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VIA EMAIL and RESS

November 3, 2023

Nancy Marconi
Registrar
Ontario Energy Board
2300 Yonge Street, Suite 2700
Toronto, Ontario, M4P 1E4

Dear Nancy Marconi:

Re: Enbridge Gas Inc. (Enbridge Gas)
Ontario Energy Board (OEB) File No. EB-2022-0335
Integrated Resource Planning (IRP) Pilot Projects
Interrogatory Responses

In accordance with the OEB's Procedural order No. 2, dated October 5, 2023, enclosed please find the interrogatory responses of Enbridge Gas.

In accordance with the OEB's revised Practice Direction on Confidential Filings effective December 17, 2021, Enbridge Gas is requesting confidential treatment of the following exhibits – details of the specific confidential information for which confidential treatment is sought (all of which fits within the OEB's "presumptively confidential" category) are set out below:

Exhibit	Description of Document	Brief Description	Basis for Confidentiality Claim
Exhibit I.APPrO-5	Interrogatory Response to Exhibit I.APPrO-5	Commercially Sensitive Information	The redactions relate to information that is commercially sensitive, considered to be Presumptively Confidential, and consists of financial and/or commercial material that Enbridge Gas has consistently treated as confidential. Disclosure of customer-specific demands could divulge investment plans, prejudice competitive positions and/or interfere with ongoing negotiations.

Exhibit I.FRPO-2 Attachment 1	Interrogatory Response to Exhibit I.FRPO-2	Commercially Sensitive Information	The redactions relate to information that is commercially sensitive, considered to be Presumptively Confidential, and consists of financial and/or commercial material that Enbridge Gas has consistently treated as confidential. Disclosure of customer-specific demands could divulge investment plans, prejudice competitive positions and/or interfere with ongoing negotiations.

If you have any questions, please contact the undersigned.

Sincerely,

(Original Digitally Signed)

Brittany Calhoun
Sr. Advisor, Leave to Construct Applications

Cc: EB-2022-0335 Intervenors

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit B, Tab 1, Schedule 1 / pp. 3-4 of 15
Exhibit C, Tab 1, Schedule 2 / p. 1 of 8

Preamble:

Per the IRP decision1, IRP pilot projects are seen as an effective approach to understanding and evaluating how IRP can be implemented to avoid, delay, or reduce projects. Understanding the intent of the IRP pilots, Enbridge Gas developed two primary objectives for the IRP pilots to gather transferrable learnings and to have the potential for scalability. The two objectives are to: 1) develop an understanding of how enhanced targeted energy efficiency (ETEE) and demand response (DR) programs impact peak hour flow/ demand, and 2) develop an understanding of how to design, deploy, and evaluate ETEE and residential DR programs.

Question(s):

a) Enbridge Gas's objectives focus on two IRP alternatives (IRPAs). Please explain why Enbridge Gas made ETEE and DR a priority for the pilots. Did Enbridge Gas consider other IRPAs? If so, which IRPAs were considered and why did Enbridge Gas not proceed with those IRPAs as part of the pilots? If not, why were other IRPAs not considered?

b) Enbridge Gas also seeks to gain learnings on the use of CNG injection as a longer-term supply-side alternative. This appears to fall outside of Enbridge Gas's pilot objectives. Please explain why, and to what extent Enbridge Gas plans on considering the use of CNG in its pilot and future IRP plans.

Response:

a) The OEB's IRP Decision (EB-2020-0091) approved the following IRP alternatives:

1. Demand side alternatives including enhanced targeted energy efficiency (ETEE) programs and demand response (DR) programs
2. Supply-side alternatives including market-based supply side alternative and compressed natural gas (CNG)

Enbridge Gas considered the above noted approved IRP alternatives and has proposed ETEE, DR and supply side alternatives in its Pilot Project application.

Enbridge Gas focused the Pilot Project objectives on the ETEE and DR alternatives, as Enbridge Gas has limited experience with these alternatives being utilized to reduce peak hour demands. ETEE includes a suite of offerings featuring a portfolio of measures that leverages existing DSM programming for residential, commercial and industrial customers, to gain an understanding of differences in ETEE versus broad-based DSM programming with respect to design, implementation, uptake, and impact to peak hour. This also includes limited ETEE offerings for electrification and advanced technologies to build learnings to support integrated energy planning and wider market deployment. The Southern Lake Huron Pilot Project includes a residential DR program, which will be the first time Enbridge Gas is piloting a program of this nature.

Enbridge Gas does have experience with the other supply side alternatives; therefore, although they are included and Enbridge Gas will monitor them for additional learnings, they were not the primary focus of the Pilot Projects.

b) As explained at Exhibit B, Tab 1, Schedule 1, paragraph 7, Enbridge Gas will utilize the CNG alternative for peak shaving to supplement incremental system peak flows/demand exceeding the physical/hydraulic capabilities of the system. CNG can be implemented relatively quickly compared to other IRP alternatives, making it an effective alternative to defer or delay a facility project. Enbridge Gas will use the CNG alternative in future IRP Plans where it is deemed to be a technically and economically feasible alternative.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit B, Tab 1, Schedule 1 / pp. 9 & 14 of 15

Preamble:

Per the above referenced materials, Table 1 & 2 shows Parry Sound and Southern Lake Huron (SLH)'s 10-year residential and commercial customer attachment forecast. The general trend from 2022-2031 is a gradual decline in residential attachments while commercial attachments remain relatively steady throughout the 10-year period for both pilot project areas.

Question(s):

Please describe how Enbridge Gas took this trend in forecasted attachments into consideration when determining the types of IRPAs to deploy for both pilot projects. Why are the selected demand and supply-side IRPAs most suitable for the projected growth in both pilot regions? What difference in learnings does Enbridge Gas expect to gain between the two pilot projects?

Response:

The growth forecast was taken in consideration when determining the technical feasibility of supply side and demand side IRPAs, such as number of CNG trailers/volumes required. The growth forecast was also considered in the determination of the baseline facility pre- and post-implementation of ETEE. Although the growth forecast was considered, as noted above, the primary objectives of the Pilot Projects are focused on gaining learnings on demand side IRPAs. While Enbridge Gas's 10-year forecast in customer attachments is gradually declining, discussions with both municipalities indicated that higher and more localized growth has been observed in the last few years compared to the historical averages. Deployment of demand side IRPAs are intended to support the reduction in overall system peak hour loads and to help to defer and reduce the scope of the facility projects, particularly in Parry Sound where the reinforcement cost is much higher.

Supply side IRPAs do not support reductions in system load but instead allow for the deferral of a project. The proposed supply-side IRPAs will support peak period demands, such as leveraging CNG for peak shaving, to ensure safe and reliable delivery of natural gas is maintained over the course of the pilot while learnings are gathered from the demand-side IRPAs.

With regards to differences in learnings, the Parry Sound Pilot Project includes electrification measures and advanced technologies within ETEE, whereas the Southern Lake Huron Pilot Project includes residential demand response. Additionally, there may geo-specific learnings due to the differences in location and customer mix of the systems, where incentive levels, engagement tactics or local contractor networks may vary.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit B, Tab 1, Schedule 1 / p. 11 of 15
Exhibit D, Tab 1, Schedule 2 / p. 7 of 14
Exhibit D, Tab 1, Schedule 3 / p. 3 of 11

Preamble:

"SLH area of influence" is where changes in peak hour demand will most significantly impact identified system constraint. However, Enbridge Gas notes that commercial & industrial (C&I) ETEE offerings will be available throughout the SLH region (including "greater SLH") to maximize learnings since there is a small percentage of C&I customers in the "SLH area of influence".

Question(s):

a) Enbridge notes that a major benefit of the SLH Pilot Project area is the existence of encoder receiver transmitters (ERTs). However, additional ERT installations need to be made in the "SLH area of influence" and in the remaining Sarnia area for larger C&I customers. Enbridge Gas is also aware of supply chain issues resulting in longer lead times for larger C&I meter sets. As such, the start of C&I ETEE programming has been delayed to 2025. Please explain why Enbridge Gas believes the SLH Pilot Project will lead to optimal C&I learnings compared to other potential pilot projects when there is a smaller C&I sector in the "SLH area of influence" and a shortened timeframe in C&I ETEE programming due to supply chain issues.

b) Since most customers in the SLH Pilot Project area are equipped with existing ERTs, has Enbridge Gas considered whether they can avoid the delay in C&I ETEE programming to 2025 if full metering coverage was not required?

c) With a 2025 delayed start of C&I ETEE programming for the SLH Pilot Project, how does Enbridge Gas plan on leveraging C&I ETEE programming learnings from the Parry Sound Pilot Project?

Response:

a) From a metering perspective, a large number of residential and smaller commercial customers within the Southern Lake Huron area are equipped with existing ERTs. The financial and timing benefits of selecting a Pilot Project location where existing metering for residential and small commercial customers already exists outweighs the timing challenge associated with metering for C&I customers, and makes Southern Lake Huron an optimal Pilot Project location when compared against any other potential project where existing hourly measurement is not currently available and would encounter the same supply chain issues.

b) As indicated in response to part a) above, most residential and smaller commercial customers in the Southern Lake Huron Pilot Project area are equipped with existing ERTs. However, given the purpose of the proposal to broaden the scope for C&I customers to the greater Southern Lake Huron Pilot Project area was to gain learnings around peak hour impact and ETEE potential from these sectors, it would be critical to ensure hourly measurement is available on all the C&I customers; especially the larger C&I customers, which have a more significant impact to peak hour. For details on why full coverage is required please see response at Exhibit I.STAFF-5.

c) There may be initial program delivery learnings from the implementation of Parry Sound C&I ETEE offering that could inform the C&I ETEE offering in SLH, such as customer engagement and marketing tactics or engagement with contractors. Additional learnings such as peak hour reduction, measure uptake or incentive levels would require more time and data in order to determine trends. Additionally, learnings from installation of hourly metering on C&I customers in Parry Sound will be leveraged and applied to the SLH project area.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit C, Tab 1, Schedule 2 / pp. 1-3 of 8
Exhibit C, Tab 1, Schedule 1 / pp. 3-4 of 4
Exhibit D, Tab 1, Schedule 1 / p. 8 of 34
Exhibit D, Tab 1, Schedule 2 / p. 6 of 14

Preamble:

Per the above referenced materials, Enbridge Gas developed two pilot-specific objectives. To meet these objectives, a list of criteria was developed to review the 2023-2032 asset management plan (AMP). Potential pilot projects were then evaluated and ranked using a weighted average scoring matrix that consists of 5 criteria.

Question(s):

a) Please explain how each of Enbridge Gas's objectives and evaluation criteria helps to meet the overall IRP pilot project objective to understand and evaluate how IRP can be implemented to avoid, delay, or reduce projects.

b) In Enbridge Gas's review of the AMP, there are criteria for the potential pilots to 1) act as "proof-of-concept" resulting in the potential for scalability and transferrable learnings and 2) to enable effective data collection and measurement of IRPA investment impacts. Please explain how the SLH Pilot Project meets both criterion considering there is a small percentage of C&I customers in the "SLH area of influence" requiring the expansion of the C&I ETEE programming to the "Greater SLH" region to gain learnings and the supply chain issues in obtaining metering equipment to delay the start of C&I ETEE programming to 2025.

c) One criterion used in evaluating and ranking potential pilot projects in the scoring matrix is a "balanced customer mix and potential for scalability" weighted at the higher end of 25%. Please explain why Enbridge Gas feels there is a balanced customer mix for both pilots (especially SLH) when Enbridge Gas notes that the customer base for both pilot project areas are largely residential and there is a smaller C&I customer base in the “SLH area of influence” of 1.7% and 6.4% in “Greater SLH” vs. 12.9% in Parry Sound.

d) Please explain the rationale behind Enbridge Gas’s original intent in selecting one pilot project to address a single identified system need/constraint and a second pilot to address multiple identified system needs/constraints. Why is Enbridge Gas now satisfied with having two pilot projects to address multiple identified system needs? Did Enbridge Gas consider selecting the second highest scoring pilot that addresses a single identified system need instead?

Response:

a) The considerations and rationale for the five criteria used in the Pilot Project selection and how they relate to the Pilot Project objectives are described in Exhibit C, Tab 1, Schedule 2, pages 1 to 3.

The Pilot Project objectives are to gain learnings about the impact that IRPAs (ETEE and DR) have on peak hour flow/demand, as well as to gain learnings about the design and implementation of these programs.

Each of the Pilot Project evaluation/selection criteria support achieving these objectives, as they enabled Enbridge Gas to identify projects that would provide insights on the impact of IRPAs on peak (e.g. via choosing a Pilot Project area with hourly flow measurement), and insights on design and implementation (e.g via choosing a pilot project area with a mix of customer types) – these learnings will be applied to future IRP Plans, which in turn supports efforts to delay, avoid or reduce other future projects

b-c) Please see Exhibit C, Tab 1, Schedule 2, page 7 on why Southern Lake Huron has the potential to enable effective data collection.

The initial Pilot Project selection process considered and chose the entire Southern Lake Huron system, as it has a significant customer base and mix of customers with encoder receiver transmitters (“ERTs”). Enbridge Gas believes that focusing on the entire Southern Lake Huron system would provide the scale and data-driven learnings that would be valuable in future non-pilot IRP Plans.

A detailed review of the projects within the Southern Lake Huron system was then completed and an area of influence was developed. This area of influence defined where peak hour reductions would benefit the constraints on the system. Using this information, Enbridge Gas proposed offering the ETEE and DR to all customers within the area of influence. In addition, because the area of influence contains a low number of commercial and industrial (“C&I”) customers, the Company also proposed offering the C&I ETEE offering to the entire Southern Lake Huron Project area. This ensures that the Company can obtain key learnings about the C&I customer market even though they are outside of the area of influence and will not help defer the reinforcement project. In putting forth this proposal, Enbridge Gas considered the total Pilot Projects budget; specifically, the magnitude of budget being allocated to an area that does not directly impact a need. The learnings obtained from this market segment will be used to evaluate and implement future IRP Plans.

d) In the initial stages of defining the two Pilot Projects, a variety of scopes and criteria were proposed, such as focusing on ETEE paired with supply side, DR standalone, long-term project versus near-term project, etc. Based on the variety of projects seen in the AMP, instead of focusing project-by-project, Enbridge Gas started considering how projects in the AMP could be grouped and addressed through an IRPA plan that includes one or more IRP alternatives. At this point, it was proposed that one pilot be focused on a single system need/constraint and the second pilot focused on addressing multiple needs over many years leveraging a suite of IRP alternatives.

As the systems were reviewed in greater detail and the hydraulic models were updated to reflect recent changes such as growth, customer demands and/or system pressures, the scopes of the Pilot Projects were impacted. For instance, Parry Sound was selected on the basis of being a single system need, with a focus on ETEE. However, due to the reduced delivery pressure from TCE, it significantly advanced the need of the reinforcement project, requiring the use of CNG as a bridging solution. Additionally, further consideration of facility alternatives led to the proposed rebuild of Emsdale station to help reduce the scope of the pipeline project, thereby resulting in a Pilot Project in Parry Sound that addresses multi-system needs and leverages multiple IRP alternatives.

Regardless of whether there is a single or multiple need/constraints, reviewing a system holistically ensures that all potential options are evaluated and that the optimal alternatives (either facility and/or IRP) are brought forward. In addition, reviewing the system holistically supports evaluating if one IRP Plan could technically and cost-effectively address multiple projects. Enbridge Gas will continue to apply this approach moving forward when reviewing projects.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit A, Tab 2, Schedule 1 / p. 3 of 6
Exhibit D, Tab 1, Schedule 3 / pp. 2&4 of 11

Preamble:

Enbridge Gas proposes to deploy complete coverage of hourly metering devices in both pilot project areas. Enbridge Gas notes that procurement of devices for C&I customers in SLH cannot commence until the OEB approves the cost consequences of the pilot projects. As such, Enbridge Gas requested for a Decision and Order to be issued by December 2023 since Enbridge Gas needs at least 4 months to implement ETEE programming into the market by Q2 2024.

Question(s):

a) Please explain why Enbridge Gas requires complete coverage of hourly metering devices for both pilot project areas. Has Enbridge Gas considered any alternative techniques like extrapolating sample data onto the population? For the Parry Sound Pilot Project, can the existing SCADA measurement of entire system hourly flow data at the Emsdale CMS not be leveraged?

b) Please explain why Enbridge Gas cannot commence procurement of hourly metering devices for C&I customers in the SLH Pilot Project area until the OEB approves the cost consequences of the pilot projects.

c) Please confirm whether Enbridge Gas has weighed the benefit and cost of obtaining complete coverage of hourly metering devices considering factors like potential timing delays and metering supply issues. Can Enbridge Gas meet the targeted Q2 2024 launch (or earlier) if procurement could start before obtaining OEB approval?

Response:

a) As shown in response at Exhibit I.SEC-2, Enbridge Gas is estimating a total reduction of 187 m^3/hr from ETEE in the Parry Sound Pilot Project out of a total Parry Sound system flow of ~5608 m^3/h in 2026. This equates to a 3.3% reduction in peak hour load in 2026, where previous year reductions can be assumed to be less. While SCADA measurement at a system level is available and will still be leveraged for a macro view, as described in Exhibit D, Tab 1, Schedule 3, pages 2 to 6, factors such as customer growth, commodity pricing, changes in occupancy, customer habits, as well as equipment and building changes not related to ETEE programming all have the potential to confound Enbridge Gas's efforts to understand the impact of ETEE by customer type. When hourly data is available for the specific group of customers participating in ETEE, the sample size will be larger, and the above factors should have less of an effect on the analysis.

b) Enbridge Gas considered extrapolating sample data onto the population but does not feel this is appropriate. Hourly data is required before and after an IRPA is tested on customers to understand the impact of the IRPA on their flow/demand. An alternative would be to install hourly measurement only on customers interested in participating, to reduce the quantity of hourly measurement devices, but this would not allow for a baseline to be established unless the implementation of the ETEE measure is delayed. This would present challenges in program participation, as delays in installation or incentives may dissuade follow-through from customers. Since it is not possible to know which customers will participate in advance, Enbridge Gas cannot know where to install hourly metrology proactively on a select few customers. Enbridge Gas believes that being able to draw conclusions faster will enable future IRPAs to be implemented sooner with less risk, and therefore this path is preferred.

c) The procurement and implementation of the hourly metering devices for C&I customers is more complex and expensive compared to the ERTs required for residential. Additionally, given that the changes in peak hour demand within the greater SLH Pilot area will not significantly impact any system needs and the broadening of scope is meant to support additional learnings for the C&I sector, Enbridge Gas believes that it is appropriate to receive guidance from the OEB on whether the cost consequences would be approved prior to proceeding.

   As noted in Exhibit D, Tab 1, Schedule 3, page 4, paragraph 11, measurement should be in place the year prior to implementation of ETEE in order to allow for baseline consumption data to be established. Therefore, in order to target a Q2 2024 launch for SLH, metering would need to be completed in advance of Winter

2023/2024. At this time, Enbridge Gas cannot confirm there is sufficient time to secure resources and materials even if procurement was started in advance of obtaining OEB approval.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit D, Tab 1, Schedule 1 / pp. 5-6 of 34
Exhibit B, Tab 1, Schedule 1 / p. 7 of 15
Exhibit B, Tab 1, Schedule 2 / p. 2 of 8

Preamble:

For the Parry Sound Pilot Project, Enbridge Gas plans to utilize a supply-side IRPA of negotiating an increased pressure agreement with TCE to avoid system reinforcement by meeting customer demands during peak periods. An agreement has been reached for two years up to Winter of 2025/26. Enbridge Gas intends on extending the contract beyond Winter 2024/2025 but if TCE is unable to provide the service, Enbridge Gas plans to install and implement an expanded CNG injection supply-side IRPA.

Question(s):

a) The supply-side IRPA of entering into an increased pressure agreement with TCE is projected to span until Winter 2025/26. This covers a notable portion of the Parry Sound Pilot Project duration which is projected to end 2027. Please explain what transferrable and scalable learnings Enbridge Gas expects to gain through this contract negotiation/ arrangement with TCE.

b) Please confirm whether Enbridge Gas has carried out an analysis of whether a two-year TCE contract or an expanded CNG injection is a better option from a cost and learnings perspective.

c) Enbridge Gas notes that if demand-side IRPAs are unsuccessful in achieving forecasted peak period reduction, Enbridge Gas will request an extension of the TCE agreement. If that is not feasible, Enbridge Gas will install a CNG injection system to ensure the reliability and safety of gas services to customers. Please explain what analysis Enbridge Gas has completed to justify this action plan.

d) Enbridge Gas notes they would like to gain learnings on the use of CNG injection as a longer-term supply-side alternative and as a peak shaving alternative. If Enbridge Gas can extend the contract with TCE beyond the Winter of 2025/26, please clarify whether Enbridge Gas plans on using CNG injection as a supply-side IRPA and if so, to what extent.

<u>Response:</u>

a) Enbridge Gas has utilized increased pressure agreements with TC Energy for many years. However, the agreements are typically short term in nature, are provided at no cost and can be terminated with two years notice. Enbridge Gas has requested TC Energy to develop a “pressure service” that Enbridge Gas can contract for long-term to defer or downsize future facility projects.

b) Confirmed. Enbridge Gas considered both the TC Energy pressure agreement and implementation of CNG. At the time of the Pilot Projects Application, the TC Energy pressure agreement was the preferred alternative as it is provided at a lower cost than CNG and the increased pressure could be provided immediately compared to CNG, where a third-party service would need to be negotiated and the equipment would need to be installed.

c) The analysis in this case is the result of hydraulic modelling on the Parry Sound system using the Design Hour Demand forecast methodology outlined in Enbridge Gas’s EB-2022-0200 Rebasing Application. If the demand-side alternatives do not achieve the required peak-hour reductions within the first few years, then Enbridge Gas must meet the peak hour demands through the TCE pressure agreement extension or CNG. If TCE does not extend the pressure agreement then CNG will be utilized to meet the peak hour demands. The results of the hydraulic modelling show CNG can be utilized to defer the design hour demand peak required above the TCE supply and existing pipeline infrastructure. This allows for the reinforcement on this system to be deferred to future years, depending on actual growth and if demand side reductions are unsuccessful. Due to the length of the Parry Sound System, only small volumes of CNG would be required to offset reinforcement needs and can be utilized until a reinforcement is installed if the IRPA peak hour reductions are not met.

d) No, if the TC Energy pressure agreement can be extended and the incremental pressure meets the peak hours demands of the system and the cost of the increased pressure is lower than the cost of CNG then CNG would not be implemented.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit D, Tab 1, Schedule 2 / p. 5 of 14

Preamble:

Enbridge Gas notes that the supply-side IRPA of CNG injection uses two CNG tube trailers with two smaller decanting trailers located on-site. A third trailer will be brought in if system flows deplete one of the two trailers. This IRPA set up is identical between the SLH Pilot Project and the Parry Sound Pilot Project.

Question(s):

Please explain the benefit of executing the same IRPA and plan in both the Parry Sound and SLH Pilot Projects. What difference (if any) does Enbridge Gas anticipate in its peak shaving learnings between the two pilot projects? Has Enbridge Gas considered any variations to the IRP plan to maximize CNG learnings between the two pilot projects?

Response:

In both Pilot Project areas, CNG injection will be utilized as an IRP alternative if the peak demands in the project area exceed the peak hour capability of the system and trigger a low-pressure control. Although the purpose of implementing CNG in both Pilot Project areas is the same and the learnings are likely to be similar; the benefit of executing CNG in both Pilot Project areas is that CNG can be contracted for and implemented within months, whereas other demand side alternatives require years to develop and implement, and to determine whether the IRPA is impacting the peak hour demands. This means that if growth in the Pilot Project areas exceeds the forecast or the demand side IRP alternatives fail to deliver peak reductions, then having incorporated CNG will ensure that can be utilized to meet the peak hour demands - maintaining safe and reliable service to the area.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit B, Tab 1, Schedule 2 / pp.3-4 of 8 (Parry Sound), pp. 6-7 of 8 (SLH)

Preamble:

Enbridge Gas notes that the pilot projects are supportive and aligned with the OEB's public policy (specifically the statutory objectives in section 2, subsections 3 and 5 for the natural gas sector). Enbridge Gas notes that both pilots focus on energy conservation, energy efficiency and DR measures to support its alignment with subsection 5 which promotes conservation and energy efficiency through GHG emission targets, federal climate policies and jointly funded HER+ program.

Question(s):

Please explain how the pilot projects in Parry Sound and SLH align with OEB's public policy in section 2, subsection 3 (to address rational expansion of transmission and distribution system) and subsection 5.1 (the maintenance of a financially viable gas industry), whether it be throughout or post the term of the pilot projects.

Response:

In general, the Pilot Projects are intended to understand and evaluate how IRP can be implemented to avoid, delay, or reduce facility projects. Among other things, this includes implementing and monitoring several IRPAs and observing their performance and impacts on peak system demands. These Pilot Project learnings will inform the Company's evaluation of future IRP opportunities, including the extent to which IRPAs can be used to cost-effectively delay, downsize or avoid future facilities projects. Implementing these projects and obtaining these learnings is directly aligned with and supports both the OEB's objectives of rational expansion of the distribution system and the maintenance of a financially viable gas industry, Specifically, the Pilot Projects are intended to delay or downsize the system expansion requirements in both Parry Sound and Southern Lake Huron through the deployment of both supply-side and demand side IRPAs. This will avoid near-term facilities expansion costs while determinations are made as to how demand side IRPAs may reduce future demand and facilities requirements. This is consistent with the OEB objective of supporting the rational expansion of the distribution system – where alternatives to expansion are available, they are to be considered and potentially implemented (where feasible).

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit D, Tab 1, Schedule 1 / p. 2 of 34
Exhibit D, Tab 1, Schedule 2 / p. 3 of 14

Preamble:

Enbridge Gas notes that it will require at least four months from the OEB's approval of the pilot projects to implement ETEE programming in market.

Question(s):

Please provide the specific tasks and corresponding agenda of what Enbridge Gas plans to do over the four-month period in preparation for implementation of ETEE programming for both pilot projects. Please explain why these tasks can only begin once Enbridge Gas receives OEB approval.

Response:

Most implementation activities will only begin once there is certainty in scope of programming and approved budget.

During this four-month period after the application has been approved (if approved as filed), various activities to ramp up ETEE programming implementation will commence which will include: resourcing, program design finalization, marketing activities/roll-out finalization, potential partner engagement/program planning, contractor engagement on programming. Some activities can begin now and are in progress, such as discussions with potential DERMS/delivery partners for the residential DR program.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit D, Tab 1, Schedule 1 / pp. 8 & 24-27 of 34
Exhibit E, Tab 1, Schedule 1, Attachment 1

Preamble:

For the Parry Sound Pilot Project, Enbridge Gas plans to offer a limited ETEE-version of the HER+ program of electrification measures to residential customers. The program offers additional incentives for cold climate air source heat pumps (ccASHP) capped at 20 participants and ground source heat pumps (GSHP) capped at 10 participants. Enbridge Gas does not expect the additional electrical load demand from these electrification measures to have a material impact on the local electricity grid. Exploration of this offering will allow Enbridge Gas to evaluate the potential applicability and feasibility of electrification measures in an isolated environment. It will also inform future work and collaboration with the electricity sector.

Question(s):

a) Please clarify whether Enbridge Gas has been in contact with Lakeland Power to ensure that the amount of electrification measures will not have a material impact on the local electricity grid. If so, please clarify how Enbridge Gas arrived at a cap of 20 and 10 participants for ccASHP and GSHP respectively. Is the proposed cap driven by possible electricity system constraints or by other factors(e.g., goal of testing other IRPAs)?

b) Enbridge Gas has budgeted approximately $0.1M for residential electrification measures vs. $1.4M for advanced technologies in their limited ETEE offerings in the Parry Sound Pilot Project (recognizing that one of the advanced technologies also includes an element of electrification). The three advanced technologies (hybrid heating, natural gas heat pumps, and thermal energy storage are capped at 40, 20 and 40 residential participants respectively and 5 participants for commercial). These advanced technologies are not part of the 2023-2025 DSM Plan and have not yet or have just recently been commercialized. Please explain why

Enbridge Gas has decided to allocate more money and participant opportunities for advanced technologies than electrification measures, understanding there are restrictions/ limitations to both options.

<u>Response:</u>

a) Enbridge Gas has been in contact with Lakeland Power to confirm the amount of electrification measures will not have a material impact on the local electricity grid. The proposed cap was introduced to allow for the inclusion of a limited amount electrification measures as part of a diverse range of ETEE measures within the Pilot Project. Enbridge Gas acknowledges that while the current IRP framework does not support funding towards electric IRPAs, the Pilot Project provides a suitable isolated environment in which the potential applicability and feasibility of electrification measures in supporting future IRP efforts can be explored; and a cap of 20 units is deemed to be reasonable. A greater number of units was not proposed as detailed coordinating energy planning would be required with the electric sector to determine the full impacts to the respective grid and systems prior to this being considered. With respect to the GSHP, a lower number of units was proposed relative to the ASHP, given the greater complexity and costs associated with installation of the measure.

b) For clarity, the residential electrification measure offering is a component of the HER+ offering; therefore, most of the promotion and delivery costs are captured under the province wide Enhanced DSM offering. The $0.1 million only represents the costs associated with the electrification measure's incremental incentive, overhead and promotion. This $0.1 million, therefore, cannot be directly compared to the $1.4 million for advanced technologies.

   As noted in Exhibit D, Tab 1, Schedule 1, page 27, the incentive levels for the advanced technologies considered the limited market awareness and market adoption of these new measures, as well as leveraging a direct install delivery model to reduce barriers to implementation for homeowners. Despite being in the earlier stage of their full commercialization, the advanced technologies offer sizeable peak reduction potential and thus are included in the pilot proposal to compliment the other ETEE offerings. Learnings for these technologies can support wider market deployment in future IRP applications.

ENBRIDGE GAS INC.
Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit D, Tab 1, Schedule 1 / pp. 26-31 of 34
Exhibit E, Tab 1, Schedule 1, Attachment 1

Preamble:

Enbridge Gas notes several drawbacks to ETEE advanced technologies. There is minimal or no market awareness of the advanced technologies and the advanced technologies have yet or have only been recently commercialized. Moreover, the average household income and historical adoption rate of energy efficiency measures in the Parry Sound Pilot Project area are lower than the provincial average, suggesting that higher incentives are likely required.

Question(s):

a) Please explain how Enbridge Gas arrived at the capped participation levels for each of the three advanced technology offerings for residential and commercial customers.

b) There are various established DSM programs that are operational and have proven to be effective in delivering broad-based energy savings in Parry Sound. Given this and the uncertainties associated with ETEE advanced technologies, please explain why Enbridge Gas has chosen to allocate approximately $1.4M to ETEE advanced technologies.

c) Please confirm the source of the forecasted peak reduction for each of the three advanced technologies in Table 11 of the aforementioned materials.

d) Please explain why Enbridge Gas has chosen to cap thermal energy storage at 40 participants (the same as simultaneous hybrid heating), considering thermal energy storage will yield peak reduction of 20% with minimal anticipated consumption reductions. Whereas hybrid heating will yield peak reduction of 30-40% and up to 50% consumption reduction.

Response:

a) The participation levels of the advanced technologies were determined through consideration of limiting the budget relative to the enhanced DSM offering, while also allowing for a meaningful sample size of participants to help build learnings to support wider market deployment in future IRP applications.
   Based on discussions with the Technical Working Group ("TWG"), the cap for residential gas heat pumps (GHPs) was set to 20 units to align with the cap for air source heat pumps (ASHP), and the cap of 5 units for commercial GHP seemed reasonable based on the size of the commercial segment. Please see response at Exhibit I.STAFF-10, part a) for additional information regarding the cap for electrification measures.
   The same cap of 40 units was proposed for both thermal energy storage and hybrid heating. For clarity, the cap was introduced to provide the maximum budget to be allocated to this offering and is not equivalent to a forecasted uptake.

b) The inclusion of the advanced technologies was considered as a supplemental new offering to complement the existing broad-based DSM programs in achieving the Pilot Project objectives and supporting further reduction in system peak loads. Please see response at Exhibit I.STAFF-10, part b) for additional information regarding the allocation of budget towards advanced technologies.

c) Please see response at Exhibit I.ED-6, part b).

d) Please see response at part a).

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit D, Tab 1, Schedule 1 / p. 10 of 34

Preamble:

Enbridge Gas plans on leveraging existing DSM offerings for its IRP ETEE Pilot Project offerings in Parry Sound and SLH.

Question(s):

Since pilot projects are intended to gain transferrable learnings rather than deploying the most cost-effective measures, has Enbridge Gas considered developing any new net ETEE offerings instead of leveraging existing DSM offerings? Has Enbridge Gas conducted research to identify any gaps in ETEE programming based on feedback from its residential, commercial, and industrial customers during stakeholdering and marketing efforts for both pilot project areas?

Response:

The existing DSM programs have been leveraged to achieve the best outcomes for the Pilot Projects ETEE programs where Enbridge Gas expects value through shorter program development, simplified marketing messaging aligning with current in-market offers, and utilization of existing delivery channels that may be expanded as part of the IRP Pilot Projects.

Net new ETEE offerings (not leveraging existing DSM programming) are being proposed in the form of the Limited ETEE Offering for Advanced Technologies.

Some barriers identified with ETEE and DR programming through stakeholdering efforts include challenges to program uptake such as customer reluctance due to distrust in the marketplace and lack of understanding of program details. These stakerholdering efforts are further detailed in response at Exhibit I.PP-30, part a). In addition, through the engagement with the large institutional customer in Parry Sound, the customer had indicated that lack of capital funding was a barrier they faced, which can be tackled through increased incentives that Enbridge Gas will be testing as part of the ETEE programming.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit D, Tab 1, Schedule 1 / pp. 15-23 of 34

Preamble:

Enbridge Gas has set incentive levels and caps for DSM offerings with additional IRP ETEE incentives for the Parry Sound and SLH Pilot Projects. They are as follows:

- Residential (HER+ measures) doubles the OEB-approved DSM maximum incentive but capped at 100% of cost.
- Small and medium C&I customers (direct install and prescriptive offerings) aim to cover a portion of the equipment and installation costs up to 100% of cost.
- Large C&I customers (custom offering) aims to provide enhanced incentives up to twice of existing DSM offering (up to 50-75% of cost).
- No additional incentives for affordable housing programing but will enhance targeted marketing activities for existing DSM program offerings for this sector.

Question(s):

a) Enbridge Gas notes that residential space heating is a significant contributor to peak period flows/demand. However, residential customers are also known to have lower energy efficiency program uptake and the average household income is lower than the provincial average. Likewise, there is a lack of capital barrier for small and medium sized C&I customers. Please explain why Enbridge Gas has chosen to double the HER+ program incentives, whereas small and medium sized C&I customers can have up to 100% of its program costs covered.

b) For the affordable housing program, how does Enbridge Gas plan to track and attribute the potential energy savings and marketing costs carried out as part of the pilot projects for these DSM programs?

Response:

a) As noted in response at Exhibit I.OGVG-2, part a-b), Enbridge Gas expects that both residential customers and small commercial/industrial customers will have the opportunity for 100% cost coverage of measures with enhanced incentives based on the proposed incentive levels. As described in Exhibit D, Tab 1, Schedule 1, the program incentive levels proposed are starting points for the Pilot Projects and there is an expectation that the impact of incentive levels will be monitored on an on-going basis and adjustments will be made where required, in line with the objectives of the Pilot Projects (e.g., increase participant uptake).

b) Participant incentives for the affordable housing program will be funded by the DSM program. Energy savings will be tracked and included in the DSM results. Incremental promotional costs geographically targeted to the Pilot Project areas for the affordable housing program will be funded by the Pilot Projects.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit D, Tab 1, Schedule 2 / pp. 8-12 of 14

Preamble:

Enbridge Gas plans to offer a DR program to the entire SLH region. 10 DR events are anticipated during the first heating season. Financial incentives are in place to incent enrolment into the program and Enbridge Gas will consider increasing participation and retention levels through a loyalty marketing initiative that will likely be handled by the distributed energy resource management system (DERMS) provider.

Question(s):

a) Please confirm what temperature levels Enbridge Gas plans on triggering a DR event. How did Enbridge Gas decide on these temperate levels? Will levels change over the course of the pilot project to assess customer sensitivity?

b) Please clarify when (i.e. at what level of participation) the loyalty marketing initiative be considered.

c) Please explain how Enbridge Gas plans to monitor the effectiveness of DERMs marketing efforts for the DR program. Is there planned coordination between Enbridge Gas and DERMs regarding marketing approaches and frequency?

Response:

a) Enbridge Gas plans to trigger DR events at various temperatures during the heating season to support the establishment of a correlation between outdoor temperature and reheat from setback time. Please see Exhibit D, Tab 1, Schedule 2, page 11 of 14, paragraph 23 for more details.

b) As noted at Exhibit D, Tab 1, Schedule 2, page 11, paragraph 25 and Exhibit D, Tab 1, Schedule 2, page 12, paragraph 26, Enbridge Gas may explore a variety of marketing tactics including loyalty marketing to drive increased DR program participation and retention levels. Based on the program need, if loyalty marketing is deemed an effective tactic, details will be finalized at the time of implementation.

c) Enbridge Gas expects a fully coordinated approach to marketing with the DERMS service provider through the specific marketing channels (e.g., in-app offering marketing through the thermostat brand mobile applications etc.) that will be implemented as part of the greater marketing strategy to drive program participation and to optimize customer experience. Plans on monitoring and coordination will be assessed in greater detail pending OEB approval of this application and following procurement of the DERMS service provider.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit D, Tab 1, Schedule 3 / pp. 6-7 of 11

Preamble:

Enbridge Gas discusses the required data collection along with the evaluation plan for ETEE and DR programs. Hourly flow measurement is to be installed on all customers in the pilot project areas for collection of baseline and post-pilot project implementation data with the use of control groups.

Question(s):

a) Enbridge Gas notes that depending on the number of participants and complexity, a consultant may be engaged for data analysis of ETEE impacts to peak hourly flow. Please confirm whether consultant costs have been captured in the projected pilot costs. If so, has Enbridge Gas reached out to any potential consultants given the importance of analyzing data in a timely manner to adjust IRPA plans for increased effectiveness over the course of the pilots? At what levels of participation and complexity does Enbridge Gas feel a consultant will need to be engaged?

b) Enbridge Gas intends to collect thermostat data for DR program analysis if it is available from the manufacturer. Given the importance of obtaining and analyzing data in a timely manner, please confirm whether Enbridge Gas has reached out to the thermostat manufacturers and, if so, the responses Enbridge received. If thermostat data is not available from the manufacturers, how does this impact Enbridge's DR program analysis?

Response:

a) Confirmed. A placeholder estimate for consultant costs were included under Data Collection and Analysis at Exhibit E, Tab 1, Schedule 1, Attachment 1, page 1 of 1, lines 10 and 21. Enbridge Gas has had discussions with two consultants and will engage them (or others) if necessary once the data analysis process has begun. The Company expects that the level of consultant participation will be more clear at that time.

b) Enbridge Gas had reached out and met with two of the most popular smart thermostat manufacturers in the Ontario marketplace to better understand the data that can be provided. One of them can provide certain key data points that can be matched to specific Enbridge Gas customers. However, the other is not able to provide certain key data points (e.g., heating system runtime) at an identifying participant level, only at an anonymized participant level therefore the data cannot be matched to specific customer-matching Enbridge Gas AMI data. While this may affect our ability to assess each individual customer's impact on the system, Enbridge Gas is confident the data will still provide overall learnings about diversity and customer impacts.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit D, Tab 1, Schedule 3 / pp. 8-9 of 11

Preamble:

Enbridge Gas discusses its monitoring and evaluation plan for ETEE and DR programs.

Question(s):

Does Enbridge Gas intend to assess free-ridership as part of its process evaluation (i.e., whether participants would have implemented measures in the absence of the IRP pilots)?

Response:

Enbridge Gas does not intend to assess free-ridership as part of the Pilot Projects evaluation and has not included costs associated with such an assessment. ETEE technologies or programs that are implemented in a geotargeted area for the purposes of infrastructure deferral are aimed at ensuring that the demand reduction happens and shows up on the distribution system, allowing for a deferral of otherwise required new infrastructure. For this reason, gross volumes are a more accurate reflection of demand reduction and the impact on a distribution system.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit B, Tab 1, Schedule 2 / pp. 3 & 5-6 of 8
Exhibit E, Tab 1, Schedule 1 / p 1 of 19

Preamble:

The IRP decision2 encourages Enbridge Gas to use the IRP pilot projects as a testing ground for an enhanced DCF+ test. However, Enbridge Gas has only completed and filed a DCF Phase 1 test to support the Parry Sound and SLH Pilot Projects. Enbridge Gas's enhanced DCF+ test will be adjudicated in the first non-pilot IRP Plan application.

Question(s):

a) Enbridge Gas notes that a Stage 1 DCF analysis has been provided for the two Pilot Projects to "assist the OEB in assessing the current application". Please explain what the results of the DCF Stage 1 test indicates in terms of the pilot project selection and the pilot project's cost effectiveness. In Enbridge Gas's perspective, how should these test results factor into the OEB's decision on approving the cost of the two pilot projects?

b) The DCF+ Working Group report was issued May 2023. Enbridge Gas's IRP Pilot Projects application was filed in July 2023. DCF+ discussions with the IRP TWG were held on a bi-weekly basis leading up to the issuance of the DCF+ Working Group report. Understanding that the pilot projects are a testing ground and that results of the DCF+ test will not influence the board's decision of whether the two proposed pilot projects were appropriately chosen from an economic perspective, please explain why Enbridge Gas did not attempt to complete the DCF+ test beyond Phase 1 for both pilot projects for learnings.

c) To facilitate practice and potential learnings from executing Enbridge Gas's enhanced DCF+ test using real life scenarios, please confirm whether Enbridge Gas plans on carrying out the enhanced DCF+ test for both pilot projects once the test has been finalized. If so, when, where, and with whom will the results and supporting calculations of the DCF+ test be shared? To obtain and consider feedback from IRP technical working group (TWG), does Enbridge Gas plan on sharing the results with the IRP TWG prior to filing the enhanced DCF+ test for adjudication in the first non-pilot IRP plan?

Response:

a) The DCF stage 1 cost included at Exhibit E, Tab 1, Schedule 1 was provided as information to give the OEB a comparison of the rate impacts associated with both the IRP alternatives and the base facility solutions. As discussed in the evidence, the Pilot Project's cost effectiveness was not the highest priority objective for the Pilot Projects. The primary objectives of the Pilot Projects, as outlined at Exhibit B, Tab 1, Schedule 1 are to:

   i. Develop an understanding of how ETEE and DR programs impact peak hour flow/demand.
   ii. Develop an understanding of how to design, deploy, and evaluate ETEE and residential DR programs.

   As shown at Exhibit E, Tab 1, Schedule 1, the stage 1 results are positive for the Parry Sound Pilot Project and negative for the Southern Lake Huron Pilot Project. However, as explained at Exhibit C, Tab 1, Schedule 2, the Parry Sound and Southern Lake Huron projects scored the highest when compared to the other potential projects with respective to the Pilot Project selection criteria and, therefore, they were selected as the Pilot Projects.

   As noted above, cost effectiveness is not a key objective of the Pilot Projects and, in any case, future IRP Plan applications will use the DCF+ test so there is no benefit to focusing on the interim approach in the application.

b) Please see response at Exhibit I.ED.1, part a).

c) Not confirmed. Enbridge Gas does not plan to carry out the enhanced DCF+ test for the Pilot Projects.

   Confirmed. As noted in response at Exhibit I.ED-1, Enbridge Gas will review the DCF+ Guide and methodology with the TWG in Q4 2023 on the first IRP Plan which will be filed in 2024. In Enbridge Gas's view, the best use of time and resources is to focus on the DCF+ process as part of the next IRP Plan.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit E, Tab 1 Sched 2 / p. 1 of 6
EB-2022-0200 Exhibit 1 Tab 1 Sched 1 / p. 54 of 61, Sched 2 pp.39-40 of 48
(Partial Settlement Proposal, June 28, 2023)

Preamble:

Enbridge Gas proposes to include the IRP Pilot Project costs in the IRP Costs deferral accounts because the project costs are incremental to the costs that support Enbridge Gas's 2023 current-approved and 2024 proposed rates. The OEB has indicated that it intends to accept a partial settlement filed by Enbridge Gas in the rebasing application (EB-2022-0200), which would modify the definitions of the IRP Operating Cost and IRP Capital Cost Deferral Accounts to recognize off-setting amounts in the account balances to reflect avoided capital cost impacts related to facilities projects that are delayed, avoided or downsized by IRP.

Question(s):

a) Does Enbridge Gas believe that the OEB's determination on the appropriateness of including costs of the pilot projects in the IRP Deferral Accounts should be based on the updated definitions of the IRP Deferral Accounts (as defined in the partial settlement)? Why or why not?

b) Is Enbridge Gas still of the view that all IRP Pilot Project costs should be eligible for recovery in the IRP Deferral Accounts, subsequent to the change in definitions of the IRP Deferral Accounts? Why or why not?

c) Enbridge Gas indicates that there are no IRP Pilot Project costs included in the forecast of operating or capital costs supporting Enbridge Gas's 2024 Rebasing application. Are any costs for the baseline facility alternatives to the Parry Sound Pilot or the Southern Lake Huron Pilot included in the forecast of operating or capital costs supporting Enbridge Gas's 2024 Rebasing application, and are these baseline facility alternatives included in the asset management plan that supports the forecast of operating or capital costs? Please describe as needed.

Response:

In general, Enbridge Gas believes that the determination of cost recovery related to the Pilot Projects is best determined in a future deferral account clearance proceeding, once the costs are known and recorded. This question was discussed during the EB-2022-0200 proceeding at 14 Tr.17 to 28, in the context of questions from OEB staff about how the updated IRP Deferral Accounts will operate during the 2024 to 2028 IRM term.

a) Enbridge Gas believes that the treatment of costs for the Pilot Projects to be included in the IRP Deferral Accounts depends on when the costs are incurred. For costs incurred in 2023, as the Pilot Projects were developed and the Application was prepared and filed, the original terms and conditions of the IRP Deferral Accounts would apply. For costs incurred in 2024 and beyond (which are anticipated to be the majority of the costs), the updated terms and conditions of the IRP Deferral Accounts as set out in the OEB-approved Partial Settlement Proposal from EB-2022-0200 would apply.

b) Enbridge Gas believes that all costs associated with the Pilot Projects are appropriately recorded in the IRP Deferral Accounts. These are not included in 2024 base rates or revenue requirement (nor in 2023 rates). To the extent that it can be said that the Pilot Projects are reducing or avoiding capital costs of new facilities that are included in revenue requirement, then there may be an offset applied within the IRP Capital Costs Deferral Account, to reduce the recoverable costs and avoid "double recovery". There are many details to be worked out about how this "offset" would work. For example, how will the account address avoided costs from delayed/downsized capital projects that will only be recognized some years after the IRP plan is implemented? And how is it determined what is "in" revenue requirement for future years beyond 2024 (the only year for which rates are set through a cost of service review)? These are questions best addressed at a later time, either when the IRP Deferral Accounts are presented for recovery, or potentially as part of a non-pilot IRP application.

c) There were no capital costs related to the baseline facility alternatives for the Parry Sound and South Lake Huron projects included in the Company's 2024 capital budget. That is the budget upon which rates will be set for 2024 to 2028.

As described in evidence at Exhibit C, Tab 1, Schedule 1, there are costs for the baseline facility alternatives that would be incurred in years after 2024. The total cost for Parry Sound facilities projects is $28.3 million, split between projects in 2025, 2027 and 2030. The total cost for South Lake Huron projects is $3.1 million, split between projects in 2025 and 2032.

There are costs included in the AMP for future years related to the baseline facility alternatives for the Parry Sound and South Lake Huron projects. The timing and scope of the Parry Sound project is different in the AMP from what is set out in Exhibit C, Tab 1, Schedule 1, because additional information about TC Energy's plans became available after the AMP was completed as well as demand and model updates including creating a USM model for the 4,960 kPa system.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit E, Tab 1, Schedule 1 / pp. 4 & 7 of 19

Preamble:

Enbridge Gas presents a summary of the Parry Sound Pilot Project budget in Table 2.0 of the above referenced materials. The budget distinguishes direct pilot IRPA costs from pilot learnings costs and whether they are classified as O&M or capital.

Question(s):

a) Enbridge Gas notes that CNG injections trailers are rentals and Enbridge Gas needs to procure temporary lease of lands and capital costs. Please clarify what the $70K incurred in 2025 for the Parry Sound Pilot Project and $70K in 2024 for the SLH Pilot Project relates to and why it is capital in nature. Does Enbridge Gas own and operate the IRPA?

b) Please confirm that the primary purpose of distinguishing between direct pilot IRPA costs and pilot learnings costs is to determine what costs should be included/excluded in stage 1 of the DCF+ economic test. Does Enbridge Gas plan on making this cost distinction for future non-pilot IRPA plans? If so, has Enbridge Gas considered how to apportion direct vs. learning costs since it is reasonable to assume there will likely be an aspect of learning to each IRP plan?

Response:

a) In both cases, the $70k capital cost is associated with station modifications required to allow for the injection of CNG into the existing pipeline system. Enbridge Gas does not own or operate the CNG trailers.

b) Confirmed. Enbridge Gas does not plan to distinguish future IRP Plan costs between direct costs and learning costs.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit E, Tab 1, Schedule 2 / pp. 4-5 of 6

Preamble:

Enbridge Gas proposes to allocate balances in the IRP operating and capital cost deferral account balances as follows:

- Parry Sound – to Union North rate classes in proportion to system peak and average day demands
- Southern Lake Huron – to Union South in-franchise rate classes in proportion to Union South design day demands excluding design day demands served directly off transmission lines.

This allocation methodology differs from the harmonized cost allocation methodology in the 2024 rebasing application but is consistent with the allocation methodology that would be used for most assets that would be installed under the baseline facility project for both pilot projects.

Question(s):

Please explain why this cost allocation methodology is preferred and most appropriate for each of the Pilot Projects.

Response:

The cost allocation methodologies proposed by Enbridge Gas for the IRP deferral account balances associated with the Parry Sound Pilot Project and Southern Lake Huron Pilot Project costs are appropriate because the methodologies are consistent with the allocation of costs that underpin current rates for assets similar to the baseline facility project.

The allocation of Pilot Project costs similar to the baseline facility project ensures the Pilot Project does not negatively impact one group of customers over another when compared to the impacts that would have resulted from the baseline facility project. The IRP projects create a similar operational capacity impact as would have been obtained with the baseline facility project, therefore, it is logical that the customer impacts are also similar. The OEB commented on the cost allocation methodology as part of the IRP Framework Decision:

> The OEB agrees with Enbridge Gas that the approach to allocating costs for the facility project that is being avoided, deferred, or reduced by the IRP Plan will serve as an important reference point for the approach to cost allocation for IRP Plans.[1]

Allocating IRP costs based on the cost allocation methodology that underpins current rates is consistent with the approach used for the allocation of other variance accounts as well as the incremental revenue requirement associated with incremental capital module projects. In addition, this approach to allocating incremental costs is consistent with the OEB's Decision on Union Gas Limited's Panhandle Reinforcement Project:

> It would be inconsistent to change the depreciation term and cost recovery for one project, while Union's other assets are depreciated and recovered on different bases.[2]
>
> A leave-to-construct application requesting a capital pass-through mechanism for cost recovery over 14 months is not the appropriate forum to consider deviations from principles embedded in current OEB-approved rates.[3]

If the cost allocation methodologies that underpin rates change in a future year resulting from an OEB Decision in Enbridge Gas's 2024 Rebasing application, Enbridge Gas will propose a change to the cost allocation methodologies for the IRP deferral account balances. The cost allocation methodology changes will be proposed as part of the Non-Commodity Deferral Account Clearance and Earnings Sharing Mechanism application where disposition is requested for actual Pilot Project costs.

[1] EB-2020-0091, Decision and Order, p. 80.
[2] EB-2016-0186, Decision and Order, p. 10.
[3] EB-2016-0186, Decision and Order, p. 11.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit F, Tab 1, Schedule 1 / pp. 2-5 of 6

Preamble:

Enbridge Gas held meetings with representatives from Municipalities, LDCs, IESO and engaged with local communities through an open house session in the Parry Sound and SLH Pilot project areas. Enbridge Gas continues to have follow up meetings with these stakeholders. Enbridge Gas also plans to take a variety of approaches to engagement and outreach efforts in hopes of learning the most effective ways to reach audiences. Enbridge Gas has also developed a specific webpage to provide members of each pilot project community with access to information and updates on the pilot projects including a “have your say” feature.

Question(s):

a) Given the municipality’s support of Enbridge Gas’s proposed pilot projects and the continual engagement with the municipality and LDCs, has Enbridge Gas considered coordinating and leveraging these stakeholder’s communication channels for public outreach? Has Enbridge Gas tried to obtain feedback on what communication channels have been most effective for the municipality and LDCs in these areas?

b) Considering the relatively low attendance numbers at the open house in Parry Sound and SLH, did Enbridge Gas ask attendees how they found out about the event and whether they have any suggestions on how to reach more attendees (particularly residential participants)?

c) How does Enbridge Gas plan to monitor the activity on their pilot project specific webpages and to address comments from the “have your say” function?

Response:

a) Enbridge Gas has not obtained specific feedback on what communication channels have been the most effective for the Municipalities and LDCs in the Pilot Project areas. Enbridge Gas intends to continue working with the municipalities, IESO and LDCs in the Pilot Project areas throughout the Pilot Project term to ensure that it seeks feedback on and leverages any past or new program delivery/communications channels, opportunities and learnings in the promotion of the ETEE and DR offerings once those programs are finalized and after the OEB Decision is issued.

b) The initial Pilot Project community engagement was intended to introduce the community to the concept of Integrated Resource Planning ("IRP") and what an IRP Pilot Project and an Integrated Resource Planning Alternative ("IRPA") offering could look like in their area. Future engagement initiatives that will be held once the OEB Decision on the Pilot Project Application has been received and will include more details on the range of ETEE offerings, the incentive levels and how to participate. The Company anticipates that this information will be of greater interest for the residents and businesses in the community and will result in an increased level of attendance. The level of attendance at the initial open houses was in line with previous open houses for traditional leave to construct applications. Enbridge Gas is considering both a virtual open house as well as an in-person event to gauge which is the most effective way to engage with the community.

   The Company will also look to leverage existing municipal outreach channels such as the municipal social media channels, councilor newsletters, etc. Enbridge Gas has received informal feedback from one of the open houses that in the future, the Company should look at holding the event at one of the busier arenas in town. As a result, the Company is considering this for future communications. In addition, as part of future event rollouts, a post event survey will be implemented asking participants how they heard about the event.

c) Enbridge Gas will monitor the "click throughs" on the Pilot Project web page to review those items or pages that garner the most interest. Enbridge Gas also utilizes an email management system for communication with people who have registered their emails, ensuring adherence to Canadian Anti-spam legislation ("CASL"). This system allows Enbridge Gas to review who has received email correspondence, whether the email has been opened and if a registration has been completed or if a webinar attendance response has been received. In addition, the "have your say" function information on the website is automatically forwarded to the IRP@enbridge.com email address and is monitored and responded to by Enbridge Gas personnel.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit F, Tab 1, Schedule 3 / p. 1 of 1

Preamble:

Enbridge Gas sent email notifications to Indigenous groups located within ten kilometers of the pilot project areas.

Question(s):

Did Enbridge Gas hear back from any of the Indigenous groups they emailed? If so, what feedback (if any) did the groups provide? If not, did Enbridge Gas attempt to follow up with the Indigenous groups to ensure they successfully received the initial email notifications?

Response:

Enbridge Gas did not hear back from any of the Indigenous groups notified. Enbridge Gas regularly engages with Aamjiwnaang First Nation and Kettle and Stony Point First Nation. For Wasauksing First Nation, the Enbridge Gas Community and Indigenous Engagement Advisor contacted the Band office prior to reaching out to confirm their contact information as Enbridge Gas does not regularly engage with the Nation. In Enbridge Gas's view, since the proposed Pilot Projects will not have an adverse impact on Aboriginal and Treaty rights, Enbridge Gas did not follow up with the Indigenous groups to confirm they had received the initial notification.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit B, Tab 1, Schedule 1 / p. 5 of 15

Preamble:

The Parry Sound and SLH Pilot Projects have a proposed term of 2023- 2027. Enbridge Gas notes that pilot project updates, key learnings and outcomes will be communicated to the OEB and stakeholders through the annual IRP report.

Question(s):

a) Please confirm who the "stakeholders" are.

b) Please explain how Enbridge Gas plans on obtaining, considering, and where appropriate, implementing OEB and each of the stakeholder's feedback into its IRPA pilot project design throughout the course of the Parry Sound and SLH Pilot Projects.

c) Please confirm whether Enbridge Gas plans to leverage the expertise of the IRP TWG outside of annual IRP reporting. If so, what communication channels and how frequently does Enbridge Gas anticipate doing this in order to receive timely input on how to modify IRPA pilot project spend and efforts to potentially increase pilot project effectiveness.

Response:

a) Stakeholders include the Technical Working Group ("TWG") and other intervenors that review Enbridge Gas's Annual IRP Report (filed in the annual Deferral and Variance Account Disposition proceeding). The annual IRP Report is filed publicly and available for any interested person to review. Enbridge Gas will also provide Pilot Project updates to the project area municipalities, electric LDCs and the IESO.

b) Enbridge Gas will gather and provide Pilot Project updates, learnings and key insights on an ongoing basis to the TWG, municipalities, electric LDCs and the IESO through meetings, emails, etc. when information is available. Any feedback obtained through these updates to the TWG, municipalities, electric LDCs, the IESO or from the OEB and other intervenors will be reviewed by Enbridge Gas and implemented where appropriate. Enbridge Gas will provide updates on (including but not limited to): the ETEE and DR program implementation, the TC Energy pressure service, the impact of the IRPAs on peak hour demands, the resulting required facility project, and the alternatives as demands and systems change over the Pilot Project duration.

c) Confirmed. Please see response to part b).

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff (STAFF)

Interrogatory

Reference:

Exhibit E, Tab 1 Schedule 1 / pp. 1-2 of 19

Preamble:

Enbridge Gas notes its understanding that it will not be required to seek approval for cost adjustments within 25% of the total proposed Pilot Projects budget. Enbridge Gas also notes its expectation that it will have flexibility in the allocation of annual budgets between the years included in the pilot term of 2023-2027, and that this flexibility will allow Enbridge Gas to be responsive to learnings and feedback and allow for adjustments to the program design as necessary. Enbridge Gas discusses its monitoring and evaluation plan and reporting plan for the IRP Pilot Projects.

Question(s):

How much flexibility is Enbridge Gas requesting in terms of adjusting program design of the IRP Pilot Projects in response to learnings and feedback (e.g., included IRPAs, program measures/incentive levels, etc.). Under what conditions, if any, does Enbridge Gas propose that it would need to seek OEB approval to modify the IRP Pilot Projects?

Response:

The Company expects to monitor uptake and expects flexibility in setting incentive levels. Where greater customer uptake is realized or the Company would like to test greater incentive levels, and additional budget is required to continue programming, the Company "notes its understanding that the 25% cost adjustment threshold noted in the OEB's IRP Framework Decision[1], will be applicable to the Pilot Projects, such that Enbridge Gas is not required to seek approval for cost adjustments within 25% of the total proposed Pilot Projects budget"[2]. The additional budget through this mechanism should provide the Company flexibility to either provide incentives to cover additional

[1] EB-2020-0091, July 22, 2021, Appendix A, P.21
[2] Exhibit A, Tab 2, Schedule 1, P. 4

participation and/or offer greater incentive levels. Should Enbridge Gas require additional (or reduced) budget that varies by more than 25% from what was approved, then additional OEB approval would be sought.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Association of Power Producers of Ontario (APPrO)

Interrogatory

Reference:

Exhibit C Tab 1 Schedule 2 Page 1 of 8.

Preamble:

"Ultimately, the Company determined that the Pilot Projects would primarily be focused on gather transferrable learnings regarding IRPA design, performance and potential for scalability, including insights on peak flow reductions from demand-side IRPAs (i.e., ETEE and DR programs)."

The reference below to "large volume customers" are those who take service as a large customer under Rate 20, 100, 125, T2 or M12.

Question(s):

a) Can the proposed Parry Sound Pilot Project be scalable to large volume customers? If so, please provide a description of the scale required (e.g., number of CNG trailers).

b) Can the proposed Southern Lake Huron Pilot Project be scalable to large volume customers? If so, please provide a description of the scale required (e.g., number of CNG trailers).

c) Explain how the learnings from these Pilot Projects may be transferable to avoid, delay, or reduce facility projects for demand from large volume customers.

d) Will any ETEE programs be applicable to large volume customers? If so, please explain.

e) Are there any large volume customers in the "Area of Influence" in either of the Parry Sound Pilot Project or the Southern Lake Huron Pilot Project?

f) Given the size of the existing pipelines, could a large volume customer currently connect to either the Parry Sound Pilot Project or the Southern Lake Huron Pilot Project in the “Area of Influence”?

<u>Response:</u>

a) There are no large volume contract customers in the Parry Sound Pilot Project area; therefore, the learnings from this Pilot Project will not be scalable to large volume contract customers. Enbridge Gas has experience engaging with large volume customers via its ongoing custom approach, therefore, it was not the primary focus for these Pilot Projects.

b) The learnings from this Pilot Project will not be scalable to large volume contract customers. There is one large volume contract customer in the Southern Lake Huron Pilot Project area; however, this customer is not in the Area of Influence as noted in Exhibit B, Tab 1, Schedule 1, page 10, paragraph 19 (see footnote 11).

   Although general service customers within the Pilot Project area but outside the Area of Influence will be targeted, Enbridge Gas has not included and, therefore, will not target the one large volume contract customer in the Pilot Project area. This is because, as noted in part a), Enbridge Gas already has extensive experience with large volume contract customers and as such, they are not the primary focus for the Pilot Projects.

c) Please see response in part a) and b).

d) ETEE programs as part of the Pilot Projects will not be applicable to large volume contract customers, as the focus of the IRP Pilot Projects is on general service customers. Please also see response to part a) and b).

e) As noted in part a), there are no large volume contract customers in the Parry Sound Pilot Project area. As noted in part b), there is one large volume contract customer in the Southern Lake Huron Pilot Project area; however, it is not located in the “Area of Influence” and as noted in part b), this customer will not be targeted as part of the Pilot Project.

f) A large volume customer requesting service in Parry Sound Pilot Project area, or the Area of Influence in the Southern Lake Huron Pilot Project area would be evaluated under the Company’s normal customer attachment process. As part of this process, the Company would evaluate and determine if any assets and associated CIAC are required.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Association of Power Producers of Ontario (APPrO)

Interrogatory

Reference:

Exhibit C Tab 1 Schedule 1 Page 1 of 4; Exhibit D Tab 1 Schedule 1 Page 6 of 34

Preamble:

“Approximately 240 m3/h of CNG volumes would be required to be injected at the Parry Sound distribution system in 2025 on a design day. To reliably deliver the required CNG volumes, two CNG tube trailers with two smaller decanting trailers are proposed to be located on-site, where one trailer serves as the primary source of supply and the second trailer serves as a backup. Each trailer would have adequate supply to support peak demand independent of the other. A third trailer will be brought in if the system flows enough gas to deplete one of the two trailers. Trailer volumes, pressures and decanting of trailers will be remotely monitored to ensure continued safe and reliable operations.”

Question(s):

a) What is the volume of CNG that can be held within a CNG tube trailer?

b) How long would it take to deplete the CNG tube trailer based on the anticipated consumption rates for the Pilot Projects?

c) How will the CNG tube trailers be refilled once they are depleted?

d) Are there any reliability concerns with the use of CNG tube trailers (e.g., inclement winter weather on local roads)?

e) Will the CNG tube trailers provide an equivalent level of reliability as the baseline facility alternatives?

Response:

a) CNG trailers come in various sizes but typically carry approximately 10,000 m^3.

b) Depletion rates are dependent on network conditions and gas requirements at each Pilot Project site. If both sites were at peak design conditions, it will take 10,000/240 = 41.7 hrs for Parry Sound and 10,000/250 = 40 hrs for SLH of continuous flow to deplete one trailer.

c) There are a number of CNG stations in Ontario capable of filling tube trailers. The closest with sufficient capacity is Mount Forest, Ontario.

d) CNG tube trailers are very reliable and are in extensive operation throughout North America including Northern Ontario. Reliability can be further augmented by increasing the number or capacity of trailers on site.

e) No, CNG tube trailers do not provide the equivalent reliability as the baseline facility alternatives.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Association of Power Producers of Ontario (APPrO)

Interrogatory

Reference:

Table 13, Exhibit E Tab 1 Schedule 1 Page 18 of 19

Question(s):

a) Please confirm that the Southern Lake Huron Project has a lower net present value than the baseline facility alternative.

b) If (1) is confirmed, justify why the baseline facility alternative was not selected given it is the less expensive option.

Response:

a) Confirmed.

b) As described in Exhibit C, Tab 1, Schedule 2, one of the key Pilot Project location selection considerations was whether it had existing automated meter reading technology that could be leveraged, as this would enable more detailed data-based learnings about the impact of demand-side ETEE measures on peak hour demand without incurring additional automated meter reading costs. The Southern Lake Huron area has existing widespread automated meter reading installed on residential and smaller commercial customers.[1]

[1] Exhibit D, Tab 1, Schedule 3, P. 3.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Association of Power Producers of Ontario (APPrO)

Interrogatory

Reference:

Exhibit D Tab 1 Schedule 1 Page 1 of 34

Preamble:

“Enbridge Gas has incorporated two supply-side IRPAs as part of the Parry Sound Pilot Project: (i) a negotiated increased pressure agreement from TCE; and (ii) CNG injection, to defer the identified system need/constraint during the Pilot Project term. The higher-pressure agreement from TCE and the use of CNG injection will ensure that Enbridge Gas can reliably meet the system demand requirements while the impacts to peak hour demand through demand-side IRPAs are being tested.”

Question(s):

a) Will the baseline facilities still be needed after the end of each of the Pilot Projects' term?

b) If the answer to (1) is yes, what is more economic for customers in relation the issue identified in the Parry Sound Pilot over the next 20 years:

   a. Installing the baseline facilities only; or

   b. Installing the Pilot Project and deferring the installation of the baseline facilities to a future date?

c) Please perform the same analysis in (2) for the Southern Lake Huron Project.

d) Please calculate the economics on a net present value basis and set out the assumptions for (2) and (3).

<u>Response:</u>

a) Please see response at Exhibit I.PP-1.

b) The 20-year Stage 1 net present value ("NPV") for the Parry Sound Facility Alternative is ($21.1 million) compared to ($19.3 million) for the IRPA (including future facilities). The proposed IRPA is more economic over 20 years based on its more favourable NPV.

c) The 20-year Stage 1 NPV for the Southern Lake Huron Facility Alternative is ($2.0 million) compared to ($4.3 million) for the IRPA (including future facilities). The baseline facility alternative is more economic over 20 years based on its more favourable NPV. Please also see response at Exhibit I.APPrO-3.

d) The calculations in parts b) and c) are already presented on a NPV basis. The economic assumptions for the 20-year DCF analysis above are the same as provided at Exhibit E, Tab 1, Schedule 1, Attachment 7, except for the project time horizon which is set to 20 years.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Association of Power Producers of Ontario (APPrO)

Interrogatory

Reference:

Exhibit D Tab 1 Schedule 1 Page 9 of 34; Exhibit E Tab 1 Schedule 2 Attachment 4

Preamble:

"Within the large natural gas consumer segment (greater than 100,000 m3 annual consumption), there is one institutional customer that accounts for a significant percentage of the system load in the Parry Sound Pilot Project area. Variations in energy demands from these types of consumers can fundamentally influence identified system needs/constraints. Further, in Enbridge Gas's experience, energy efficiency projects with large consumers typically provide the highest potential savings opportunity per project compared to small consumers. As such, special consideration for this institutional customer in the form of assistance from qualified Enbridge Gas staff will be given due to the impact this customer has on the Parry Sound distribution system."

Question(s):

a) Please provide the annual consumption of this large natural gas consumer.

b) What "assistance" will this large natural gas consumer need?

c) Who would be considered "qualified Enbridge Gas staff"?

d) How are large customers treated differently? What is the nature of this customer's business?

e) What is the annual volume of the largest customer in the Area of Influence for both Pilot Projects?

f) The bill impacts in Exhibit E Tab 1 Schedule 2 Attachment 4 show that all the "small" customers have consumption greater than 100,000 m3. Why is the natural gas consumer segment greater than 100,000 m3 annual consumption considered "large"?

Response:

a) The annual consumption of this customer was approximately [redacted] in 2022.

b) Please see response at Exhibit I.SEC-6.

c) Energy Solution Advisors of Enbridge Gas.

d) The customer is a hospital. Usage of gas by large commercial or industrial customers is typically more complex and unique in nature compared to small customers and normally requires customized energy solutions. Under the proposed Pilot Project ETEE programming, the Commercial and Industrial Custom offering delivered by Enbridge Gas Energy Solution Advisors is tailored for these larger customers to help them identify, quantify, and prioritize energy efficiency opportunities.

e) Please see part a) to this response for the annual consumption of the largest customer in the Parry Sound Project area. The annual consumption of the largest customer in the Southern Lake Huron Area of Influence was approximately [redacted] in 2022.

f) The classification of large and small in Exhibit D, Tab 1, Schedule 1 and Exhibit D, Tab 1, Schedule 2 are from the perspective of energy efficiency programming where the annual gas consumption threshold under the DSM Framework for large commercial and industrial gas customers is 100,000 m^3. The large and small classification under the DSM Framework is not related to the classification of customers as large or small within a rate class for purposes of bill impacts.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Consumers Council of Canada (CCC)

Interrogatory

Reference:

Ex. A/T2/S1

Question(s):

Please provide all materials provided to EGI's Board of Directors and Executive leadership team regarding the IRP Pilot Projects.

Response:

Enbridge Gas used the TWG presentation materials for discussions with the Enbridge Gas executive leadership. Please see response at Exhibit I.ED-2 for the presentation materials.

There were no materials presented to Enbridge Gas's Board of Directors.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Consumers Council of Canada (CCC)

Interrogatory

Reference:

Ex. A/T2/S1/p. 3

Question(s):

Please explain why EGI is proposing a term of 2023-2027 when the OEB's Decision is likely not expected until the end of 2023 at the earliest.

Response:

The proposed Pilot Project term includes 2023 as there are some Pilot Project related activities and costs incurred to date that Enbridge Gas plans to record in the IRP Costs Deferral Accounts for later disposition.

Please see response at Exhibit I.PP-17, part a) for a summary of activities and related costs incurred to date for the Pilot Projects.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Consumers Council of Canada (CCC)

Interrogatory

Reference:

Ex. A/T2/S1

Question(s):

Please set out the specific relief that EGI is seeking through the application and what further decisions will be required of the OEB once the IRP Pilot Programs have been completed.

Response:

Please see Exhibit A, Tab 2, Schedule 1, paragraph 8 for a description of the relief sought in this case:

> Enbridge Gas requests an Order or Orders of the OEB approving the cost consequences of the IRP Plans for the IRP Pilot Projects and the proposed accounting treatment to record costs of the same in the IRP costs deferral accounts for later disposition and recovery. Additional details regarding Pilot Project costs, accounting and economics are set out in Exhibit E. Enbridge Gas is not seeking approval for other IRP Plan components contemplated by the OEB's IRP Decision such as the cost-benefit test (i.e. DCF+), incentives related to IRP alternatives and attribution of savings between IRP and Demand Side Management activities. Enbridge Gas will include evidence and proposals related to these items as part of the first non-pilot IRP Plan application. Enbridge Gas believes these issues do not need to be adjudicated as part of the IRP Pilot application.

As can be seen, future OEB decisions will be required for the review, recovery and disposition of costs related to the IRP Projects that have been recorded in the IRP costs deferral accounts.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Consumers Council of Canada (CCC)

Interrogatory

Reference:

Ex. B/T1/S1/p. 2

Question(s):

The evidence indicates that throughout the selection process EGI engaged the IRP Technical Working Group (TWG) to discuss key items such as: pilot project objectives, pilot project alternatives, pilot project selection criteria and potential IRPAs. TWG members reviewed a draft version of the Company's current Application in June 2023 and most members were supportive. Please provide all correspondence between EGI and the TWG members regarding the IRP Pilots.

Response:

Please see response at Exhibit I.ED-2.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Consumers Council of Canada (CCC)

Interrogatory

Reference:

Ex. B/T1/S1/p. 2 and Ex. C/T1/S2/p. 3 – Table 1

Question(s):

The Council is interested on how EGI decided on the specific IRP Pilot Projects. Obviously, there were many potential projects. Is the list in Table 1 the complete list of potential pilots or isthere a large list? If so, please provide that larger list. What specific characteristics led EGI to select the Parry Sound and Southern Lake Huron Pilots over all other options?

Response:

Please see Exhibit C, Tab 1, Schedule 2 for the process used to select the Pilot Projects and the complete list of potential pilots.

Following the completion of the 2023 to 2032 Asset Management Plan ("AMP") in the Spring of 2022, Enbridge Gas reviewed the AMP to determine which projects would have a high probability of meeting the Pilot Project objectives. Enbridge Gas identified eight projects that had the highest potential to meet the objectives. These projects were then evaluated using a scoring matrix (Table 1 in Exhibit C, Tab 1, Schedule 2) with set criteria. Parry Sound and the Southern Lake Huron projects scored the highest of the projects and were therefore selected as the Pilot Projects.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Consumers Council of Canada (CCC)

Interrogatory

Reference:

Ex. B/T1/S1/p. 5

Question(s):

EGI intends to provide Pilot Project updates, key learnings, and outcomes to the OEB and Stakeholders through the annual IRP Report that the Company files as part of the DVA and ESM application. Please provide a template for this Report.

Response:

At this time, Enbridge Gas does not have a template for the Pilot Project updates. Please see response at Exhibit I.STAFF-23 for more details.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Consumers Council of Canada (CCC)

Interrogatory

Reference:

Ex. B/T1/S1/p. 7

Question(s):

What is current status of EGI’s request for a higher pressure service from TC Energy. Will the delivery pressure at Emsdale CMS be returned to the standard tariff pressure of 4000 kPa by November 2023? Why is this request considered part of the pilot and not a part of EGI’s normal operations?

Response:

Please see response at Exhibit I.STAFF-6 and Exhibit I.FRPO-1. The request for a higher-pressure service from TC Energy differs from Enbridge Gas’s normal operations as the request is for TC Energy to develop a pressure service where Enbridge Gas could contract for a longer-term service at a contracted rate.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Consumers Council of Canada (CCC)

Interrogatory

Reference:

Ex. B/T1/S1/p. 9

Question(s):

Please explain how the Parry Sound Forecast Peak Hour Demands set out in Figure 3 were derived. To what extent were any energy transition assumptions considered in the forecast?

Response:

The Design Hour Demand was calculated using the methodologies outlined in Enbridge Gas's EB-2022-0200 Rebasing Application. Please see the Design Hour Demand Process at EB-2022-0200, Exhibit 4, Tab 2, Schedule 3, pages 28 to 30 using the energy transition assumptions in EB-2022-0200, Exhibit 1, Tab 10, Schedule 4, Section 1.4.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Consumers Council of Canada (CCC)

Interrogatory

Reference:

Ex. B/T1/S1/ p. 9

Question(s):

Please explain how the Parry Sound 10-Year Customer Attachment Forecast was derived. To what extent were any energy transition assumptions considered in the forecast? To what extent were energy transition assumptions considered in the forecast?

Response:

The customer attachment forecast was derived using the methodologies outlined in Enbridge Gas's 2024 Rebasing Application (EB-2022-0200). Please see the energy transition assumptions in the Customer Forecast at EB-2022-0200, Exhibit 1, Tab 10, Schedule 4, page 5 for further details.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Consumers Council of Canada (CCC)

Interrogatory

Reference:

Ex. B/T1/S1/p. 13

Question(s):

Please explain how the Southern Lake Huron Forecast Peak Hour Demands in Figure 5 were derived. To what extent were energy transition assumptions considered in the forecast?

Response:

The Design Hour Demand was calculated using the methodologies outlined in Enbridge Gas's 2024 Rebasing Application (EB-2022-0200). Please see the Design Hour Demand Process in EB-2022-0200, Exhibit 4, Tab 2, Schedule 3, pages 28 to 30 using the energy transition assumptions in EB-2022-0200, Exhibit 1, Tab 10, Schedule 4, Section 1.4.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Consumers Council of Canada (CCC)

Interrogatory

Reference:

Ex. B/T1/S1/p. 14

Question(s):

Please explain how the Southern Lake Huron 10-year Customer Attachment Forecast was derived. To what extent were energy transition assumptions considered in the forecast?

Response:

The customer attachment forecast was derived using the methodologies outlined in Enbridge Gas's 2024 Rebasing Application (EB-2022-0200). Please see the energy transition assumptions in the Customer Forecast at EB-2022-0200, Exhibit 1, Tab 10, Schedule 4, page 5 for further details.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Consumers Council of Canada (CCC)

Interrogatory

Reference:

Ex. B/T1/S1/p.4 and Ex. C/T1/S1/p. 3

Question(s):

The total cost of the Parry Sound Pilot Project is $6.4 million. The total cost of the Southern Lake Huron Pilot Project is $6.6 million. The total approximate capital cost for the Parry Sound baseline facility alternative which includes a station rebuild and 2 pipeline reinforcements is $28.3 million. The total approximate cost capital cost for the Southern Lake Huron baseline facility alternatives which includes a new station, a pipeline reinforcement project and a pipeline replacement project is $3.1 million. Why is EGI proposing to spend $6.6 million on the pilot to avoid $3.1 million in facilities?

Response:

Yes, the proposed Pilot Project for Southern Lake Huron is less cost-effective than the facility option. Please see response at Exhibit I.APPrO-3, part b) for the rationale for selecting Southern Lake Huron as a Pilot Project.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Consumers Council of Canada (CCC)

Interrogatory

Reference:

Ex. D/T1/S1/p. 17 and 26 – Table 7 and Table 10

Question(s):

With respect to the Parry Sound Pilot how did EGI determine the additional incentive amounts? How did EGI determine the maximum incentive amount of $15,000?

Response:

The proposed maximum incentive amount per residential participant of $15,000 was set at a 50% increase from the current HER+ maximum and serves as a starting point to enable complete cost coverage for the increased maximum measure incentives and for greater cost coverage of participants with higher multi-measure uptake. Enbridge Gas proposes flexibility in adjusting incentive levels during the Pilots Projects as noted in response at Exhibit I.STAFF-13 and Exhibit I.STAFF-24. This proposed flexibility would include potentially increasing the cap on the maximum $15,000 per participant if it is deemed warranted to enable greater participation.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Consumers Council of Canada (CCC)

Interrogatory

Reference:

Ex. D/T1/S1

Question(s):

How many total residential customers will be permitted to participate in the Parry Sound Pilot? What is the total maximum available incentive amount for the Parry Sound Pilot for all participants?

Response:

There is no proposed limit on the number of residential customers permitted to participate in the enhanced targeted energy efficiency ("ETEE") residential offerings of existing Demand Side Management ("DSM") programming; rather, the Company is expecting to monitor uptake and would either close out offerings or seek incremental funding if the maximum approved budget was expected to be exceeded. Residential participation limits have been proposed for the Limited ETEE Offering for Electrification Measures and Limited ETEE Offering for Advanced Technologies. Please see Exhibit D, Tab 1, Schedule 1, paragraph 50 and paragraph 54 for the proposed maximum number of participants respectively for each of the Limited ETEE offerings.

Please see Exhibit E, Tab 1, Schedule 1, Table 3 for the total participant incentive amounts proposed for the Parry Sound Pilot Project.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Consumers Council of Canada (CCC)

Interrogatory

Reference:

Ex. D/T1/S2

Question(s):

How many total residential customers will be permitted to participate in the Southern Lake Huron Pilot Project? What is the maximum available incentive amount for the Southern Lake Huron Pilot for all participants?

Response:

There is no proposed limit on the number of residential customers permitted to participate in the enhanced targeted energy efficiency ("ETEE") residential offerings of existing Demand Side Management ("DSM") programming or the demand response ("DR") residential offering; rather the Company is expecting to monitor uptake and would either close out offerings or seek incremental funding if the maximum approved budget was expected to be exceeded. As stated in Exhibit A, Tab 2, Schedule 1, Paragraph 9:

> To accommodate for uncertainty and flexibility in the Pilot Project budget, Enbridge Gas notes its understanding that the 25% cost adjustment threshold, as noted in the OEB's IRP Framework Decision, will be applicable to the Pilot Projects, such that Enbridge Gas is not required to seek approval for cost adjustments within 25% of the total proposed Pilot Projects budget. Enbridge Gas notes its expectation that it will have flexibility in the allocation of annual budgets between the years included in the pilot term of 2023-2027. This flexibility will allow Enbridge Gas to be responsive to learnings and feedback and allow for adjustments to the program design as necessary.

Please note, ETEE residential offerings are limited to the Southern Lake Huron Area of Influence; however, the DR residential offering is open to all residential customers in the Southern Lake Huron Pilot Project area.

Please see Exhibit E, Tab 1, Schedule 1, Table 9 and Table 11 for the total participant incentive amounts proposed for the Southern Lake Huron Pilot Project.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Consumers Council of Canada (CCC)

Interrogatory

Reference:

Ex. E/T1/S2/p. 3 – Table 1 Summary of IRP Pilot Project Costs

Question(s):

Of the $13.474 million in total project costs, please provide the proposed allocation by rate class.

Response:

Please see Attachment 1. For purposes of providing a response to the question asked, Enbridge Gas has allocated the sum of the total operating and capital cost of $6.637 million for the Parry Sound Project and $6.837 million for the Southern Lake Huron Project using the cost allocation methodologies proposed in the application.

Enbridge Gas notes that the actual cost impacts of each project will be reflected in the IRP deferral accounts on an annual basis through the 2025 to 2028 IR term. The cost impacts will include the annual project operating costs and the annual revenue requirement[1] of project costs eligible to be capitalized for inclusion in rate base.

[1] The annual revenue requirement including depreciation expense, income tax expense, and the cost of capital will be calculated from the total project capital costs.

IRP Pilot Projects Total Allocation

Line No.	Particulars	Allocator: Union North Joint Use Mains (1)	Allocator: Union South Distribution Demand (2)	Total Allocation ($000s): Parry Sound Project (3)	Total Allocation ($000s): Southern Lake Huron Project (4)	Total
		(a)	(b)	(c)	(d)	(e)
	EGD Rate Zone					
1	Rate 1	-	-	-	-	-
2	Rate 6	-	-	-	-	-
3	Rate 9	-	-	-	-	-
4	Rate 100	-	-	-	-	-
5	Rate 110	-	-	-	-	-
6	Rate 115	-	-	-	-	-
7	Rate 125	-	-	-	-	-
8	Rate 135	-	-	-	-	-
9	Rate 145	-	-	-	-	-
10	Rate 170	-	-	-	-	-
11	Rate 200	-	-	-	-	-
12	Rate 300	-	-	-	-	-
13	Total EGD Rate Zone	-	-	-	-	-
	Union North Rate Zone					
14	Rate 01	35	-	2,350	-	2,350
15	Rate 10	11	-	734	-	734
16	Rate 20	27	-	1,801	-	1,801
17	Rate 25	4	-	288	-	288
18	Rate 100	22	-	1,465	-	1,465
19	Total Union North Rate Zone	100	-	6,637	-	6,637
	Union South Rate Zone					
20	Rate M1	-	31,063	-	4,374	4,374
21	Rate M2	-	11,510	-	1,621	1,621
22	Rate M4	-	2,539	-	358	358
23	Rate M5	-	44	-	6	6
24	Rate M7	-	2,142	-	302	302
25	Rate M9	-	-	-	-	-
26	Rate M10	-	-	-	-	-
27	Rate T1	-	813	-	114	114
28	Rate T2	-	443	-	62	62
29	Rate T3	-	-	-	-	-
30	Total Union South Rate Zone	-	48,554	-	6,837	6,837
31	Total In-Franchise (5)	100	48,554	6,637	6,837	13,474

Notes:

(1) Union North joint use mains allocation is in proportion to forecast 2024 Union North peak and average design day demands, excluding large industrial.

(2) Union South distribution demand allocation is in proportion to forecast 2024 Union South in-franchise design day demands, excluding demands served directly off transmission

(3) Allocated in proportation to column (a).

(4) Allocated in proportation to column (b).

(5) The total balance in columns (c) and (d) from Exhibit E, Tab 1, Schedule 2, Table 1.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Environmental Defence (ED)

Interrogatory

Reference:

Exhibit B, Tab 1, Schedule 2

Question(s):

a) Please provide an estimate of the cost-effectiveness of each project as a whole, and each measure within each project, based on Enbridge's latest draft and understanding of the DCF+ test.

b) Please provide an estimate of the cost-effectiveness of each project as a whole, and each measure within each project, based on the TRC plus test.

c) Please provide an estimate of the cost-effectiveness of each project as a whole, and each measure within each project, based on any other means that Enbridge believes is appropriate.

Response:

a) Enbridge Gas is unable to complete a cost-effectiveness test based on the latest draft of the DCF+ Guide, as the DCF+ Guide itself is not yet complete and nor is Enbridge Gas' DCF+ model. Attempting to complete this analysis as part of the Pilot Projects interrogatory process would not be possible due to timing. As noted at Exhibit B, Tab 1, Schedule 1, paragraph 8, Enbridge Gas continues to review the DCF+ cost test with the IRP Technical Working Group ("TWG"). This includes the remaining consultation Enbridge Gas would like to have on its DCF+ Guide, as well as consultation on the DCF+ model that the Company will complete for its first non-pilot IRP Plan. Enbridge Gas will file both its DCF+ Guide and a completed DCF+ model when it files its first non-pilot IRP Plan application in 2024 as stated in the OEB's IRP Decision[1].

[1] EB-2020-0091, IRP Decision, p.57

b) Per the OEB's IRP Decision the DCF+ is the cost test for IRP and the TRC+ test is not applicable for the IRP Plans[2]. In addition, it would be a time-consuming exercise that cannot be completed within the interrogatory response timeframe; therefore, Enbridge Gas has not provided a response. Further, cost effectiveness is not a primary objective of the Pilot Projects. As noted at Exhibit A, Tab 1, Schedule 1, page 2, the primary objectives of the Parry Sound Pilot Project are to develop an understanding of how enhanced targeted energy efficiency ("ETEE") programs impact peak hour flow/demand and to develop an understanding of how to design, deploy, and evaluate ETEE programs.

c) Enbridge Gas has provided the net present value of each Project at Stage 1 of the DCF analysis at Exhibit E, Tab 1, Schedule 1. Providing an estimate of the cost-effectiveness of each measure within each Pilot Projects would be a time-consuming exercise that cannot be completed within the interrogatory timeframe; therefore, Enbridge Gas has not provided a response. Please also see response to part b).

[2] EB-2020-0091, IRP Decision, p.56

ENBRIDGE GAS INC.

Answer to Interrogatory from
Environmental Defence (ED)

Interrogatory

Reference:

Exhibit C, Tab 1, Schedule 2

Question(s):

a) Please provide all feedback from the TWG relating to these pilot projects and on pilot projects in general.

b) Please provide a table showing all comments on the proposed pilots from Chris Neme and a column showing whether Enbridge made any adjustments, and if not why not, and if yes, how.

c) Please provide answers to any questions that Chris Neme asked regarding the proposed pilots.

Response:

a) Please see Attachment 1 for the TWG presentations where the Pilot Projects were an agenda item, including the development of the pilot selection criteria, the discussion of the potential pilot projects, the selection of the pilot project and the development of the Pilot Project Application evidence. Please see Attachment 2 for the TWG meeting minutes where TWG member feedback was captured by OEB staff.

b-c) Neither Enbridge Gas nor OEB staff recorded every comment made by each TWG member unless the comments were received in writing or required a follow-up by Enbridge Gas. OEB staff, as provided in part a), captured general comments by the TWG members and the responses by Enbridge Gas. Please see Attachment 3 for two emails from Chris Neme and Table 1 for responses to Chris Neme's comments on the draft Pilot Project Application evidence that were provided.

Table 1

Item	**Chris Neme Comment/Question**	**Enbridge Gas Response** ***(Evidence Reference and Action Taken)***
	June 19, 2023 - email	
1	There should be more data on the projects, particularly forecasts of peak hour demand broken down by customer type/class, underlying assumptions for those forecasts, etc. This is needed to put the forecast impacts of the IRPAs into context.	Addressed by including peak hour forecasts into the Application. Added in the 10-year forecasted peak hour demands to help put load reductions in context as per comment (Exhibit B, Tab 1, Schedule 1, Paragraph 16 and 25).
2	My concerns about the proposed emerging technology investments in the Parry Sound project are much, much bigger than before now that I see how large the proposed incentives and participation and budget for them are. I can't believe Enbridge is proposing that gas heat pumps have 2.5 times as much participation as full electrification ASHPs/GSHPs and that hybrid heat pumps have twice the forecast participation (both without any apparent participation caps analogous to those imposed on ASHPs/GSHPs) – despite significantly less peak demand savings per measure. Moreover, the proposed spending on these measures is almost as great as for the DSM measures and about 10 times that proposed for full electrification measures – again despite much smaller peak demand reductions per measure. I have to say that this just jumps out as obviously advancing an Enbridge agenda that has nothing to do with IRPAs and is highly problematic and objectionable.	Reviewed comments on a separate call with Chris Neme. As a result, the number of GHP was reduced to 20 to align the cap for ASHP (Exhibit D, Tab 1, Schedule 1, Page 27, Paragraph 54). Also clarified on the call that incentive levels for ASHP/GSHP were incremental, on top of the existing HER+ incentives. As the limited offering is a component of the HER+ offering; most of the costs for promotion and delivery are covered under the enhanced DSM offering. Additional wording was included in the Application to ensure clarity around the budget shown for ASHP/GSHP (Exhibit D, Tab 1, Schedule 1, Page 25).

3	I have serious concerns about the proposed increases in residential DSM rebates being too small to drive significant increases in demand. The C&I rebates seem much more reasonable. Since this is the application asking for approval, it seems like it won't be possible to increase the residential rebates in the future without coming back to the Board, which eliminates the ability to be nimble in response to market feedback. Thus, I fear the Company is setting itself up for failure. It should instead start with much bigger increases in residential rebates, with the ability to scale back if it is more successful than expected, particularly in pilots designed to test, in part, what it takes to move the market. This is just way too conservative an approach.	Reviewed the incentive levels on a separate call with Chris Neme to explain the proposed ETEE HER+ offering incentives in more detail, and that the intent of the ETEE HER+ offering is to provide an incentive that covers the full cost for most participants for the selected measures. (Exhibit D, Tab 1, Schedule 1, Paragraph 33). No further increases to the incentive levels were proposed.
4	The DCF+ stage 1 tests seem potentially problematic to me, but I can't tell for sure what all the issues are (or not) without seeing the Excel files from which the Appendix values were obviously derived.	Discussed at the TWG Meeting #27 the rationale for performing only Stage 1 of DCF test and confirmed that would be included in the Application. No further updates to Application.
	<u>June 19, 2023 – Evidence Comments</u>	
5	[M. Parkes] Language threw me a bit here - it sounds like among demand-side IRPAs, ETEE and DR are "lesser known". Consider rewording sentence to clarify that you mean demand-side IRPAs in general are lesser known than supply-side. [C. Neme] I agree. EE and DR are actually the most common IRPAs, so "lesser-known" seems an inappropriate adjective. Also, I object to the suggestion later in the sentence that supply-side IRPAs are "more reliable". There is actually no evidence I'm aware of to suggest that is the case. I suggest deleting both sets of adjectives and just refer to "demand-side IRPAs" and "supply-side opportunities" without modifiers.	Ref: Exhibit A, Tab 2, Schedule 1, Paragraph 2. Removed the term "lesser-known" in Application.

6	I think you mean electrification measure. Better to state that more clearly here.	Ref: Exhibit A, Tab 2, Schedule 1, Paragraph 3. Updated language in Application per comment.
7	You should at least briefly spell out what the Advanced Technology is here. I assume it includes gas heat pumps which I continue to believe is inappropriate because it is highly unlikely to be cost-effective or deployable at any scale in the near-term. Thus, including it here strikes me as an attempt to promote the Company objective of pushing the technology after it was rejected in the recent energy efficiency plan.	Ref: Exhibit A, Tab 2, Schedule 1, Paragraph 3. Updated language in Application per comment.
8	This should not be just about the performance of the technology, which is what the sentence implies. Even more important could be learnings about what it takes to effectively drive customer participation and demand.	Ref: Exhibit A, Tab 2, Schedule 1, Paragraph 2. Updated language in Application per comment.
9	[M.Parkes] For discussion with the WG at the June 20 meeting, but I think you can say more than this. I would suggest adding something along these lines: "The TWG has reviewed the draft evidence and Enbridge's understanding is that the TWG is broadly supportive of the proposed pilot projects as described in the evidence, although some details of the proposals, such as the inclusion of gas-based advanced technologies, and the necessary level of metering coverage with hourly flow measurement within the pilot project areas, do not have consensus support." [C.Neme] I agree.	Ref: Exhibit B, Tab 1, Schedule 1 , Paragraph 3. OEB Staff’s proposed language regarding the framing of engagement with TWG members. Updated language in Application per proposed language.

10	This sentence is a little confusing. "Gather learnings on multiple IRPAs" as well as "gain insights on peak flow reductions..." Isn't the latter redundant with the former? I'd suggest spelling out the kinds of learnings you anticipate getting. One is the peak demand impacts of different IRPAs for different types of customers. Another is what it takes programatically to drive high levels of customer adoption of different IRPAs. Another might be how to improve the accuracy of forecast future load growth. There are probably others we should discuss and agree upon. Probably should have flagged this earlier, but the TWG and Enbridge should be on the same page regarding what we are testing and what are the key things we expect to learn.	Ref: Exhibit B, Tab 1, Schedule 1, Paragraph 5. Updated language in Application per comment. Additional language included in Exhibit D, Tab 1, Schedule 3, Paragraph 36
11	Parry sound list should include electrification measures and proposed gas heat pump measures in the bullets below. Again, I disagree with the gas heat pump proposal, but since the Company is proposing it, you should be up front about listing it here.	Ref: Exhibit B, Tab 1, Schedule 1, Paragraph 5. Updated language in Application per comment.
12	It seems to me that Enbridge should also expect to gain a better understanding of forecasting of peak load growth through the pilots. You'll be collecting a bunch of data that should enable that to occur over time.	Ref: Exhibit B, Tab 1, Schedule 1, Paragraph 6. Additional language included in Exhibit D, Tab 1, Schedule 3, Paragraph 36.
13	This seems redundant with the previous bullet, so suggest deleting. Unless I'm missing something...	Ref: Exhibit B, Tab 1, Schedule 1, Paragraph 6. Comment was referring to one of the detailed objective learnings. Removed in Application per comment.
14	Call this "electrification measures" to be clear	Ref: Exhibit B, Tab 1, Schedule 1, Paragraph 6. Updated language in Application per comment.
15	I thought that the Company was going to also do Stage 2 consistent with our agreement on key changes there. Why not do that too?	Ref: Exhibit B, Tab 1, Schedule 1, Paragraph 8. Confirmed at TWG Meeting #27 that only Stage 1 test was being performed. No further updates to Application.

16	This is confusing because above you follow this statement with another statement saying TCE has agreed to maintain the pressure for another two winters.	Ref: Exhibit B, Tab 1, Schedule 1, Paragraph 15. No further updates to Application, felt explanation was clear.
17	I think this is, at least implicitly, a forecast of net customer additions, right? That is these new attachments are not assumed to be offset in the forecast by any current customers disconnecting, right? If so, in the context of current federal promotions of heat pumps, you should relabel this "net customer additions" or something like that	Ref: Exhibit B, Tab 1, Schedule 1, Paragraph 17. Updated language in Application for additional clarity per comment.
18	It would be better to add more info here. I assume that the forecast of increased demand is not just about net customer additions, but that it also accounts for forecast improvements in efficiency (e.g., as customers replace old furnaces with new ones). Is that not true? I would just like to see more about what the specific forecast increase in peak demand is and what the key underlying assumptions underpinning that forecast are. That would include info on the level of peak demand at which the ability to maintain pressures absent TCE help begin to be problematic. In other words, having a table showing the actual forecast peak demand by year, along with key underlying assumptions, would be very helpful for putting load reductions in context. Also, the forecast should be broken down by customer class/type.	Ref: Exhibit B, Tab 1, Schedule 1, Paragraph 18. Refer to response in Item 1. Added Exhibit B, Tab 1, Schedule 1, Paragraph 16.
19	This is a pretty major change in the forecast need date from when the AMP was completed (very recently). This deserves more explanation. What changed and why?	Ref: Exhibit B, Tab 1, Schedule 1, Paragraph 24. Updated language in Application for additional clarity per comment.
20	same comment as above for Parry Sound - make clear that these are forecast net additions	Ref: Exhibit B, Tab 1, Schedule 1, Paragraph 25. Updated language in Application for additional clarity per comment.

21	Same comment as for Parry Sound: the project deserves more detail info/data. What is the peak demand forecast, by customer type/class and in total? What are the key drivers of that forecast - not just new customer connections, but assumptions about efficiency improvements (or not) among existing customers, etc.	Ref: Exhibit B, Tab 1, Schedule 1, Paragraph 27. Refer to response in Item 1. Added Exhibit B, Tab 1, Schedule 1, Paragraph 25.
22	again, this is a value-laden term that I think is not needed or appropriate. It is not clear that they are always 100% "reliable" or that, as the term implies, that the demand-side solutions are "less reliable". Suggest striking.	Ref: Exhibit B, Tab 1, Schedule 2, Paragraph 4 No update to language in Application, as Enbridge Gas felt it was appropriate to use the term “reliable”.
23	I might suggest noting that this approach to pilots has been used in at least electric utility non-wires solutions in other jurisdictions (e.g., Maine)	Ref: Exhibit B, Tab 1, Schedule 2, Paragraph 6 Comment acknowledged. No update to language in Application.
24	The Board order referred not only to its statutory authority, but also to other "provincial and federal laws and regulations." To that end, it is not clear why Enbridge wouldn't call out how the focus on DSM helps address climate policy goals.	Ref: Exhibit B, Tab 1, Schedule 2, Paragraph 8. Added new language per comment, Exhibit B, Tab 1, Schedule 2, Paragraph 9.
25	Why not also state that this could minimize risk of unnecessarily over-building and creating under-utilized assets given uncertainties about demand forecasts in the context of the energy transition?	Ref: Exhibit B, Tab 1, Schedule 2, Paragraph 12. Added new language per comment, Exhibit D, Tab 1, Schedule 1, Paragraph 73.
26	I don’t see how this helps address peak demand. Should be struck without a really compelling explanation.	Ref: Exhibit B, Tab 1, Schedule 2, Paragraph 12. Comment was in reference to the three advanced technology measures. No update to language in Application. Advanced technologies provide peak hour reductions, as described in Exhibit D, Tab 1, Schedule 1, Pages 26-32.

27	The company needs to provide a compelling explanation for why gas heat pumps should be included given their rejection in the Company's DSM plan.	Ref: Exhibit B, Tab 1, Schedule 2, Paragraph 12. Details around inclusion of advanced technologies is described in Exhibit D, Tab 1, Schedule 1, Pages 26-32.
28	Since you've only done Stage 1, you can't conclude it isn't cost-effective given approved three-stage test. Thus, I'd suggest saying instead that it doesn't pass the Stage 1 test (again, that's different than whether it is cost-effective, even per the approved DCF+ test). Same comment as above for Parry Sound.	Ref: Exhibit B, Tab 1, Schedule 2, Paragraph 6 and 15. Updated application language to clarify any comments related to describing cost-effectiveness.
29	Very useful info, but should be preceded with presentation of peak demand by customer class/type to show relative importance of residential vs. commercial/industrial. Same comment for Southern Huron below.	Ref: Exhibit C, Tab 1, Schedule 2, Paragraph 8, Table 2. Refer to response in Item 1. Added Exhibit B, Tab 1, Schedule 1, Paragraph 16 and 25).
30	use "electrification" instead of "electric"	Ref: Exhibit D, Tab 1, Schedule 1, Paragraph 4. Updated language in Application per comment.
31	elaborate on what this includes	Ref: Exhibit D, Tab 1, Schedule 1, Paragraph 4. Comment was in reference to a sentence that stated "advanced technology". No further updates to language in the Application, as more detail around what's included in advanced technology is elaborated on in subsequent section.
32	suggest noting that things have changed since the IRP framework was approved, including the Board requiring Enbridge to co-fund (with the feds) electrification measures as part of its order in the Company's DSM plan case.	Ref: Exhibit D, Tab 1, Schedule 1, Paragraph 5. Acknowledged comment. No further updates to the Application as Enbridge Gas felt the DSM plan is a separate item.

33	This level of increase seems inadequate to me to drive significant increases in demand. I think you should start with a much larger increase - like a doubling of total incentive. If that generates demand at a really high level, you can then scale back. When piloting what it takes to move the market, you shouldn't start with modest tweaks to current offerings.	Ref: Exhibit D, Tab 1, Schedule 1, Paragraph 33. Refer to response in Item 3 for discussion around the proposed ETEE incentive levels.
34	Great. Smart to start at this level.	Ref: Exhibit D, Tab 1, Schedule 1, Paragraph 41. No further changes to the proposed Commercial & Industrial incentive levels.
35	Good! Very reasonable place to start.	Ref: Exhibit D, Tab 1, Schedule 1, Paragraph 44. No further changes to the proposed Commercial & Industrial incentive levels.
36	Why keep the same per project cap for custom industrial? Suggest a 50% increase as for commercial (or even a doubling for both). This may be what it takes to drive participation. Start there and then retain the ability to scale back if things are working better than expected. You don't want to have to go back to the Board for approval to further increase. If you don't do that, you may be setting yourself up for failure...	Ref: Exhibit D, Tab 1, Schedule 1, Paragraph 44, Table 9. Updated the project cap for custom industrial from $200k to $300k per discussion with Chris Neme.
37	This is a really high %, much higher than the Company is offering for insulation or ASHPs or GSHPs. It is inappropriate gas heat pumps for reasons previously stated - and could have the effect of biasing customer decisions against other more appropriate measures. I also continue to have skepticism about potential benefits per dollar for hybrid systems. Thermal storage seems OK as a measure to promote this way, but not sure about 60% incentives.	Ref: Exhibit D, Tab 1, Schedule 1, Paragraph 55 Refer to Items 2 and 3 for discussion around the proposed ETEE incentive levels and additional clarity around the proposed ASHP/GSHP budget. Rationale for the proposed advanced technology incentive levels is provided in the Paragraph 55. No further changes to proposed incentive levels for advanced technologies.

38	yet, Enbridge is only increasing total NRCan/EGI incentives for insulation measures by about 25%.	Ref: Exhibit D, Tab 1, Schedule 1, Paragraph 55 Clarified in call that the stated 23-27% incremental increase over total combined NRCAN and OEB approved DSM measure incentive amounts brings incentive close to full cost coverage. No further changes to proposed incentive levels.
39	This raises all kinds of questions. Why would you only get 20-30% reduction in energy consumption if you get 50% peak reduction? Are you suggesting that the hybrid systems would mostly operate in gas heating mode and only switch to electric operation at peak hours? If so, that is highly problematic. Will this require cold climate heat pumps as part of the hybrid solution? That should be made clear. Assuming so, annual gas use should decline by 90%. yes, but you can get 100% peak savings with an ASHP at lower cost!	Ref: Exhibit D, Tab 1, Schedule 1, Paragraph 56. Confirmed the data in Table 11 for hybrid heating was flipped for peak and consumption reduction. Corrected and updated in Application.
40	[M.Parkes] Is Enbridge proposing to cap the maximum pilot spending on advanced technologies, in the way that it is doing for ASHP/GSP? Why or why not? [C.Neme] I had the same question. I also find it highly problematic that the Company's proposed participation (capped or not) for gas heat pumps is ~2.5 times the budgeted number of full electrification participants and that the hybrid heating participation is double the full electrification participation - even though both options produce far less peak reduction per participant. Because the proposed rebates for these measures is also much greater than proposed increase in full electrification rebates, the proposed cost per unit of peak reduction will be dramatically lower than the proposed increase in cost per full electrification w/ASHP or GSHP. This all is clearly being driven by other Enbridge objectives rather than what is best for testing IRPAs. Highly problematic!	Ref: Exhibit D, Tab 1, Schedule 1, Table 12. Caps were discussed at the TWG Meeting #27, and Application was updated to include caps for the advanced technology offering. (Exhibit D, Tab 1, Schedule 1, Page 27, Paragraph 54). Refer to Item 37 for additional details around the proposed electrification budget compared to advanced technologies.

41	It is ridiculous that the Company is seeking almost as much money for its "advanced technologies" - particularly gas heat pumps and hybrid heat pumps - as for enhanced DSM. Not to mention about 10 times as much money as for full electrification measures that provide much greater peak reduction per unit. Highly objectionable.	Ref: Exhibit E, Tab 1, Schedule 1, Table 3. Comment was acknowledged. Refer to Item 37 for additional details around the proposed electrification budget compared to advanced technologies.
42	I continue to say that it makes no sense to call this the “utility perspective”. It is just a rates perspective.	Ref: Exhibit E, Tab 1, Schedule 1, Paragraph 20. Updated language in Application per comment.
43	Why is the amount of CNG assumed to be needed constant over time? Shouldn’t it decline as DSM and other measures effects accumulate?	Ref: Exhibit E, Tab 1, Schedule 1, Attachment 1, Line 2 CNG is being implemented across the duration of the pilot to ensure the system reliability is maintained over the course of the Pilot Project. No further changes.
44	why are these costs included? They should be incurred regardless of whether traditional supply investments are made or whether IRPAs are pursued	Ref: Exhibit E, Tab 1, Schedule 1, Attachment 1, Line 6 and 7 Stakeholdering and Legal Costs are included into Direct Pilot IRPA Costs as they are costs associated with the Application, and consistent with LTC applications.
45	Same comment as above for Parry Sound. Why doesn’t CNG need decline over time as DSM effects grow?	Ref: Exhibit E, Tab 1, Schedule 1, Attachment 1, Line 12 Refer to response in Item 43.
46	are these included in DCF+? They shouldn't be.	Ref: Exhibit E, Tab 1, Schedule 1, Attachment 2, Line 3 and 8 Confirmed. Metering costs were classified as Pilot Learning costs and not included in the Stage 1 DCF economic evaluation.
	July 7, 2023 - email	

47	I have a concern about your proposed language, specifically the part that says “the TWG is broadly supportive of the proposed pilots as described in the evidence.” I think the conversations we had were very helpful and agree with the direction of all the changes you made. However, I still think that the inclusion of any gas heat pumps is problematic and wouldn’t characterize that as just a detail. Thus, I’d recommend revising the language to say “…the TWG is supportive of most elements of the proposed pilots…” or “…the TWG is supportive of the pilots, though there is one significant disagreement” (it is only one for me – the inclusion of gas heat pumps – but perhaps there is another from another party) or something like that.	Ref: Exhibit B, Tab 1, Schedule 1, Paragraph 3. OEB Staff’s proposed language regarding the framing of engagement with TWG members. Proposed language from OEB Staff was included and updated in Application.

ONTARIO ENERGY BOARD

Integrated Resource Planning Technical Working Group

IRP Working Group Meeting #1

January 18, 2022

Ontario

ONTARIO ENERGY BOARD

Agenda

- Welcome and member introductions/perspectives (all, 25 min, no slides)
- Update on IRP-related developments (OEB Staff, 5 min, slides 3-5)
- Review Terms of Reference (OEB Staff, 30 min, slides 6-13)
- Update on IRP pilots and related implementation of IRP Framework (Enbridge Gas, 30 minutes, no slides)
- Discuss priority activities and next steps (all, 30 minutes, slides 15-22)

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OEB Updates – Mandate Letter

- Mandate Letter from Minister of Energy to OEB Chair (Nov. 15, 2021):
  - *"I expect to see the establishment of multi-year natural gas Demand Side Management (DSM) programming and the implementation of the OEB's Integrated Resource Planning framework for assessing demand-side and supply-side alternatives to pipeline infrastructure in meeting natural gas system needs. I would like to express my strong interest in a framework that delivers increased natural gas conservation savings and reduces greenhouse gas emissions."*

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OEB Updates – Framework for Energy Innovation

- Framework for Energy Innovation (FEI) consultation (EB-2021-0118) aims to facilitate the deployment and adoption of innovative and cost-effective solutions, including distributed energy resources (DERs), in ways that enhance value for energy consumers.
- Several areas of overlap with IRP, including:
  - **Needs cases and use cases:** FEI WG has been developing "needs cases" (which system needs can DERs address?) and "use cases" (identifying DER solution(s) that can best meet those needs) and is focusing on the electricity system at this time.
    - It is expected that further consideration of alternative solutions in the natural gas system (similar to needs cases and use cases for DERs in FEI) will be done through IRP Framework implementation.
  - **Benefit-cost analysis:** FEI is working on benefit-cost analysis of DERs; a subgroup has been established and is using the National Standards Practice Manual as a starting point.
- OEB staff will monitor activities of both working groups and share information and attempt to co-ordinate activities if appropriate.

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OEB Updates – Leave to Construct Applications

- Enbridge Gas has filed several Leave to Construct Applications with the OEB that address the requirements of the IRP Framework regarding assessment of IRP Alternatives:
  - St. Laurent Pipeline replacement in City of Ottawa (EB-2020-0293)
  - Greenstone Mine Pipeline (EB-2021-0205)
- In both cases, Enbridge Gas has submitted that detailed evaluation of IRP Alternatives are not required, based on the binary screening criteria in the IRP Framework.
- Both proceedings are currently active.

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Terms of Reference

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ToR: General considerations and objective

- IRP Decision requires OEB staff to develop ToR.
- Draft modeled on ToRs for other active OEB Working Groups, with modifications to account for specifics of IRP Framework.
- Comments on draft ToR may be provided verbally today or subsequently in writing.
  - OEB staff will take into consideration and finalize ToR.
- **Working Group Objective:** To provide input on IRP issues that will be of value to both Enbridge Gas in implementing IRP, and to the OEB in its oversight of the IRP Framework.

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ToR: Priorities

- Describes initial priorities of Working Group and other potential areas of work.
- Time set aside for discussion of priorities later in today's meeting.

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ToR: Membership, term, roles & responsibilities

- Term of members expected to be for an initial period of two years.
- Members (other than OEB staff, Enbridge Gas and observers) have been selected as individuals, and asked to provide input and advice based on their experience and technical expertise and not to advocate specific commercial interests or on behalf of parties they have represented.
- Additional responsibilities defined for OEB staff and Enbridge Gas representatives.
- Observer role for IESO and EPCOR.

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ToR: Issues resolution

- The IRP Working Group will attempt to achieve consensus on IRP related issues where appropriate.
- Any materials authored by the Working Group will reflect the Working Group's shared conclusions and not necessarily the views of the OEB, as well as identify areas where consensus was not reached.

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ToR: Public reporting and confidentiality

- Default assumption is that meeting materials will be considered non-confidential and shared on the OEB's Natural Gas IRP webpage.
- Summary of key outcomes from each meeting will be prepared by OEB staff and shared with meeting participants to review for accuracy.
  - Once reviewed and approved, the OEB will post the key outcomes and related meeting materials on its website unless materials are determined to be confidential, to allow stakeholders to follow the Working Group's progress.
- Enbridge Gas or other Working Group members may indicate that certain materials that they provide should be treated as confidential information. If necessary, Enbridge Gas may request that specific members not participate in review or discussion of issues of a commercially sensitive nature.
  - Provisions for members to view confidential materials upon signing a Confidentiality Declaration and Undertaking.

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ToR: Cost awards

- Cost awards will be available to eligible persons.
  - Default maximum cost award of 1.5 * meeting time.
- OEB staff will provide guidance regarding costs as appropriate (e.g., whether additional hours will be eligible for cost awards for review of documents or completion of additional tasks).
- OEB will initiate costs awards process on a regular basis (at least annually).

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ToR: Discussion

- Do you have any clarification questions regarding the ToR, and the expectations it establishes regarding your participation on the IRP Working Group?
- Do you have any concerns with the draft ToR or proposed changes?

Enbridge Gas Update on IRP Pilots and Implementation

(no materials)

Discussion of Work Priorities

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Work priorities

- IRP Decision indicates that that the first priorities of the IRP Working Group are expected to be:
  - Consideration and implementation of the IRP pilot projects.
  - Enhancements or additional guidance in applying the Discounted Cash Flow-plus economic evaluation methodology.
  - Review of Enbridge Gas's annual IRP report (based on timing of Enbridge's application).

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Other potential areas of work

- The IRP decision notes other potential areas of work for the IRP Working Group, including:
  - Learnings from natural gas IRP in other jurisdictions.
  - Performance metrics for IRP.
  - Accounting treatment of IRP costs.
  - Treatment of stranded assets in system planning.
- Other potential activities relevant to the IRP Framework may be identified by the Working Group or through OEB direction.

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IRP pilot projects

- Enbridge Gas expected to select and deploy two IRP pilot projects by the end of 2022, with input being sought from Working Group.
- Will require an application to the OEB using the new approval process for IRP Plans.

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Economic evaluation of IRP Alternatives

- IRP Framework (section 5.3) indicates that the economic evaluation used to compare IRP Plans and Facility Alternatives will be a three-phase Discounted Cash Flow-plus (DCF+) test, based on test currently used to assess transmission system expansions.
- General categories of costs and benefits in each phase are listed in the Framework, to be refined and improved by Enbridge Gas and the Working Group.
  - Working Group asked to consider how different carbon pricing scenarios should be used in the DCF+ calculation.
- Enbridge Gas encouraged to use pilots as testing ground for enhanced DCF+ test, and file an enhanced DCF+ test for approval as part of first non-pilot IRP Plan.

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Annual IRP report and Working Group report

- IRP Framework (chapter 10) requires Enbridge Gas to file an annual IRP report with the OEB for information, with specified content requirements.
- Working Group is expected to review a draft of Enbridge Gas's annual IRP report in advance of filing.
- A report from the Working Group to the OEB should be filed by OEB staff in the same proceeding in which Enbridge Gas's annual IRP report is filed.
  - The Working Group report should include any comments on Enbridge Gas's annual IRP report, including material concerns that remain unresolved within the Working Group, and may also describe other activities undertaken by the Working Group in the previous year.

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Work priorities: discussion

- Do you have any concerns with the proposed near-term priorities for the Working Group?
- Do you have initial views on the approach the Working Group should take regarding guidance on the DCF+ test and the consideration of pilot projects?
  - Detailed discussion of these items is expected at future meetings.
- In the list of other potential areas of work, are there additional items you believe are important that should be added to the list?

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Wrap-up and next steps

- Confirm timing of meeting #2 (proposed for February 15, 2021)
- Finalize ToR
  - Request any follow-up written comments from members by January 25
- Draft and circulate summary of outcomes from today's meeting
- Establish agenda/action items for next meeting

ONTARIO ENERGY BOARD

Thank you

IRP Technical Working Group Meeting #2

February 15, 2022

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IRP Annual Report

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- Enbridge will file the IRP Annual Report with the Annual Deferral Disposition Proceeding summarizing the IRP activities from January 1, 2021 to December 31, 2021
- Per the OEB directive, the IRP Annual Report will include:
  - A summary of IRP stakeholdering activities from the past year
  - A summary of IRP engagement or consultation activities with Indigenous peoples
  - Updates on IRP pilot projects underway
  - Updates on incorporating IRP into asset management planning
  - Updates on status of potential IRP Plans
  - Updates on status of approved IRP Plans, including details of adjustments made by Enbridge Gas
  - Annual and cumulative summaries of actual peak demand reductions/energy savings generated by each IRP Plan to-date, including comparisons to the initial forecast reduction/energy savings and the actual amount of expenditure on each IRP Plan to-date
  - Types of IRPAs, estimates of cost, peak demand savings, status in Ontario, potential role and relevance to Enbridge Gas's system, and learnings from pilot projects and other jurisdiction (See IRPA Template attachment example that will be populated and filed in the Report)
- The first IRP Annual Report will not include detailed information in all Report sections due to timing or lack of information

IRP Annual Report Timeline (tentative)

• Enbridge drafts Annual Report	February 1 – April 10
• TWG review of draft #1 of Annual Report	April 11 - 18
• Comments/discussion on draft #1	April 19
• Enbridge updates draft Annual Report	April 20 - 27
• TWG review of draft #2 of Annual Report	April 28 - May 5
• Comments/discussion on draft #2	May 6 – May 10
• Enbridge finalizes IRP Annual Report	May 11 - 15
• TWG writes submission to OEB	May 1 - 15
• Enbridge files IRP Annual Report	May 31

IRPA Pilot Objectives – For Discussion

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- The OEB directed Enbridge to deploy two pilot projects
- In its Decision, the OEB noted:

  "The pilots are expected to be an effective approach to understand and evaluate how IRP can be implemented to avoid, delay or reduce facility projects."

- Objective of Pilots: Determine how an IRPA can impact peak hour and peak demand to avoid, delay or reduce the need for future infrastructure

Pilot Selection Process – For Discussion

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- Enbridge will work with the TWG to determine what IRP alternatives should be tested as pilots (February - March)
- Enbridge to review potential projects and select 4-6 projects that meet the TWG pilot alternative recommendations (April - May)
- Review potential Pilot Projects with TWG and choose Pilot projects (May – June)
- File application(s) with OEB (Aug-Sept)
- Pilot OEB proceedings (TBD)
- Deploy pilot projects (TBD)

Potential IRPAs for Pilots – For Discussion

- Demand Side Alternatives
  - Demand Response
  - Enhanced targeted energy efficiency (ETEE)
  - Low Carbon Tech (NGHP, GSHP, etc)

- Supply Side Alternatives
  - Compressed Natural Gas/Liquified Natural Gas
  - Renewable Natural Gas
  - Upstream Deliveries

IRP Technical Working Group Meeting #3

March 22, 2022

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IRP Annual Report

- Enbridge will file the IRP Annual Report with the Annual Deferral Disposition Proceeding summarizing the IRP activities from January 1, 2021 to December 31, 2021
- Per the OEB directive, the IRP Annual Report will include:
  - A summary of IRP stakeholdering activities from the past year
  - A summary of IRP engagement or consultation activities with Indigenous peoples
  - Updates on IRP pilot projects underway
  - Updates on incorporating IRP into asset management planning
  - Updates on status of potential IRP Plans
  - Updates on status of approved IRP Plans, including details of adjustments made by Enbridge Gas
  - Annual and cumulative summaries of actual peak demand reductions/energy savings generated by each IRP Plan to-date, including comparisons to the initial forecast reduction/energy savings and the actual amount of expenditure on each IRP Plan to-date
  - Types of IRPAs, estimates of cost, peak demand savings, status in Ontario, potential role and relevance to Enbridge Gas's system, and learnings from pilot projects and other jurisdiction (See IRPA Template attachment example that will be populated and filed in the Report)
- The first IRP Annual Report will not include detailed information in all Report sections due to timing or lack of information

IRP Annual Report Timeline (tentative)

ENBRIDGE
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• Enbridge drafts Annual Report	February 1 – April 4
• TWG review of draft #1 of Annual Report	April 5 - 18
• Comments/discussion on draft #1	April 19
• Enbridge updates draft Annual Report	April 20 - 27
• TWG review of draft #2 of Annual Report	April 28 - May 5
• Comments/discussion on draft #2	May 6 – May 10
• Enbridge finalizes IRP Annual Report	May 11 - 15
• TWG writes submission to OEB	May 15 - 31
• Enbridge files IRP Annual Report	May 31

Potential IRPAs for Pilots – For Discussion

- Demand Side Alternatives
  - Demand Response
  - Enhanced targeted energy efficiency (ETEE)
  - Low Carbon Tech (NGHP, GSHP, etc)

- Supply Side Alternatives
  - Compressed Natural Gas/Liquified Natural Gas
  - Renewable Natural Gas
  - Upstream Deliveries

Pilot Selection Process – For Discussion

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- Enbridge will work with the TWG to determine what IRP alternatives should be tested as pilots (February - March)
- Enbridge to review potential projects and select 4-6 projects that meet the TWG pilot alternative recommendations (April - May)
- Review potential Pilot Projects with TWG and choose Pilot projects (May – June)
- File application(s) with OEB (Aug-Sept)
- Pilot OEB proceedings (TBD)
- Deploy pilot projects (TBD)

Appendix

IRPA Pilot Objectives – For Discussion

- The OEB directed Enbridge to deploy two pilot projects
- In its Decision, the OEB noted:

  “The pilots are expected to be an effective approach to understand and evaluate how IRP can be implemented to avoid, delay or reduce facility projects.”

- Objective of Pilots: Determine how an IRPA can impact peak hour and peak demand to avoid, delay or reduce the need for future infrastructure

IRPA Pilots

April 2022

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Pilots Objectives

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- As per the IRP Decision “The pilots are seen as an effective approach to understand and evaluate how IRP can be implemented to avoid, delay or reduce facility projects” and “Enbridge Gas is encouraged to use the IRP pilot projects as a testing ground for an enhanced DCF+ test…”
- Through discussions with the IRP TWG, pilot’s objective is to improve understanding of how to design, deploy and evaluate IRPAs that cost effectively delay or avoid the need for future infrastructure spending

IRPAs

- The following IRPAs will be considered either alone or in combination for pilot projects:

- Demand-side IRPAs
  - Enhanced Targeted Energy Efficiency (ETEE)
  - Demand Response

- Supply-side IRPAs
  - Compressed Natural Gas (CNG)/Liquified Natural Gas (LNG)
  - Supply-side deliveries
  - Renewable Natural Gas (RNG)

General Pilot Criteria

Selected pilot projects must meet the following general criteria:

- Pass the IRP Binary Screening
- Be tied to an existing system need and identified in EGI’s 10-year Asset Management Plan
- Demand reduction required is technically achievable with IRPAs
- Have the potential for transferrable learnings and good data collection
- Act as a proof-of-concept project with good potential for scalability
- One long-term project (2027+) and one near-term project (within the next 3 years) where demand + supply IRPAs are implemented
- Although cost effectiveness will be an important criteria to achieve, there is the potential that the alternative may not be the most cost-effective solution when compared to the baseline facility solution

Pilot #1: ETEE + Supply-side IRP

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- **Pilot Description**: Implement an Enhanced Targeted Energy Efficiency (ETEE) program for a near-term need (within the next 3 years) and use a supply-side solution to bridge timing gap
- **Objective**: Understand how ETEE measures impact peak hour demands and understand how to design, deploy and evaluate an ETEE program. In addition, develop a cost recovery & incentive mechanism for ETEE and O&M based supply-side IRPAs
- **Criteria**:
  - Single Sourced, if possible
  - System need area has a balanced customer mix (i.e. a few large contract customers aren't dominating the demand)
  - Supply-side IRPAs for bridging in the short-term are logistically feasible in meeting capacity shortfalls in the short-term

Note: Pilot would need to be equipped with Automated Meter Reading (AMR)

- AMR will help assess ETEE measure's impact on peak hour consumption for different customer types
- Installed on targeted strategic locations and on a statistically significant portion of the population for the different customer types
- AMR would be implemented as Phase 1 of the pilot to develop a baseline demand profile

Pilot #2: Compressed Natural Gas (CNG)/Liquified Natural Gas (LNG)

- **Pilot Description:** Implement CNG/LNG as a peak-shaving measure for constrained networks in the short-term until a longer-term solution is determined and deployed

- **Objective:** Develop operational experience with CNG/LNG as a short-term peak-shaving IRPA and develop a cost recovery & incentive mechanism

- **Criteria:**
  - CNG/LNG implementation is logistically feasible in meeting short-term peak shaving needs
    - Volumes Required
    - Refueling location
    - Injection location

Pilot #3: Demand Response

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- **Pilot Description:** Implement a Demand Response (DR) program focused on general service customers' heating loads; identify a system with a long-term need (2027+)

- **Objective:** Understand how Demand Response measures impact peak hour demands for general service residential/commercial customers and understand how to design, deploy and evaluate a Demand Response program. In addition, develop a cost recovery and incentive mechanism.

- **Criteria:**
  - Single Sourced, if possible
  - System need area is made up of primarily residential & commercial general service demand

Note: Pilot would need to be equipped with Automated Meter Reading (AMR)

- AMR will help assess DR measure impacts on peak hour consumption for different customer types
- Installed on targeted strategic locations and on a statistically significant portion of the population for the different customer types
- AMR would be implemented as Phase 1 of the pilot to develop a baseline demand profile

Pilot #4: Demand Response V2

- **Pilot Description:** Implement a Demand Response program focused on contract customers for a long-term need (2027+)

- **Objective:** Understand how to design, deploy and evaluate a Demand Response program focused on increasing Interruptible Rate uptake of existing contract customers and develop a cost recovery & incentive mechanism

- **Criteria:**
  - Single Sourced, if possible
  - System need area is made up of primarily contract customers equipped with EGI metering telemetry

Note: EGI will need time to stakeholder with contract customers to gauge interest

Next Steps

- At May/June TWG, EGI will bring forward about 6-10 projects meeting the criteria and will provide the following project details:
  - Brief project description
  - Year needed
  - Cap Ex for baseline facility infrastructure
  - Peak demand reduction needed to eliminate project
  - Customer mix

IRP Technical Working Group Meeting #5

May 24, 2022

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IRP Annual Report

IRP Annual Report

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- Draft #2 of the Annual Report was issued May 9 for TWG comments
- Enbridge Gas received comments from several TWG participants up to May 19
- Enbridge Gas responded to the comments and edited the Annual Report where applicable
- Discussion:
    - Outstanding concerns or comments?
    - TWG Report – approach and timing
- Enbridge Gas will issue the Final IRP Annual Report May 26, 2022
- Enbridge will file the IRP Annual Report on May 31, 2022

Enhanced Targeted Energy Efficiency (ETEE)

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ETEE Measures of Focus for Peak Hour

Residential	Commercial	Multi-Residential	Industrial
Heating System Advancement	Heating System Advancement	Heating System Advancement	Heating System Advancement
Air Sealing	Ventilation	Ventilation	Ventilation
Whole Home Building Envelope (Wall / Attic / Basement Insulation)	Building Envelope	Building Envelope	Building Envelope

ETEE Pilot Input Assumptions

- Focus on general service customers
- Contract customers will be considered on a case-by-case basis
- Gross impact measured for IRP
- In-situ baselines
- Derating factors or IRPA oversubscription
- Testing customer rebate and participant measure uptake

IRP Pilot Discussion

IRP – Asset Management Plan Review - Update

- Enbridge Gas completed the 2023-2032 Asset Management Plan (AMP), identifying the system needs and required facility projects for the next 10 years.
- Enbridge Gas completed the IRP binary screening using the OEB approved screening criteria
- IRP will assess the AMP projects in three phases in order to meet the Rebasing evidence timelines
  - Phase I – High level assessment of whether an IRP alternative is possible for all projects
  - Phase II – Assessment of which alternatives are technically feasible for the projects
  - Phase III – Detailed assessment and development of IRPA plans where technically and economically feasible
- The results of the Phase I IRP assessments will be included in Appendix B of the AMP
- IRP will continue to assess projects and update Appendix B of the AMP to include projects that have had a Phase II and III evaluation - updates to be provided via Rebasing interrogatories in 2023

IRP – Pilot Strategy - Discussion

- In addition to screening the Asset Management Plan (AMP) project-by-project, Enbridge Gas is evaluating how projects in the AMP could be grouped and addressed through an IRPA plan that includes one or more IRP alternatives.
- Enbridge is analyzing the following project portfolios/groupings:
  - Geographical areas
  - Asset class, i.e. storage, distribution, stations, etc.
  - Need - i.e. vintage steel replacement, integrity, growth
  - Risk profile, i.e, projects with a risk profile that could allow for enhanced inspection
- Enbridge proposes that one IRP Pilot consider a “Geographical IRPA Plan” that would address multiple needs over the next 10 years within a specific area using a suite of IRP alternatives
  - Enbridge is reviewing several geographical areas and will bring potential areas/projects to the June IRP TWG meeting for review and input
  - Suite of IRP Alternatives will include supply side, demand side as well as consider enhanced inspection/integrity management
- Enbridge will continue to develop a second pilot per previous TWG discussions

For Discussion: DRAFT TWG Schedule / Next Steps

- ***June TWG Meeting***:
  - *Meeting #1:* Enbridge to bring potential pilot projects, TWG to discuss and provide feedback
- ***July TWG Meetings***
  - *Meeting #1:*
    - Using TWG feedback, bring revised list of potential Pilots - choose/confirm Pilot Projects
    - Enhanced Targeted Energy Efficiency (ETEE) discussion continued – applicable measures (if not yet finalized) and discussion of methodology for estimating peak hour reduction per alternative
  - *Meeting #2:* Enbridge to provide/review DCF+ Study, TWG to provide feedback
- ***August TWG Meeting:***
  - *Meeting #1:*
    - DCF+ Study discussion continued (if required)
    - Enbridge to provide update on Pilot Projects, TWG to provide input
  - *Meeting #2:* Enbridge to provide update on Pilot Projects, TWG to provide input

For Discussion: DRAFT TWG Schedule / Next Steps

- **September TWG Meeting:**
  - *Meeting #1:* Enbridge to provide update on Pilot Projects, TWG to provide input

- ***September - December:*** Enbridge develop IRP Pilot evidence/application(s) depending on scope and timing of agreed upon pilots

- ***January 2023 - April 2023:*** Complete OEB proceedings

- **Deploy pilot projects (prior to winter 2023)**

For Discussion: Frequency of meetings for September and into 2023, should we book bi-weekly for now and determine agenda during the summer and adjust as needed?

IRP Technical Working Group

Meeting #6

ENBRIDGE

June 21, 2022

Enhanced Targeted Energy Efficiency (ETEE)

ETEE Measures of Focus for Peak Hour

Residential	Commercial	Multi-Residential	Industrial
Heating System Advancement	Heating System Advancement	Heating System Advancement	Heating System Advancement
Air Sealing	Ventilation	Ventilation	Ventilation
Whole Home Building Envelope (Wall / Attic / Basement Insulation)	Building Envelope	Building Envelope	Building Envelope

ETEE Pilot Input Assumptions

- Focus on general service customers
- Contract customers will be considered on a case-by-case basis
- Gross impact measured for IRP
- In-situ baselines
- Derating factors or IRPA oversubscription
- Testing customer rebate and participant measure uptake

IRP Pilot Discussion

Portfolio Pilot Option

Sarnia/Camlachie/Wyoming 420 kPa system

ENBRIDGE

NEEDS

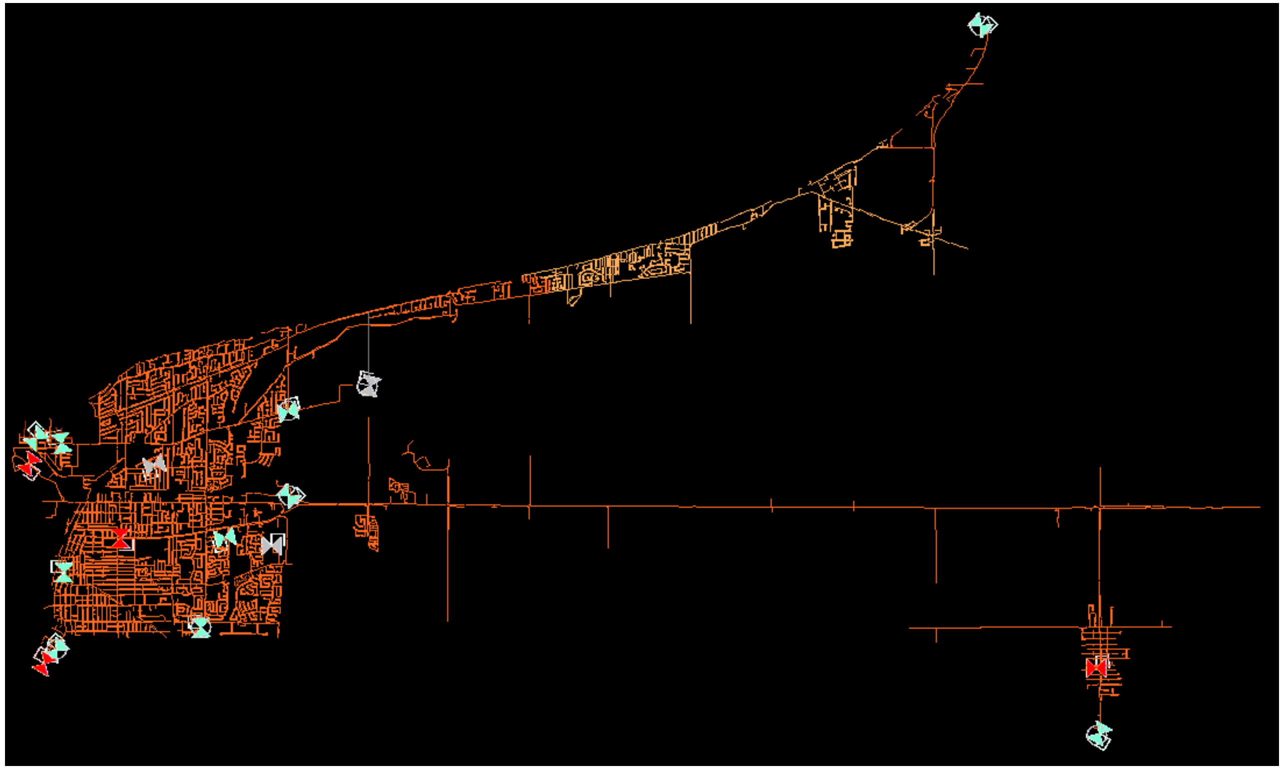
- Significant growth along lakeshore
- Single pipe reinforcement project planned in 2032
- Several pipe replacement projects (vintage steel, low pressure, bare unprotected, etc)
- Two station rebuilds

CUSTOMERS

- ~30,150 customers (2,200 COM, 27,950 RES)
- One contract customer (IT)

MEASUREMENT

- Most customers (~29,000) have meters equipped with interval measurement devices (ERTs). Confirming ability to enable them to begin measurement.
- Require pressure recorders (ERXs) to be installed at low points
- Six primary stations – require flow measurement installed. Some have SCADA pressure.



Portfolio Pilot Option

Ottawa System

ENBRIDGE

NEEDS

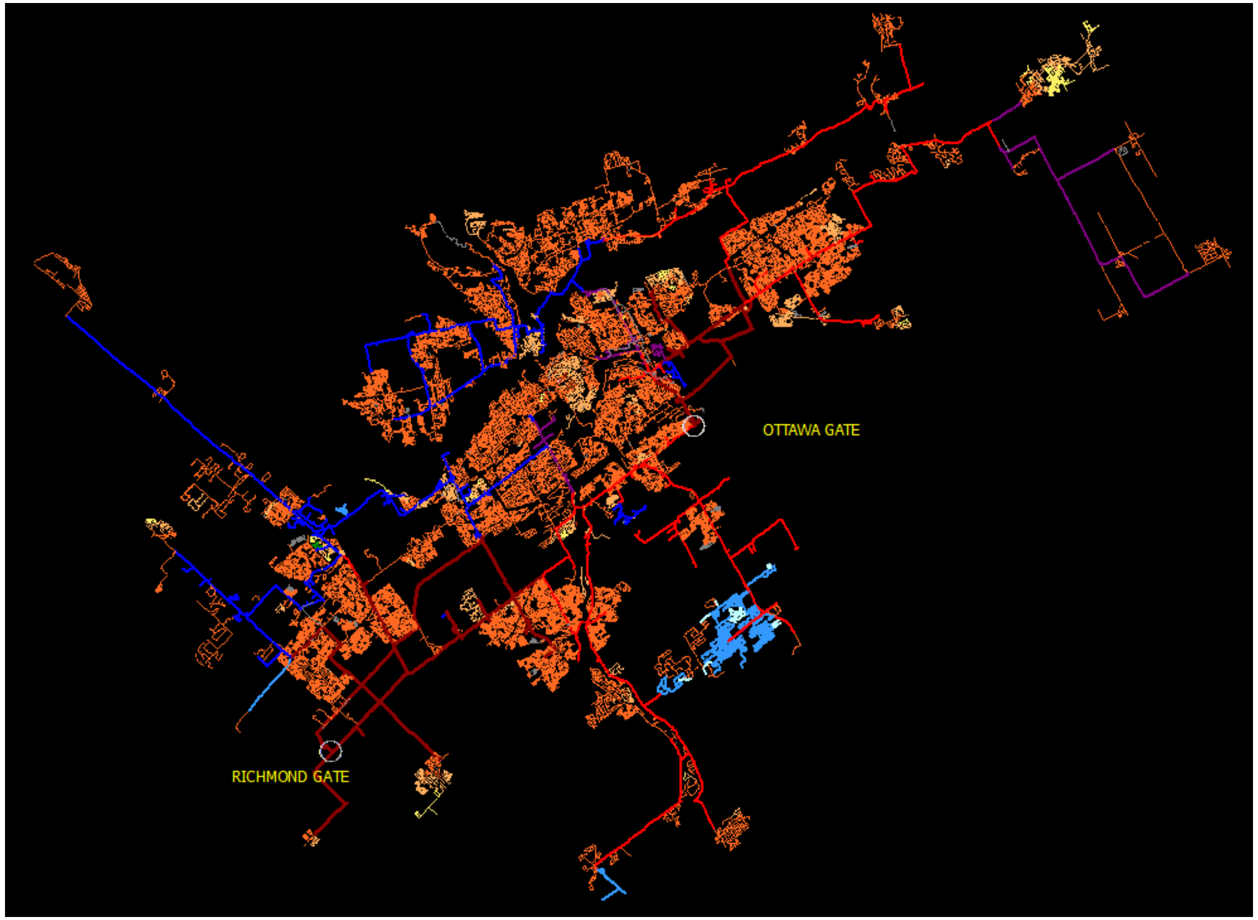
- ~14 reinforcements throughout the system
- Dozens of vintage steel replacement projects
- Various municipal replacement/relocation projects
- Various station rebuilds on this system

CUSTOMERS

- ~343,800 customers
    - (540 APT, 19,500 COM, 323,000 RES, 200 IND)
    - 51 Contract customers

MEASUREMENT

- Difficult to track small changes and effects system wide on a system this large
- Two primary station feeds (Ottawa Gate and Richmond Gate) with flow and pressure measurement. Dozens of stations downstream throughout
- Gazifere downstream will be a unique consideration
- ERX coverage throughout, but many specific projects may need ERXs installed



Single Project Pilot Option

Parry Sound System

ENBRIDGE

NEEDS

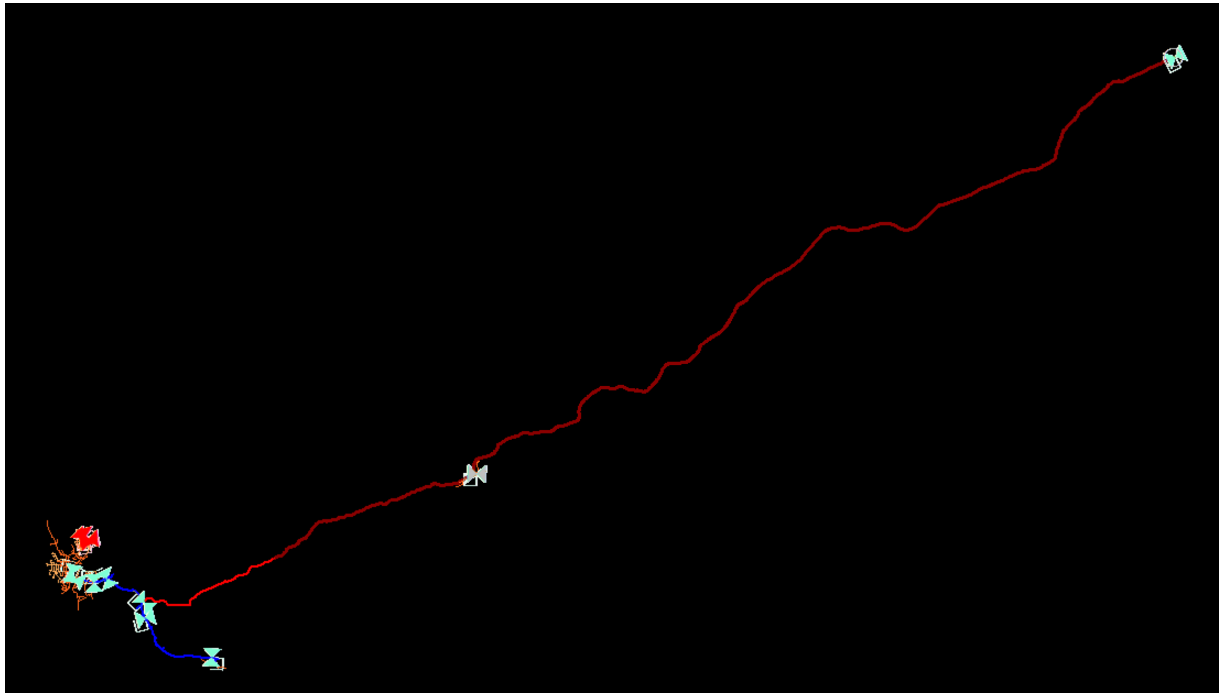
- Single pipe reinforcement planned in 2032
  - Hydrogen blending, CNG and TCE pressure increase alternatives to be considered
- No pipe replacement or station projects planned

CUSTOMERS

- ~2070 customers (267 COM, 1803 RES)
- No contract customers

MEASUREMENT

- Existing flow & pressure measurement at Emsdale CMS
- Existing pressure measurement at Parry Sound TBS
- Minimal customers with ERTs installed, need to install interval measurement devices at customers
- Will need to install pressure recorders (ERX's) at low points



Single Project Pilot Option

Brooklin System

NEEDS

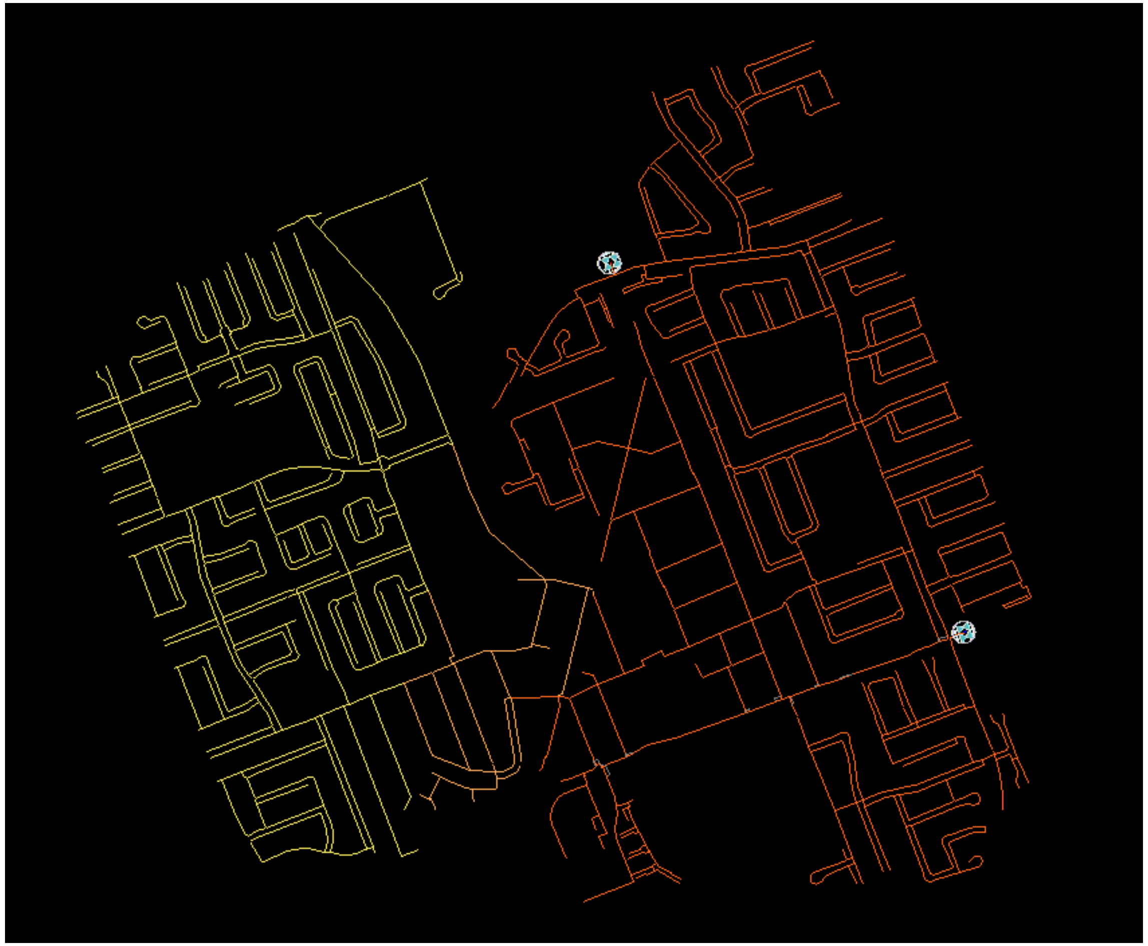
- Single pipe reinforcement project planned in 2024
- No replacement projects currently in plan
- Significant growth potential around the west end

CUSTOMERS

- ~6700 customers (140 COM/IND, 6580 RES)
- No contract customers

MEASUREMENT

- 2 distribution stations – no measurement currently and would require flow and pressure measurement
- Need to install ERX's at low points, currently 2 ERX's installed
- No ERTs currently installed, need to install interval measurement devices at customers



IRP Pilots - Evaluation Matrix

- Pilot options will be evaluated against a list of key criteria to help inform selection

Criteria
Potential for scalability and transferrable learnings
System configuration
Mix of facilities requirements identified in 10-year AMP *
Balanced customer mix
Peak hourly flow data collection potential
Feasibility of supply-side IRPA implementation in the short-term
Potential for DSM to impact system needs

* For regional pilot only

Compressed Natural Gas

Compressed Natural Gas as an IRPA

Systems Needs

- Enbridge Gas continues to receive requests for natural gas distribution connections in large and small communities for residential growth and seasonal loads
- Enbridge Gas has identified system needs where reinforcement is required due to low pressures and peak hour concerns

CNG as an IRPA

- CNG is a potential IRPA for projects where other IRPAs are not viable
- Mobile CNG trailers and injection stations can be used to provide natural gas supply security during peak periods
- CNG trailers/stations can be used for several winters, depending on the economics, to defer or perhaps a eliminate a future need and can be easily relocated in subsequent years to other locations

DCF+ Test

Enhancements & Guidehouse Recommendations

Agenda

- Treatment of GHG Emissions
- Net Equipment Costs
- 15% Non-Energy Benefit Flooring Mechanism
- 15% Non-Energy Benefit Accentuating Mechanism
- Additional Non-Energy Benefits that could be quantified or qualified

Treatment of GHG Emissions

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- Phase 1 - Avoided/Incremental Utility Carbon Costs
  - $65 per tonne of CO2e in 2023, increasing by $15/tonne of CO2e per year to $170 per tonne in 2030
  - Applicable to the utility's emissions.
- Phase 2 – Avoided/Incremental Customer Carbon Costs
  - $65 per tonne of CO2e in 2023, increasing by $15/tonne of CO2e per year to $170 per tonne in 2030
  - Account for (participating) customer-specific carbon costs.

Net Equipment Costs

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- Phase 2 - Net Equipment Costs
  - To distinguish costs associated with the customer-bought equipment from the rest of the customer-incurred costs
  - Including net equipment costs as a separate parameter would distinguish costs associated with the customer-bought equipment from the rest of the customer-incurred costs.
  - Recognizes that non-pipeline solutions (as opposed to physical pipeline upgrades) could result in customer, and equipment-specific costs.

15% Non-Energy Benefit Flooring Mechanism

- Phase 3 - NEB Flooring mechanism
  - The Flooring Mechanism’s purpose is to ensure that quantified NEBs represent at least 15% of the overall project benefits.
  - The use of the NEB Flooring Mechanism avoids under-accounting NEBs and stimulates their quantification.
  - Quantifiable Benefits Phase 3 ≥ 0.15 * (Benefits Phase I+ Benefits Phase II)

15% Non-Energy Benefit Accentuating Mechanism

- Phase 3 - NEB Accentuating mechanism
  - The Accentuating Mechanism reflects the “typical” NEB adder found in other jurisdictions. It aims to increase previously quantified NEBs by a specific percentage – 15% in this instance – to account for known Phase 3 benefits for which there is no quantification mechanism.
  - Will stimulate the efforts to quantify Phase 3 benefits while ensuring that unquantifiable parameters remain financially considered within the DCF+ test.
  - Total Benefits Phase 3 = 0.15 * (Quantifiable Benefits Phase 3)

Additional Non-Energy Benefits

ENBRIDGE

- Guidehouse is also recommending the quantification / qualification of the following NEB's where appropriate:

NEB	Description
Economic development	Including but not limited to: - Indigenous employment - Low-income employment - Minorities employment - Use of Canadian material/equipment/knowledge
Increased safety	For users and operators (including probability of major injury, fatality, leakages)
Other emissions	- NOx - Sox
Water and land uses	
Resiliency of the transmission and distribution system, or the user's assets	
Reliability of the system (enhanced security of supply)	

Next Steps

- Final GH Report received by 3rd week of June
- Enbridge will confirm what GH recommendations will be accepted
- Final report sent to the IRP TWG Group
  - Discussion with DCF+ sub-group

IRP Technical Working Group

Meeting #8

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July 19, 2022

Enhanced Targeted Energy Efficiency (ETEE)

IRP/ETEE Pilot Focus Measures for Peak Hour

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Residential	Commercial	Multi-Residential	Industrial (Assume general industrial accounts - treat like commercial or in case of contract customer will be facility specific)
Heating System Advancement (Enhanced Whole Home Program)	Heating System Advancement (Boilers/Controls)	Heating System Advancement (Boilers/Controls)	Heating System Advancement
Air Sealing (Enhanced Whole Home Program)	Ventilation (Destratification/DCV)	Ventilation (DCV/Controls)	Ventilation
Building Envelope (Wall / Attic / Basement Insulation) (Enhanced Whole Home Program)	Building Envelope (Air Curtains / Dock Door Seals)	Building Envelope (no current DSM program)	Building Envelope

ETEE Pilot Assumptions

- Focus on general service customers - For the purposes of estimating ETEE in the forecast IRPA comparison and implementing (participants), the focus would be on non-contract customers.
- Contract customers will be considered on a case-by-case basis for potential ETEE opportunities
- Gross impact / In-situ baseline – Peak hour and peak day gas reductions will be forecast on a gross basis based on the Posterity model relative to current building gas usage/equipment.
- Derating factors or IRPA oversubscription – To address unknowns and forecast error, EGI proposes ~20% "oversubscription to target" forecast gas reductions per the recommendation in ICF report (EB-2020-0091 - ICF IRP Study: Final Report - pg 48).
- Testing customer rebate and participant measure uptake – For Discussion: What percentage incremental cost should the pilot cover? How should approach vary based on customer types?

IRP Pilots - Evaluation Matrix

- Pilot options will be evaluated against a list of key criteria to help inform selection

Criteria
Potential for scalability and transferrable learnings
System configuration
Mix of facilities requirements identified in 10-year AMP *
Balanced customer mix
Peak hourly flow data collection potential
Feasibility of supply-side IRPA implementation in the short-term
Potential for DSM to impact system needs

* For regional pilot only

IRP Technical Working Group

Meeting #10

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August 23, 2022

Derating Factor Clarification

In addressing the action item from the July 19th TWG to confirm whether the derating factor covers forecast uncertainty regarding customer uptake; or is it covering error variability in the amount of peak demand reduction or both, below is the excerpt from the ICF report referring to the derating factor:

"The level of uncertainty related to the impact of DSM programs on peak hour demand has a significant impact on the ability of a utility to rely on DSM as an alternative to new facilities. To ensure, with sufficient reliability for planning purposes, that the impact of the DSM program on peak period demand is sufficient to reduce a facility investment, the DSM program needs to be designed to achieve greater peak period savings than the facility investment it replaces. For example, a portfolio of DSM programs might have peak period impacts with a standard deviation of 10% around the expected impact. For the DSM program to meet the required peak period load reduction 95% of the time, it would need to be sized to meet 116% of the required capacity. The same program would need to be sized at 121% of the required capacity to meet requirements 98% of the time." (page 47-48)

Whether it's called a derating factor or an IRPA oversubscription (how it was also referred to in the decision), it captures the same goal of accounting for uncertainty of peak impacts requiring additional IRPA uptake therefore confirming that the factor accounts for both.

IRP Pilots

IRP Pilot Objectives

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- As per the IRP Decision “The pilots are seen as an effective approach to understand and evaluate how IRP can be implemented to avoid, delay or reduce facility projects” and “Enbridge Gas is encouraged to use the IRP pilot projects as a testing ground for an enhanced DCF+ test…”
- Through discussions with the IRP TWG, pilot’s objective is to improve understanding of how to design, deploy and evaluate IRPAs that cost effectively delay or avoid the need for future infrastructure spending

IRP Pilots Proposal

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Proposing two pilots (with focus on ETEE):

- Single project IRP Pilot – focus on addressing one need within a system with ETEE (& supply side for bridging)
- Portfolio IRP Pilot- focus on a geographical area and addressing multiple needs over the next 10 years using a suite of IRP alternatives *(For discussion: Demand Response)*

Key Objectives for ETEE:

- Understand how ETEE measures impact peak hour demands and understand how to design, deploy and evaluate an ETEE program.
- In addition, develop a cost recovery & incentive mechanism for ETEE and O&M based supply-side IRPAs

IRP Pilots Selection Process

ENBRIDGE

General criteria used to select pilot projects and areas:

- Pass the IRP Binary Screening
- Be tied to an existing system need and identified in EGI's 10-year Asset Management Plan
- Have the potential for good data collection and ability to measure impact of IRPAs
- Act as a proof-of-concept project with good potential for scalability & transferrable learnings
- *Note: Although cost effectiveness will be an important criteria to achieve, there is the potential that the alternative may not be the most cost-effective solution when compared to the baseline facility solution*

These considerations formed the basis of the evaluation matrix in which pilot options were scored against.

Evaluation Matrix
System configuration
Balanced customer mix & potential for scalability & transferrable learnings
Peak hourly flow data collection potential
Feasibility of supply-side IRPA implementation in the short-term
Feasibility for ETEE

Overview of System Reinforcements Plans

ENBRIDGE

- Multiple factors are incorporated into the system reinforcement plans
  - Sources of information that help to establish the timing, location and loads on the system include operational input, energy transition assumptions, input from regions/districts, developer plans, municipal zone plans.
  - Customer additions are governed by macro-level corporate econometric forecast
  - Blanket locations may be used in the absence of other information if needed to match the customer addition forecast
- Hydraulic models are run with the above inputs and reinforcement projects are identified in the year prior to the system constraint being exceeded
- Annual simulation & verification of hydraulic models using pressure and flow measurement is completed to ensure the model is reliable in estimating general demand on the system
  - Actual field data (i.e. via ERX/pressure recorder) is requested to verify model results for systems nearing constraints (i.e. min system pressures)
- Reinforcement projects are reviewed, and timing/scope are reassessed as forecast data is replaced with actuals

IRP Pilots Options

Pilot Options Reviewed *(Redacted)*

Portfolio IRP Pilot Options

- Sarnia Camlachie Wyoming
- Ottawa
- Brantford

Single IRP Pilot Option

- Bayfield
- Brooklin
- Kemptville
- Parry Sound
- Southampton

Municipal Energy Plans

ENBRIDGE

Sarnia	• Climate Change Action Plan (attached)
Ottawa	• Climate Change Master Plan (attached) • Ottawa Community Energy Transition Strategy Report – Energy Evolution (attached) • Community Energy plan (attached)
Brantford	• The City is in the process of preparing a Climate Change Action Plan for both the Corporation and the Community to focus on mitigating its impact on climate change by reducing our GHG emissions.
Bayfield (Municipality of Bluewater)	• None
Brooklin (Durham Region)	• Durham Community Energy Plan (attached)
Kemptville (Municipality of North Grenville	• Link: Environmental Action Advisory Committee https://www.northgrenville.ca/govern/governance/committees-and-boards/environmental-action-advisory-committee?highlight=WyJtdW5pY2lwYWwiLCJlbmVyZ3kiLCJwbGFuIiwicGxhbidzIl0=#purpose
Parry Sound (Municipality of Georgian Bay)	• Community Energy and Climate Change Action Plan (attached)
Southampton (Saugeen Shores)	• Link: Saugeen Shores Environmental Stewardship Ad Hoc Advisory Committee reports to Council https://www.saugeenshores.ca/en/news/environmental-committee-delivers-final-report.aspx

IRP Pilots - Evaluation Matrix

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Criteria	Weight	Portfolio Option			Single Project Option				
		Sarnia	Ottawa	Brantford	Bayfield	Brooklin	Kemptville	Parry Sound	South-ampton
System configuration	15%	3	1	3	4	3	4	5	4
Balanced customer mix & potential for scalability	25%	4	5	4	2	2	3	2	2
Peak hourly flow data collection potential	25%	5	1	2	3	3	3	4	3
Feasibility of supply-side IRPA implementation in the short-term	15%	4	2	3	3	4	5	5	5
Feasibility for ETEE	20%	3	1	2	5	2	3	4	2
Weighted Average	100%	3.9	2.2	2.8	3.3	2.7	3.5	3.8	3.0

IRP Pilots

Glossary of Terms

- AMP – Asset Management Plan
- BU – Bare and Unprotected (steel)
- ERT (Encoder Receiver Transmitter) - Interval measurement device
  - Installed at customer meter to collect hourly/daily interval data
- ERX – Electronic Pressure Recorder
  - Installed on systems for pressure collection purposes (typically on low points)
- ETEE – Enhanced Targeted Energy Efficiency
- IT – Interruptible (contract rate)
- LP – Low pressure (systems)
- MOP – Maximum Operating Pressure
- PE – Plastic
- S – Steel
- VSM – Vintage Steel Mains

IRP Technical Working Group

Meeting #12
Confidential

ENBRIDGE

September 27, 2022

Asset Management Plan

Asset Management Plan Results

ENBRIDGE

Investments for Binary Screening			
Asset Class	**Investment Count**		**2023-2032 Forecast**
Compression Stations	167	$	479,999,478
Distribution Pipe	676	$	1,583,013,054
Distribution Stations	469	$	494,841,720
Growth	134	$	525,163,987
LNG	8	$	62,270,525
Transmission Pipe & Underground Storage	45	$	1,062,344,028
Grand Total	**1,499**	**$**	**4,207,632,794**

Investments proceeding to Binary Screening

IRP Pilots

IRP Pilots

Evaluation Matrix - Summary

ENBRIDGE

- All ~600 AMP projects that passed binary screening were considered as a possible pilot program
- The Engineering team, in partnership with the IRP team, narrowed down the list of potential IRP pilot projects using the following IRP Pilot Evaluation Criteria matrix

Criteria	Weight	Portfolio Option			Single Project Option				
		Sarnia	Ottawa	Brantford	Bayfield	Brooklin	Kemptville	Parry Sound	South-ampton
System configuration	15%	3	1	3	4	3	4	5	4
Balanced customer mix & potential for scalability & transferrable learnings	25%	4	5	4	2	2	3	2	2
Peak hourly flow data collection potential	25%	5	1	2	3	3	3	4	3
Feasibility of supply-side IRPA implementation in the short-term	15%	4	2	3	3	4	5	5	5
Feasibility for ETEE (& DR)	20%	3	1	2	5	2	3	4	2
Weighted Average	100%	3.9	2.2	2.8	3.3	2.7	3.5	3.8	3.0

Scoring: Low: 1, High: 5

IRP Pilots – Evaluation Matrix

System Configuration (15%)

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Criteria Rationale:

Ability to isolate the system area for the purpose of measuring and quantifying the impacts of IRPA efforts is important for learnings.

Key Considerations:

- # of feeds
- # of system low points
- Sensitive systems (i.e. long stretch of pipes)

Option	Score	Comparison of Options
Sarnia	3	Multi-source system, stretched system at low point fed primarily by two stations
Ottawa	1	Large interconnected system with multiple feeds & smaller systems. Difficult to measure & isolate the impact of IRPAs (even with ERTs).
Brantford	3	Multi source system, sensitive due to significant growth and length of system from stations
Bayfield	4	Single low point on a very long, stretched system fed by 2 stations
Brooklin	3	Multi-source but smaller system
Kemptville	4	Small/medium single fed system stretched in some areas
Parry Sound	5	Very long stretched, single fed system. Small load reductions will have a large impact
Southampton	4	Single fed system, medium sized and stretched at north end

IRP Pilots – Evaluation Matrix

Customer Mix & Potential for Scalability (25%)

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Criteria Rationale:

Having a representative customer mix is important for scalability and transferability of learnings.

Key Considerations:

- Balanced mix of general service – residential, commercial and low-income
- Size of customer base
- Minimal seasonal customers (not primarily heat sensitive)

Option	Score	Comparison of Options
Sarnia	4	Medium # of customers with reasonable sample of residential and commercial customers
Ottawa	5	Large absolute # of customers and variety of residential & commercial & contract customers
Brantford	4	Medium # of customers with reasonable sample of residential and commercial customers
Bayfield	2	Small # of existing residential customers Very small # of existing commercial customers.
Brooklin	2	Small # of existing residential customers Very small # of existing commercial customers.
Kemptville	3	Small-Medium #of customers with reasonable sample of residential small number of commercial customers
Parry Sound	2	Small # of existing residential customers Very small # of existing commercial customers.
Southampton	2	Small # of existing residential customers Very small # of existing commercial customers.

IRP Pilots – Evaluation Matrix

Peak hourly flow Data Collection (25%)

Criteria Rationale:

Ability to measure & quantify the impacts of IRPAs on peak hour demands is critical to the objective of the pilots. Weighted higher in comparison to other categories.

Key Considerations:

- Existing customer hourly measurement (ERTs) installed on system (impacts timing of baseline data collection)
- Cost of installing ERTs on the system & availability of supply
- Flow & pressure measurement at station feeds

Option	Score	Meters w/ ERTs	Comparison of Options
Sarnia	5	98%	Existing ERTs on majority of customers. Timing is optimal for collecting baseline hourly data this winter (requires activation of hourly feature – before Nov 1).
Ottawa	1	0%	No existing ERTs installed, some pressure and flow measurement at stations. Practicability of installing ERTs across a large system is low.
Brantford	2	4%	Handful of existing ERTs installed, flow measurement only available at main gate station.
Bayfield	3	1%	Some existing ERTs installed but relatively small system to install more on, flow measurement at one station.
Brooklin	3	0%	No existing ERTs installed but relatively small system to install more on, no flow measurement at existing station.
Kemptville	3	0%	No existing ERTs installed but small/medium system to install more on, no flow measurement at existing station.
Parry Sound	4	1%	Some existing ERTs installed and relatively small system to install more on, and station flow measurement available.
Southampton	3	3%	Some existing ERTs installed and relatively small system to install more on, no flow measurement at existing station.

IRP Pilots – Evaluation Matrix

Feasibility of Supply Side IRPA (15%)

Criteria Rationale:

Consideration of short-term bridging solution to allow time for implementation of ETEE program.

Key Considerations:

- CNG volumes required to defer the need/act as a bridging solution.
- Applicability of market-based supply-side options to the pilot area

Option	Score	Comparison of Options
Sarnia	4	Reinforcement not required for years. If growth is significant, there is potential for CNG.
Ottawa	2	Large # of projects across the system and low points that will require multiple injection points, adds layers of complexity from pilot perspective.
Brantford	3	Large amount of risk driven projects in plan, but CNG volumes likely high to offset or downsize projects.
Bayfield	3	CNG volumes relatively low, but system requires reinforcement soon.
Brooklin	4	CNG volumes likely low. Dense area with significant growth potential above forecast may cause challenges.
Kemptville	5	Project not required for years, low volumes for CNG injection
Parry Sound	5	CNG volumes relatively low but may be required soon.
Southampton	5	Project not required for years, CNG injection volume likely low.

IRP Pilots – Evaluation Matrix

Feasibility for ETEE (& DR) (20%)

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Criteria Rationale:

Understanding the system and market characteristics to help gauge potential of implementing a ETEE (& DR) program.

Key Considerations:

- Growth rate of system per year
- Building vintages (older homes have more saving opportunities)
- Past participation in DSM
- Opportunity to test a demand response program for residential customers

Option	Score	Comparison of Options
Sarnia	3	Lowest relative growth rate; building vintages relatively similar across three options
Ottawa	1	Highest growth rate, scale too large and complex for pilot
Brantford	2	Relatively high growth rate, slightly newer building vintages
Bayfield	5	Bayfield has the lowest growth rate of options with relatively older homes.
Brooklin	2	Brooklin has relatively the newest homes with moderately high growth rate.
Kemptville	3	High growth rate, but relatively newer homes.
Parry Sound	4	Parry Sound has old homes with moderately high growth rate
Southampton	2	The growth rate in this area is the highest of options.

Summary & Next Steps

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- Recommendation for Pilots:
  1. Parry Sound – ETEE and CNG
  2. Sarnia – ETEE and Demand Response and potential supply side where applicable

- Next Steps
  – Create workback schedule for each pilot project
  – Reconfigure ERTs in Sarnia to start collecting data November 1
  – Install ERTs in Parry Sound to start collecting data for baseline data
  – Develop ETEE and demand response programs
  – Develop evidence
  – Use Parry Sound for the DCF+ example and discussion
  – Continuous evidence reviews with TWG

IRP Technical Working Group

Meeting #14
IRP Pilots

ENBRIDGE

October 25, 2022

Discussion Items for the TWG

- Application Timing
  - Dependent on ETEE and DR program development
- Application and evidence
  - Draft evidence outline (see next slide)
  - Level of detail required for the ETEE and DR programs
- Budget
  - Discuss budget levels for each project
- ETEE and DR program design
  - Discuss program design with TWG sub-group
  - Schedule meetings
- ERTs
  - Timing and number of data collection points
  - Data analysis
- Stakeholder Engagement
  - Kick-off stakeholder engagement by meeting with municipalities, local electric LDCs, IESO to confirm system needs and community energy plans
  - Followed by geotargeted stakeholder engagement initiative as outlined in IRP framework
- Pilot Evaluation
  - Discuss pilot evaluation criteria and timing

Draft Evidence Outline

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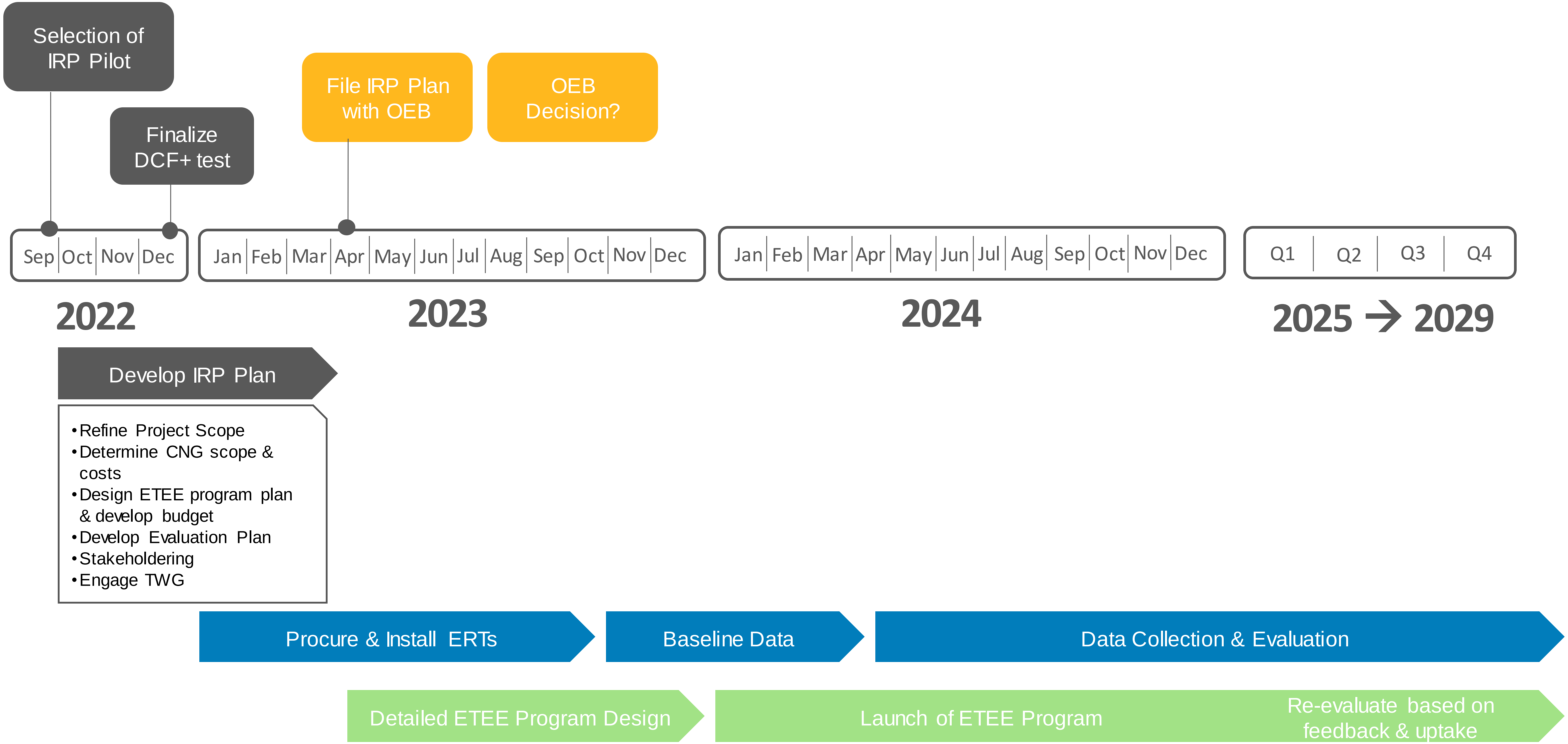
B	Project Need				
		Tab	Sched	Content	Includes
		1	1	Project Need	forecast need, constraint being addressed, timing
			2	IRP Framework Guiding Principles	Addresses how the IRP Framework's guiding principles have been addressed
		2	1	Summary of Proposed IRP Plan	Explain the proposal including the alternatives to be implemented
C	Project Alternatives				
		Tab	Sched	Content	
		1	1	Facility Alternatives	Explain facility alternatives
			2	Non-Facility Alternatives	Explain non-facility alternatives
D	Proposed Project				
		Tab	Sched	Content	
		1	1	Proposed Project	Explain project, alternatives, timing, need met, technical evaluation
			2	Evaluation and Monitoring	Proposals for the ongoing monitoring and evaluation (i.e. AMI, timing)
E	Project Costs and Economics				
		Tab	Sched	Content	
		1	1	Project Costs and Economics	
			2	Project Incentives	Proposed incentives on IRP alternative
			3	DCF+ Assumptions and Analysis	Economic evaluation using DCF+ (include all three stages)
			4	Cost Recovery	Proposed approach - rate base, O&M, deferral account, cost allocation, bill im
F	Environmental Matters				
		Tab	Sched	Content	
		1	1	Environmental Matters	
			2	Attachments	
G	Land Matters				
		Tab	Sched	Content	
		1	1	Land Matters	
			2	Attachments	
H	Consultation				
		Tab	Sched	Content	
		1	1	Indigeneous Consultation	
			2	Attachments	
			3	Stakeholder Consultation	
			4	Attachments	

DRAFT

Project Schedule – Parry Sound



DRAFT

Project Schedule – Southern Lake Huron Project

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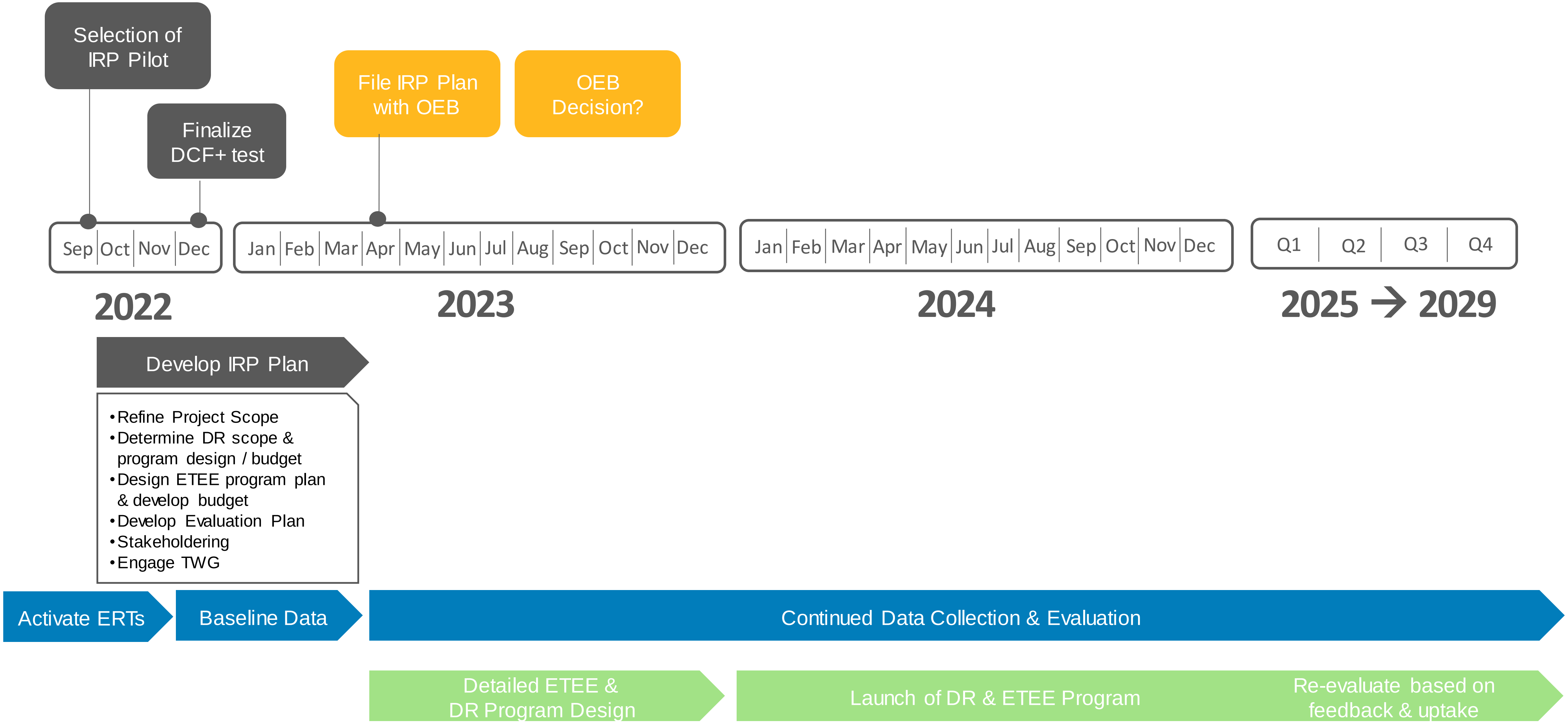

Hourly Data Collection - ERTs

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Parry Sound

- Cost to install ERTs ~$350 / ERT (*For Discussion – Number of ERTs to be installed*)
- Procurement and install timelines TBD

Southern Lake Huron

- Configuring ERTs and coordinating increased frequency of data collection required
- Additional costs for increased meter reads

IRP Technical Working Group

Meeting #16
IRP Pilots

ENBRIDGE

November 22, 2022

Agenda

- Annual Report – Discuss schedule (10 min)
- IRP Pilots filing requirements – Discuss OEB's options and next steps (10 min)
- Enbridge Pilots Update – Discuss project work streams (30 min)
- Evidence discussion (20 min)
  - Budget
  - DCF+ analysis
- DR/ETEE - Open discussion (30 min)

Annual Report

ENBRIDGE

- Enbridge has started the 2022 IRP Annual Report process

- Enbridge's proposed scheduled:
  - December-January Internal writing/reviews
  - February TWG review/comment #1
  - March TWG review/comment #2
  - April Finalize TWG Report and TWG writes report
  - May Enbridge files Annual Report

Pilot Applications – Work Tracks

- Several tracks of work are currently in flight to define detailed scope, timelines and budget of the Pilots:

Refine Facility Scope & Project Need	IRPA – ETEE Program Design	IRPA – DR Program Design	IRPA – CNG Plan
Stakeholdering	Baseline Data Collection	Monitoring, Evaluation & Audit Plan	Project Economics Application & Evidence

Pilot Applications – Work Tracks

ENBRIDGE

» Refining Facility Scope and Project Needs [Both Pilots]

- Updating facility project scopes with latest model and system updates
- [Parry Sound] Exploring potential for increase delivery pressure at TCE tap

» IRPA – CNG Plan [Parry Sound Pilot]

- DOE refining scope and CNG needs based on reduced pressures from TCE
- Engaging internal CNG/Ops team on developing plan, land requirements, budget, timelines

Pilot Applications – Work Tracks

» **IRPA – ETEE Program Design [Both Pilots]**

- Developing program design details and to engage TWG on discussion on key design elements
- Engaging Posterity for high level ETEE feasibility analysis (peak hour savings potential)

» **IRPA – DR Program Design [Southern Lake Huron]**

- Developing program design details and to engage TWG on discussion on key design elements
- Engaging other jurisdictions and thermostat suppliers to understand delivery, results and evaluation from their DR pilots
- Engaging Posterity to refine measure assumptions to allow for high level DR feasibility analysis (peak hour savings potential)

Pilot Applications – Work Tracks

ENBRIDGE

» Stakeholdering [Both Pilots]

- Completing stakeholder mapping and plan
- Arranging meetings with respective municipalities, local electric LDC and IESO to provide overview of IRP pilot, as well as their municipal energy plans, electricity needs in the area and future growth
- Coordinating to ensure IRP Pilot stakeholdering aligns with broader regional IRP stakeholdering work
- Coordinating update of IRP webpage with overview of IRP Pilots

Pilot Applications – Work Tracks

ENBRIDGE

» Baseline Data Collection

- [Sarnia] Activating ERTs (hourly meter reads) to allow for baseline data to be collected over Winter 2022/2023 – coordinating with district and operations to coordinate increase frequency in routes
- [Parry Sound] Determining procurement and install timelines for ERTs to allow for collection of baseline hourly data

» Monitoring, Evaluation & Audit Plan

- Developing data collection and analysis process with 3rd Party and internal groups
- Creating ETEE and DR Evaluation and Audit plan to audit/monitor/evaluate the effectiveness of ETEE/DR programs

Pilot Applications – Work Tracks

ENBRIDGE

» Project Economics

- For Discussion: What version of DCF+ analysis will be applied to the IRP Pilots?

» Application & Evidence

- For Discussion: Budget levels for each pilot

Discussion Items for the TWG

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- Application Timing
    - Dependent on ETEE and DR program development
- Application and evidence
    - Level of detail required for the ETEE and DR programs
- Budget
    - Discuss budget levels for each project
- ETEE and DR program design
    - Discuss program design with TWG sub-group
    - Schedule meetings
- ERTs
    - Timing and number of data collection points
    - Data analysis
- Stakeholder Engagement
    - Kick-off stakeholder engagement by meeting with municipalities, local electric LDCs, IESO to confirm system needs and community energy plans
    - Followed by geotargeted stakeholder engagement initiative as outlined in IRP framework
- Pilot Evaluation
    - Discuss pilot evaluation criteria and timing

ETEE and DR Discussion

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General

- Measurement - # of ERTs installed, sample size of pilots?
- Evaluation of pilots in other jurisdictions - level of detail/granularity in results? At a system level or customer/segment level?

DR Design

- Scope of DR program – implementing ETEE and DR in same region?
- DR design parameters – setback temperatures? Number of events? Customer incentive designs? Pre-event heating?
- Participant feedback

IRP Technical Working Group

Meeting #18
IRP Pilots

ENBRIDGE

December 20, 2022

Agenda

- Annual Report – Review Schedule (10 mins)
- Filing of Letter to OEB (5mins)
- IRP Pilots Update (45 mins)
  - Southern Lake Huron customer breakdown
  - Parry Sound Update
  - Preliminary review of budget & assumptions
- Evidence Update (10 mins)
- Other Technologies discussion (15 mins)
- DR discussion (30 mins)

Annual Report

ENBRIDGE

- Enbridge has started the 2022 IRP Annual Report process
- Enbridge's proposed scheduled:
  - December-January — Internal writing/reviews
  - February — TWG review/comment #1
  - March — TWG review/comment #2
  - April — Finalize TWG Report and TWG writes report
  - May — Enbridge files Annual Report

IRP Pilot Update

IRP Pilot Update

ENBRIDGE

» Southern Lake Huron customer breakdown

LAKESHORE

Sector	Customer Count	Peak Design Load (m3/hr)	% of Peak Design Load	% of Annual Load
Residential	4,367	5,314	90.4%	92.2%
Commercial	79	340	5.8%	5.4%
Multi-Residential	43	25	0.4%	0.4%
Industrial	11	201	3.4%	2.0%
Total	**4,500**	**5,880**	**100%**	**100%**

LAKESHORE + SARNIA CORE

Sector	Customer Count	Peak Design Load (m3/hr)	% of Peak Design Load	% of Annual Load
Residential	30,708	36,066	65.7%	67.1%
Commercial	2,223	14,024	25.6%	23.4%
Multi-Residential	697	3,944	7.2%	7.8%
Industrial	82	852	1.6%	1.7%
Total	**33,710**	**54,886**	**100%**	**100%**

IRP Pilot Update

ENBRIDGE

» Parry Sound Supply Side Alternative Update

- TCE Energy
  - Enbridge has engaged TCE to discuss potential of increased delivery pressure
  - TCE to review and determine what can be provided above the guaranteed minimum
- Emsdale Station Review
  - Engineering team reviewing station design to determine additional upgrades and impact on pressure differential across station
  - Preliminary Analysis: CNG would still be required for 2023, but would help reduce the scope of the facility project
- CNG Plan
  - CNG team developing plan and station work required in the even that increase pressure from TCE is not available
- Supply side alternatives will be compared in combination to determine best path forward

IRP Pilot Update

ENBRIDGE

» ERT & Data Collection

- Southern Lake Huron
  - ERTs have been enabled to start collecting hourly data
  - Coordinating with districts to acquire extra personnel to support increase frequency in meter reading
  - Replacement for defective ERTs on system to occur in 2023
- Parry Sound
  - Coordinating with district to install ERTS in early 2023
  - Applied stratification of customers to support prioritization of ERT installs (i.e. vintage, owner/tenant, energy usage)
- Developing data collection & analysis process with 3rd Party & internal groups

IRP Pilot Update

ENBRIDGE

» IRPA – ETEE & DR Program Design

- Developing program design details and proposed go-to market strategy
- Developing high level budgets and potential savings based on various assumptions
- Engaged other jurisdictions and stakeholders to understand delivery and applicability of DR

» Stakeholdering [Both Pilots]

- Parry Sound – met with municipal staff, HONI, IESO and local LDC last week to provide an overview of pilots
  - First of series of meetings to engage with local municipality in the development and implementation of the pilot, and explore potential synergies with IESO and local LDC
  - Next step: Hold a public webinar in early Q1 for public input
- Southern Lake Huron – Similar type of meeting set up for January
- Preparing update of IRP webpage with overview of IRP Pilots

IRP Pilot Update

ENBRIDGE

» Preliminary Budget – Parry Sound [Draft w/ placeholder assumptions]

	2022	2023	2024	2025	2026	2027	Total
Supply Side – CNG							
CNG Truck	$0	$145,000	$145,000	$145,000	$145,000	$145,000	**$725,000**
Station Modifications / Injection (TBD)							
Total CNG	$0	$145,000	$145,000	$145,000	$145,000	$145,000	**$725,000**
Supply Side – Emsdale Station Upgrade							
Station Modifications (reduce pressure differential)	$0	$750,000	$0	$0	$0	$0	**$750,000**
Total Station	$0	$750,000	$0	$0	$0	$0	**$750,000**
Total Pilot Costs - Supply Side	**TBD – more detailed review needed to consider supply side alternatives in combination**						
Demand Side - ETEE							
Incentive Costs	$0	$0	$211,591	$211,591	$211,591	$211,591	**$846,364**
Programming Costs	$0	$0	$100,286	$100,286	$100,286	$100,286	**$401,144**
IRPA (ETEE) Programming Subtotal	**$0**	**$0**	**$311,877**	**$311,877**	**$311,877**	**$311,877**	**$1,247,508**
Portfolio Overheads	$0	$0	$186,306	$186,306	$186,306	$186,306	**$745,226**
IRPA (ETEE) Total	**$0**	**$0**	**$498,183**	**$498,183**	**$498,183**	**$498,183**	**$1,992,734**
Pilot Specific Costs							
ERTs Install (400 units)	$0	$60,000	$0	$0	$0	$0	**$60,000**
Meter Reading	$0	$7,000	$7,000	$7,000	$7,000	$7,000	**$35,000**
Posterity Analysis	$13,000	$9,720	$0	$0	$0	$0	**$22,720**
Evaluation - Data	$0	$0	$10,000	$10,000	$10,000	$10,000	**$40,000**
Evaluation - Market Research	$0	$0	$5,000	$5,000	$5,000	$5,000	**$20,000**
Total Pilot Specific Costs	$13,000	$76,720	$22,000	$22,000	$22,000	$22,000	**$164,720**
Total Pilot Costs (ETEE + Pilot Specific)	$13,000	$76,720	$520,183	$520,183	$520,183	$520,183	$2,157,454

IRP Pilot Update

ENBRIDGE

» Example – Parry Sound ETEE Year 1 Results – Comparison of Assumptions

Assumptions

	# of Customers	Peak Demand (m3/hr)	% Annual uptake	% Peak Savings	# of participants	Peak Demand Available (m3/hr)	Peak Demand Savings (m3/hr)	IRPA ETEE Budget
Residential	1,619	1,821.8	2.5%	15%	40	46	6.8	$1,992,734
Commercial	255	2,265.3	2.5%	15%	6	57	8.5	
Multi-Res (if available)	164	192.7	2.5%	15%	4	5	0.7	
Industrial	9	219.0	2.5%	15%	0.2	5	0.8	
					51	**112**	**16.9**	

Assumptions

	# of Customers	Peak Demand (m3/hr)	% Annual uptake	% Peak Savings	# of participants	Peak Demand Available (m3/hr)	Peak Demand Savings (m3/hr)	IRPA ETEE Budget
Residential	1,619	1,821.8	5.0%	30%	81	91	27.3	$3,621,590
Commercial	255	2,265.3	5.0%	30%	13	113	34.0	
Multi-Res (if available)	164	192.7	5.0%	30%	8	10	2.9	
Industrial	9	219.0	5.0%	30%	0.5	11	3.3	
					102	**225**	**67.5**	

- Estimating peak demand savings based on assumed % uptake and % peak savings
- Varied assumption levels from modest to aggressive to illustrate potential range of budget and savings
- Aggressive scenario budget also considers incenting total project costs (beyond incremental)
- Larger customers will be reviewed in more detail (i.e. engaged hospital to discuss opportunities)

Application and Evidence - Discussion

ENBRIDGE

- Enbridge will file one application for both IRP pilot projects
- Evidence will include details regarding:
  - Description of the pilots and the pilot objectives
  - Identified need, reason for the need, location, timing
  - Technical overview of the facility solution and IRP alternatives
  - Economic review of the facility solution and IRP alternatives
  - Explanation at a high level of the ETEE and DR programs to be implemented
  - A budget range for each pilot project including pilot costs and non-pilot costs
  - A summary of the stakeholder discussions (e.g. municipalities, local electric LDC)
- Enbridge will request approval of the projects as soon as possible to ensure implementation for Winter 2023/2024

Other Technologies

Gas Heat Pumps (GHP)

ENBRIDGE

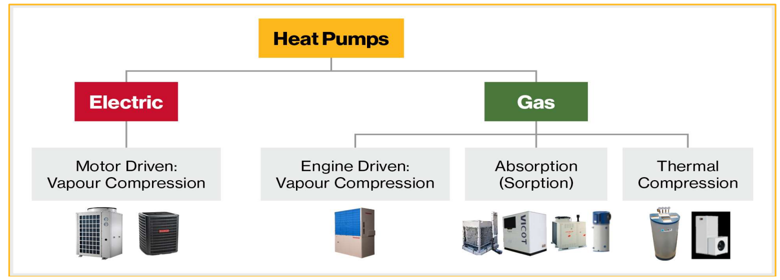
HVAC equipment similar to electric heat pumps. In a GHP, the electric compressor is replaced with either an engine driven or thermally driven compression that uses natural gas.

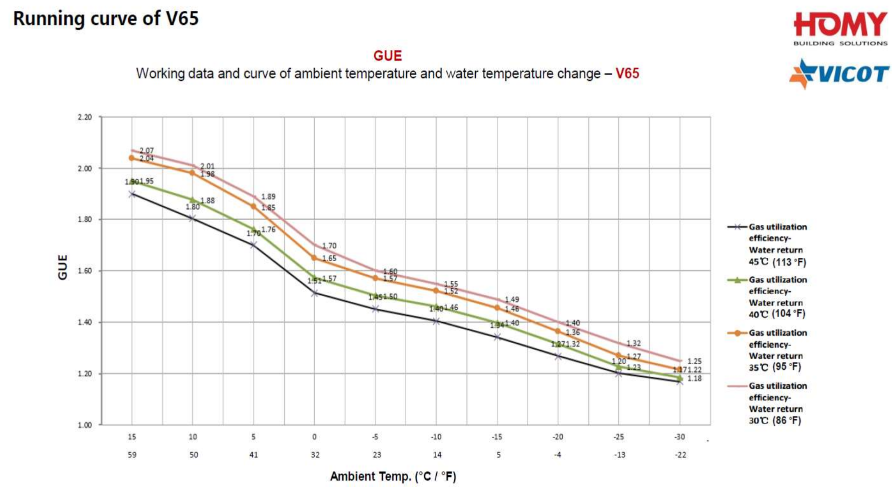
Benefits:

- Delivers greater than 100% efficiency
- Maintains capacity and high performance in very cold weather
- Reduces GHG emissions, energy and cost for customers
- Uses zero Global Warming Potential (GWP) natural refrigerants
- Able to use carbon neutral fuels such as RNG and Hydrogen to achieve net-zero emissions by 2050.

Technology Readiness:

- Two GHP products are commercially available now for the commercial sector
- Three residential GHP products are on track to be commercially available for the North American market in 2023





Hybrid Heating

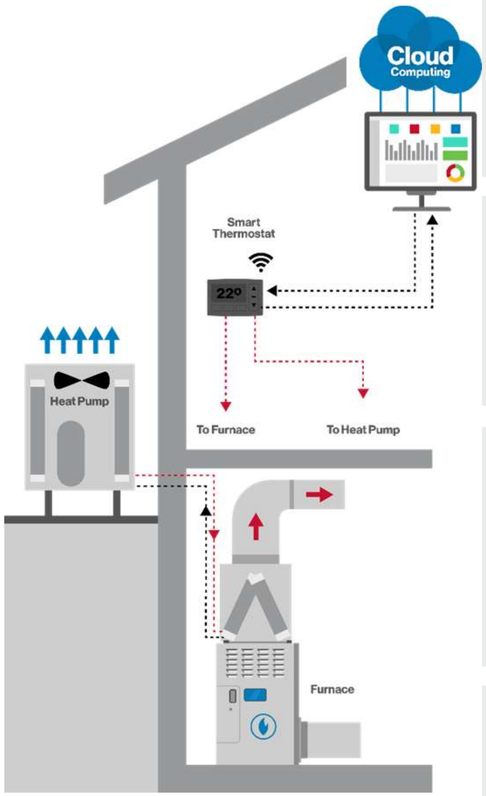
A system that adjusts to the most efficient energy saving method available to heat a home using technologies with varying fuel sources. Can combine gas furnace or combo-system with an electric air source heat pump (eASHP)

Benefits:

- When controlled and sized properly, the eASHP can operate longer in colder months and be used to reduce peak gas
- Better energy efficiency than traditional gas appliance
- Provides customer energy cost resilience by choosing most effective technology at a given time.
- Maintain thermal comfort
- Can help reduce GHG emissions if switching from a purely fossil-fuel-burning system.

Technology Readiness:

- Commercially ready components, further development of smart controllers in progress
- Re-configuration of eASHP coil for peak gas demand reduction is still in field testing and data collection ongoing



Furnace provides assurance of thermal comfort on cold winter days

Heat pumps provide shoulder season heating using spare capacity on the electric grid

Smart controls respond to price signals to achieve GHG reductions without increasing energy costs

A dual-fuel system is a hedge to uncertain energy costs

Thermal Energy Storage

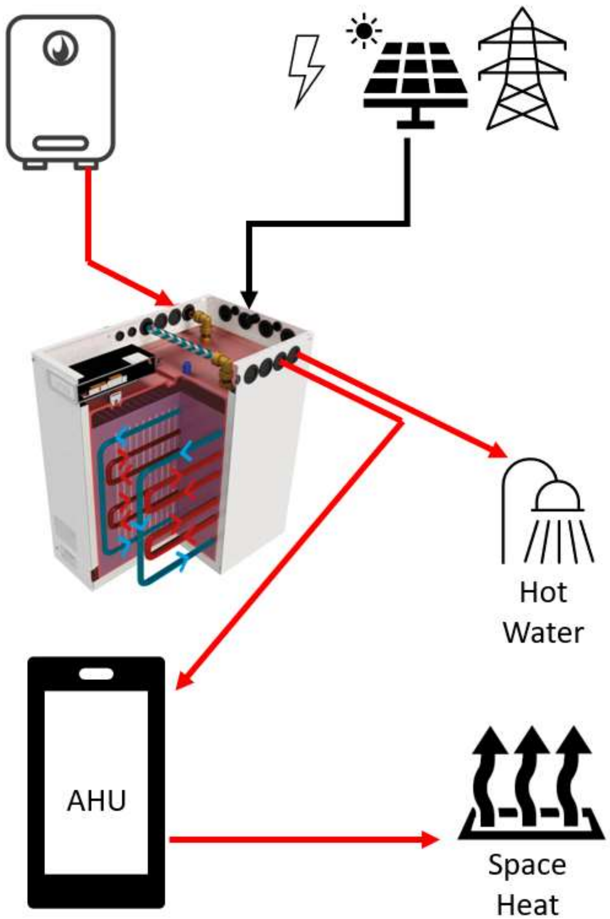
A system that stores thermal energy generated by either gas or electric equipment to be used for heating applications. Depending on cleanliness of grid, a controller in the home can switch between highly efficient gas equipment (ie. tankless/boiler) or from affordable clean power (e.g. overnight).

Benefits:

- Can be used to reduce peak gas demand by charging tank with grid electricity or by using smart controls to delay gas charging to off-peak times.
- Significantly reduces GHG emissions
- Provides resiliency
- Low-cost solution for DHW electrification without impacting grid peak load

Technology Readiness:

- Mostly commercially ready components (thermal storage equipment, water heater etc.)
- Further development of smart controllers in progress



DR Open Discussion

IRP Technical Working Group

Meeting #20
IRP Pilots

ENBRIDGE

January 24, 2023

Agenda

ENBRIDGE

- Follow up on AMI/AMR (5 mins)
- AMP Appendix B Update (20 mins)
- Pilots Update (1hr 30 mins)
  - General Update
  - Review Application
  - Review ETEE & DR Details
  - Discussion on key questions
- Wrap up (5 mins)

AMI/AMR

AMI / AMR Pilot

ENBRIDGE

- EBO 499 Settlement Agreement excerpt (B.3.1):

  Union currently has a pilot project in Sarnia. The purpose of the pilot is not to test the technology which is already proven, but rather to confirm the economic assumptions of AMR internal to Union. The total cost of the pilot is estimated at $2.6 million. Union also indicated its intention to continue with the pilot evaluation and, subject to confirming the economic benefits, Union intends to proceed with the rollout of the AMR project as outlined in the evidence at B1/T3. The parties agree that the implementation of the AMR project should not proceed until the results of the pilot have been evaluated by Union, and that, therefore, Union's 1999 capital budget should be reduced by $2.1 million.

- As part of Union Gas' 2004 rates application Union noted that based on the results of the Sarnia pilot project, it could not cost justify a mobile meter reading system. Union Gas determined that there would be no material savings from a shift to mobile meter reading. The technological and cost circumstances had not changed significantly since then, but Union committed to continue to monitor the environment for opportunities.

AMP Appendix B Update

IRP Assessment Process Results (To Date)

ENBRIDGE
Life Takes Energy

2023-2032 AMP

3,087 Projects
(Total)

Initially Screened
2023-2032 AMP

2,284 Projects
(Gas Carrying Assets)

Binary Screened
2023-2032 AMP

892 Projects

Technically Evaluated
2023-2032 AMP

(Status : In Progress)

CNG, Market Based Supply Side. Demand Response, ETEE and other technology alternatives being assessed for feasibility and value of IRP Implementation based on likelihood of IRPAs implementation eliminating, reducing or deferring the project scope. Assessment being prioritized for projects with ISD ≤ 2028.

IRP Value Rank

High – IRPAs have high technical feasibility for implementation to impact project scope

Medium – IRPAs have medium technical feasibility for implementation to impact project scope

Low – IRPAs have low technical feasibility for implementation to impact project scope

Progress To Date:
- Completed: 203
- To Be Assessed: 327

Economic Evaluation will be prioritized for assessment based on the IRP Value Rank from the Technical Screening

Screening Criteria
- Non- gas carrying assets

Screening Criteria
- Emergent Safety Issues
- Timing
- Customer-Specific Builds
- Community Expansion and Economic Development
- Pipeline Replacement and Relocation Projects

Screening Criteria
- Compression Stations
- Customer Connections
- Hydrogen Related
- Storage Pools & Wells
- Misc

Initially Screened out
2023-2032 AMP

803 Projects
(Non – Gas Carrying Assets)

Binary Screened out
2023-2032 AMP

1392 Projects

Technically Evaluated out
2023-2032 AMP

362 Projects (to date)

Legend
- Initial Screening
- Binary Screening
- Technical Evaluation

IRP Pilot Update

IRP Pilot – Detailed Work Stream Update

ENBRIDGE

PARRY SOUND PILOT

Work Streams	Update
» Supply Side IRPA	Reviewing the alternatives for supply side in combination to determine most beneficial impact to facility project. • No update from TC Energy on potential for pressure increase • CNG plan in development • Emsdale Station modification to reduce pressure differential still being reviewed by Engineering Team
» Demand Side – ETEE	To be reviewed in later slides
» Stakeholder Engagement	• Completed first meeting with Municipality, IESO, Hydro 1, LDC in December. • Additional sessions being planned to seek feedback regarding system planning, regional needs assessment and the IRP alternatives being proposed. • Update to the IRP webpage with an overview of Pilots anticipated for end of January
» Baseline Data Collection – ERTs	Coordinating with the Regional Operations for ERT installs.
» Data Analysis & Evaluation	Engineering exploring options to support analysis of hourly data.

IRP Pilot – Detailed Work Stream Update

ENBRIDGE

SOUTHERN LAKE HURON PILOT

Work Streams	Update
» Demand Side – ETEE & DR	To be reviewed in later slides
» Stakeholder Engagement	• Completed first meeting with Municipality, IESO, LDC last week. • Additional sessions being planned to seek feedback regarding system planning, regional needs assessment and the IRP alternatives being proposed. • Update to the IRP webpage with an overview of Pilots anticipated for end of January
» Baseline Data Collection – ERTs	Additional resources acquired to support increased meter reads.
» Data Analysis & Evaluation	Engineering exploring options to support analyzing of hourly data

Application and Evidence - Discussion

ENBRIDGE

- Evidence will include details regarding:
  - Description of the pilots and the pilot objectives
  - Identified need, reason for the need, location, timing
  - Technical overview of the facility solution and IRP alternatives
  - Economic review of the facility solution and IRP alternatives
  - Explanation at a high level of the ETEE and DR programs to be implemented
    - » For discussion – level of detail
  - A budget range for each pilot project including pilot costs and non-pilot costs
    - » For discussion – cost test methodology
  - A summary of the stakeholder discussions (e.g. municipalities, local electric LDC)
- Targeting filing for April 2023

IRPA ETEE & DR

Scope and Customer Analysis

Scope of Programming

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- Parry Sound (2024 start)
  - ETEE programming for residential, commercial (incl. multi-res), and industrial customers

- Southern Lake Huron (late 2023 start)
  - Lakeshore Area
    - ETEE programming for residential customers
  - Entire Southern Lake Huron Area (incl. Sarnia core & Lakeshore)
    - ETEE programming for small/medium commercial customers (for larger sample size for learnings)
    - DR programming for residential customers (for larger sample size for learnings)

- Term of pilots – To be finalized – late 2023-2026 (3 heating seasons) with potential extension

Parry Sound Customers

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- The core focus of this area would be residential, small/medium commercial and a hospital
  - Residential – majority (97%) of homes are single/semi-detached
  - Small/medium commercial – ~245 of customers are less than <100K m3/yr; 28% of total annual load (e.g. offices, retail, restaurants, hotels)
  - Hospital – largest gas consumer in area - energy audit currently underway through broad-based DSM

Sector	Customer Count	Sum of Current Design Load (m3/hr)	Current Design Load % (m3/hr)	WN 2021 Annual Load % (m3/yr)
RESIDENTIAL	1,619	1,817	40.4%	36.9%
COMMERCIAL	255	2,265	50.4%	52.1%
MULTI-RES	164	193	4.3%	4.2%
INDUSTRIAL	9	219	4.9%	6.9%
Grand Total	**2,047**	**4,494**	**100.0%**	**100.00%**

WN = weather normalized

ENBRIDGE

Southern Lake Huron Customers (LAKESHORE)

- The core focus of this area would be residential and small/medium commercial
  - Residential – majority (98%) of homes are single/semi-detached; accounts for the majority of demand in the area
  - All commercial customers are below 100K m3/yr in WN consumption
    - Relatively small population of commercial customers in area
    - Only 1 industrial between 100K-150K m3/yr in WN consumption

Sector	Customer Count	Sum of Current Design Load (m3/hr)	Current Design Load % (m3/hr)	WN 2021 Annual Load % (m3/y)
RESIDENTIAL	4,367	5,314	90.4%	92.2%
COMMERCIAL	79	340	5.8%	5.4%
MULTI-RES	43	25	0.4%	0.4%
INDUSTRIAL	11	201	3.4%	2.0%
Grand Total	**4,500**	**5,880**	**100%**	**100%**

WN = weather normalized

Southern Lake Huron Customers (ALL SARNIA)

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- The core focus of this area would be residential and small/medium commercial/industrial
  - Residential – majority (95%) of homes are single/semi-detached; majority of the consumption in the area
  - Small-medium commercial customers (<100K m3/yr) make up 18% of the total annual load (e.g. retail, hotels, schools, restaurants)
  - Large C/I customers (>100K m3/yr) make up 6% of the total annual load (non-contract customers – Office, Retail, Food Processing)

Sector	Customer Count	Sum of Current Design Load (m3/hr)	Current Design Load % (m3/hr)	WN 2021 Annual Load % (m3/y)
RESIDENTIAL	30,708	36,066	65.7%	67.1%
COMMERCIAL	2,223	14,024	25.6%	23.4%
MULTI-RES	697	3,944	7.2%	7.8%
INDUSTRIAL	82	852	1.6%	1.7%
Grand Total	**33,710**	**54,886**	**100%**	**100%**

Includes Lakeshore region, WN = weather normalized

Enhanced Targeted Energy Efficiency (ETEE)

Residential Programming

- Leverage the DSM HER+ offer (NRCAN Greener Homes Partnership) and enhance by providing additional incentives above standard offering for targeted measures
  - Targeted measures: attic insulation, wall insulation, basement insulation, exposed floor insulation, air sealing, space heating heat pump (TBD)
  - Numerous issues need addressing before ETEE implementation (e.g. contract with NRCAN, incentivizing electric measures that is in DSM framework, savings attribution)
- Service organizations to deliver enhanced offer
- Customer-specific engagement in the selected community
  - Engagement with municipality/contractors; engagement with residential customers through community events

Small-Medium Commercial Programming

ENBRIDGE

- Leverage the existing DSM commercial direct install (DI) offer and enhance by providing 100% of the cost for all space heating end use measures
  - Targeted measures: Air curtains, door seals, destratification fans, demand control kitchen ventilation, demand control ventilation, energy & heat recovery ventilators (incl. in-suite)
  - 100% cost coverage is not provided for all DI measures in broad-based DSM
- ETEE DI delivery expected to align with existing DSM DI offering at the time of ETEE rollout
  - Additional admin cost may be required for the delivery partner(s) to focus project uptake in selected areas
- Customer-specific engagement in the selected community
  - Engagement with municipality, business organizations, and contractor

Large Commercial/Industrial Programming

- Leverage the existing DSM custom offer and enhance by providing additional incentives above existing DSM offer
  - Targeted measures: primarily measures with space heating end use loads and measures that can significantly reduce peak hours loads of system (generally winter morning periods)
- Limited to non-contract customers
- Delivery to be determined whether through a dedicated internal energy advisor resource or through a third-party consultant/engineering firm

Potential Marketing Tactics

- Dedicated pilot project landing pages
- Sales support materials
- Targeted Direct Mail
- Targeted eblasts
- Outbound call campaigns
- Paid digital and social media marketing (Facebook, Instagram, Google Search, YouTube)
- Community outreach events

*Marketing tactics will be selected based on availability of budget, delivery channel, and anticipated performance metrics, where the most cost-effective tactics with best reach will be selected

Key Questions for Pilots

ENBRIDGE

- HER+ with enhanced heat pump incentive under IRP
- Attribution and allocation of savings and funding
- Allocation of DSM resourcing
- Pilot budget contingencies related to uncertainty on delivery across years of pilot (i.e. unused budget in one year can be used in next year(s))

Demand Response

Residential Programming

ENBRIDGE

- A new-to-market residential demand response offer targeting gas-space heated customers with an eligible smart thermostat (bring-your-own thermostat)
  - Could potentially offer incremental incentives beyond DSM Smart Home offer level in efforts for greater sample size and impact
- An initial incentive provided upon enrollment into program and annual incentive provided at the end of each heating season for eligible participants
- DERMS (Distributed Energy Resources Management System) provider required for delivery of the DR program (potential RFP issuance)

IRP Technical Working Group

Meeting #22
IRP Pilots

ENBRIDGE

February 21, 2023

Agenda

- Review previous meeting items (10 mins)
- Pilots Update (1hr 15 mins)
  - General Update
  - ETEE Discussion
  - Evaluation Discussion
- Wrap up (5 mins)

IRP Pilot Update

IRP Pilot – Detailed Work Stream Update

ENBRIDGE

PARRY SOUND PILOT

Work Streams	Update
» Supply Side IRPA	Reviewing the alternatives for supply side in combination to determine most beneficial impact to facility project. Finalizing scopes & costs. • No update from TC Energy on potential for pressure increase • CNG plan & review of site • Emsdale Station modification to reduce pressure differential • Development of Unsteady State Model (USM) for system
» Demand Side – ETEE	• Continuing to develop program design and budgets for ETEE program
» Stakeholder Engagement	• Second session planned with municipality & IESO/Hydro1/LDC this week • Update to the IRP webpage with an overview of Pilots anticipated for end of February
» Baseline Data Collection – ERTs	• Coordinating with the Regional Operations for ERT installs.
» Data Analysis & Evaluation	• Engineering exploring options to support analysis of hourly data. • Additional details on later slides

IRP Pilot – Detailed Work Stream Update

ENBRIDGE

SOUTHERN LAKE HURON PILOT

Work Streams	Update
» Demand Side – ETEE & DR	• Continuing to develop program design and budgets for ETEE & DR program • Connected with DERMS & OEMs to understand their support in delivery of DR programs. • Connected with IESO to understand their DR program and potential for collaboration
» Stakeholder Engagement	• Completed second meeting with Plympton-Wyoming • Second session planned with remaining municipal representatives & IESO/Hydro 1/LDC later this week • Update to the IRP webpage with an overview of Pilots anticipated for end of February
» Baseline Data Collection – ERTs	• On-going
» Data Analysis & Evaluation	• Engineering exploring options to support analysis of hourly data. • Additional details on later slides

ETEE Discussion

Programming Uptake

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Uptake Example in Pilot Areas	Annual Uptake %
Broad Based DSM	~0.2% - 0.7%
Incremental Budget Scenario Analysis	~0.3% - 1.0%

- What type of uptake has been seen in other jurisdictions for comprehensive programming (e.g. whole building envelope offers, direct install offers etc.)?
- Uncertainty exists on what is achievable for an ETEE program
- Northwest Natural (Oregon) preliminary ETEE pilot results (next slide)

Programming Uptake – NW Natural ETEE Pilot

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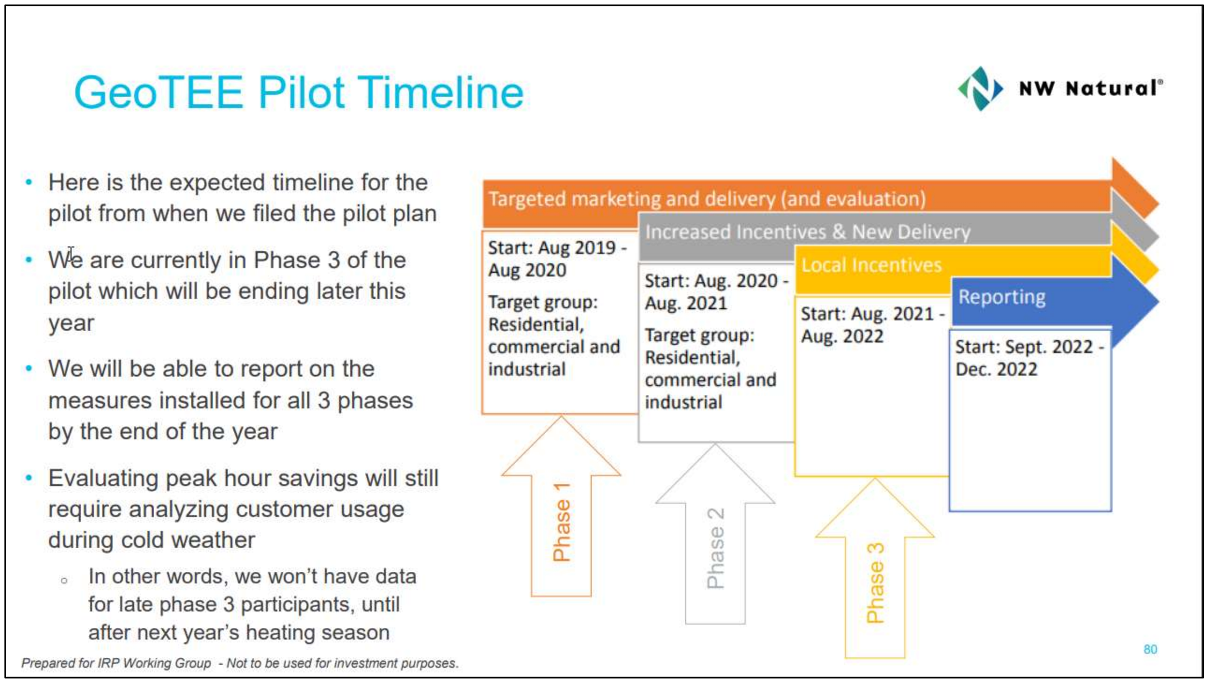

- From NW Natural TWG 5 Slides - Apr 25, 2022
- https://www.nwnatural.com/about-us/rates-and-regulations/resource-planning

Programming Uptake – NW Natural ETEE Pilot

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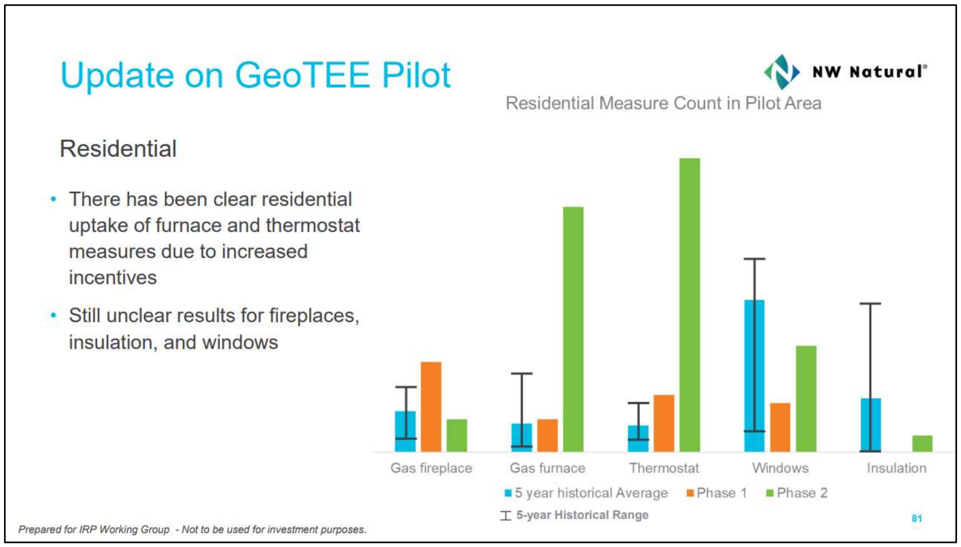
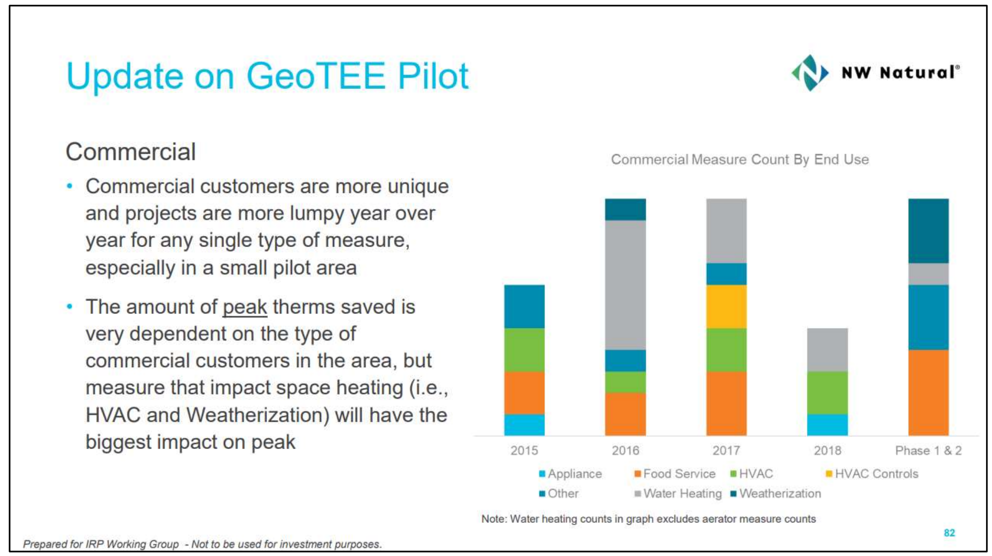




- From NW Natural TWG 5 Slides - Apr 25, 2022
- https://www.nwnatural.com/about-us/rates-and-regulations/resource-planning

ETEE Programming Incentives

Measure	Broad Based DSM Incentive Coverage*	Proposed Limited Enhanced Offer (LEO) Incentive Coverage
CI Direct Install – Air Curtains	Up to 90% of the install cost	100% of install cost
CI Direct Install – DCKV	Up to 87% of the install cost	100% of install cost

- To discuss - DSM cost coverage for the amount and IRP to cover the incremental top-up
  - How would savings be attributed?

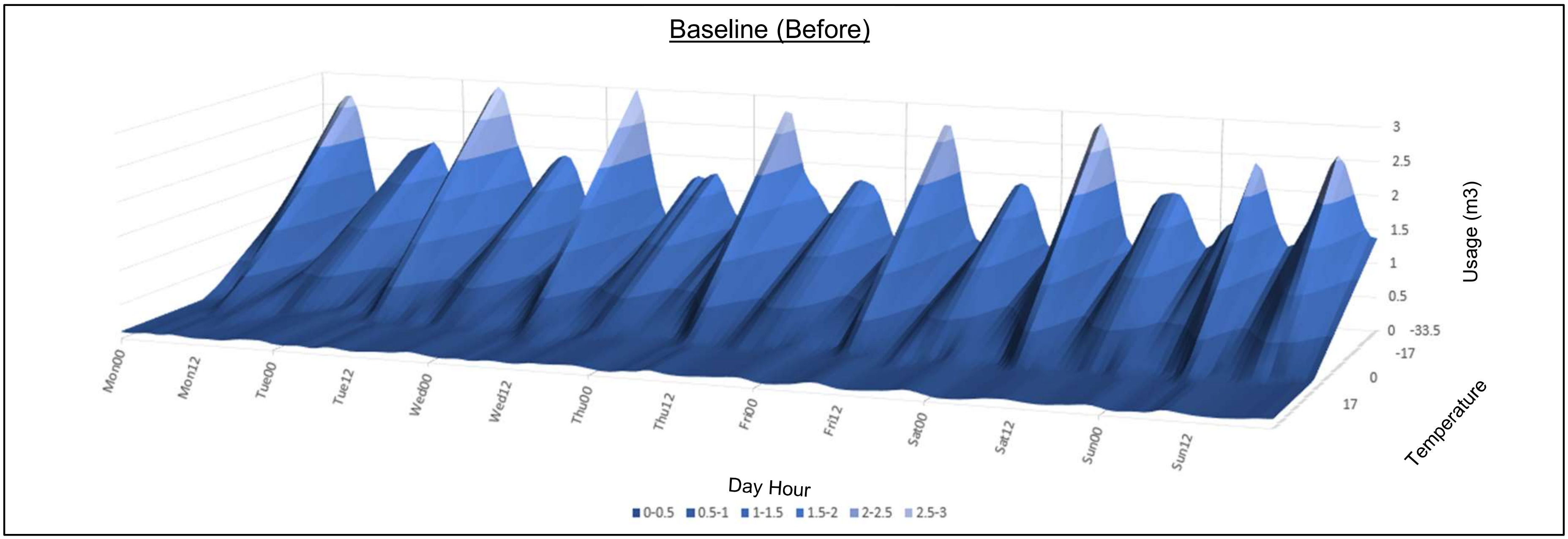
* Subject to additional offer requirements and limitations. Used for discussion purposes.

Data Analysis & Evaluation

Preliminary Review

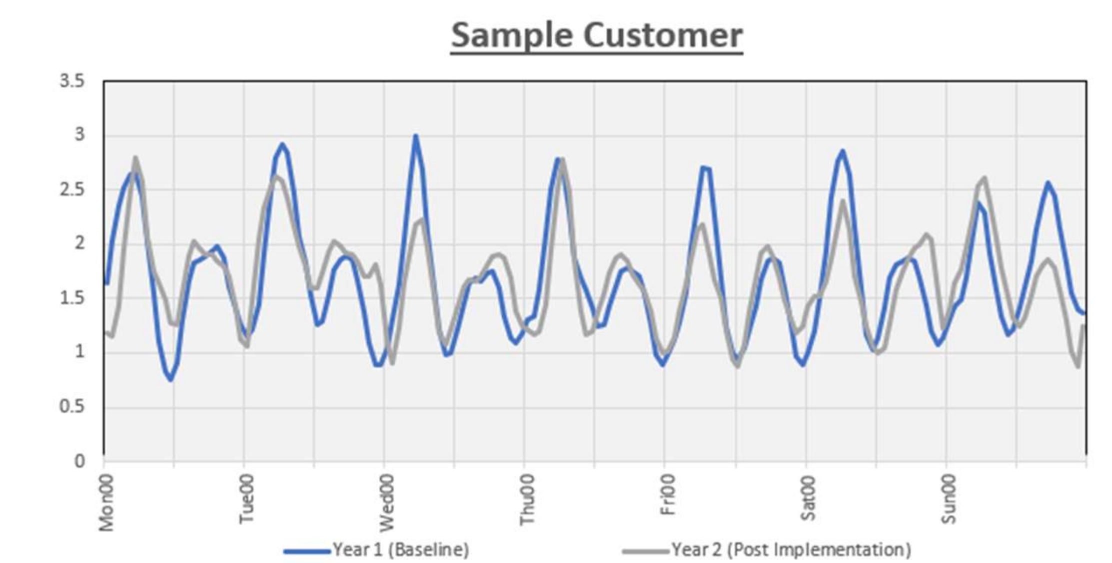
Proposed Data Analysis

- Using industry leading in-house analysis tools leveraging hourly consumption and weather data, create 168 hour (7 day x 24 hour) 3 dimensional profiles for each customer (and possibly groups of customers) as illustrated below.



Proposed Comparison

- Compare Baseline results to Post Implementation results at design conditions to quantify the overall Peak Hourly and Peak Daily changes



<u>Design Peak Hourly</u>

Year 1 = 2.99 m3/hr at Wed05

Year 2 = 2.8 m3/hr at Mon05 (Change = -6.89%)

<u>Design Peak Daily</u>

Year 1 = 42.59 m3/d on Sun

Year 2 = 46.41 m3/d on Tue (Change = 8.24%)

Proposed Assessment/Evaluation

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- Utilizing factors calculated during data analysis, attempt to determine which lever(s) the implemented incentives affected and how much

Levers	Example
» Base Load	Adding/Removing/Changing non-heating equipment: • Stoves • BBQs • Water Heaters • Clothes Dryers
» Base Temperature	Adding/Removing/Changing when gas heat is needed: • Building Envelope Changes • Set Back Thermostats • Alternate Fuel Heating
» Heating Factor	Adding/Removing/Changing the gas heating equipment: • Furnace Efficiency • Dual/Variable Stage • Heat Exchangers

- Distinguishing incentivized changes from behavioral changes will be a significant challenge (including changes in work and recreational schedules, changes in # of occupants & visitors, changes in habits, etc.)

IRP Technical Working Group

Meeting #23

DCF+ & IRP Pilots

ENBRIDGE

March 21, 2023

Agenda

- DCF+ Discussion (1 hr)
- IRP Pilots Update (15 mins)
  - General Update
  - Application Update
- Annual Report Discussion (40 mins)
- Wrap Up (5 mins)

IRP Pilots Update

IRP Pilot – Detailed Work Stream Update

ENBRIDGE

PARRY SOUND PILOT

Work Streams	Update
» Supply Side IRPA	Reviewing the alternatives for supply side in combination to optimize the facility/system need: • TC Energy responded with potential for temporary pressure increase for the following two winters; pending written confirmation • Timing for CNG to be updated • Timing for Emsdale Station upgrade to be updated • Development of Unsteady State Model (USM) for system
» Demand Side – ETEE	• Continuing to develop program design and budgets for ETEE program
» Stakeholder Engagement	• Completed 2nd stakeholdering session with municipality & IESO/Hydro1/LDC • IRP webpage with an overview of the Pilots is live • Mapping out timeline for public engagement and for obtaining letter of support from Council
» Baseline Data Collection – ERTs	• Coordinating with the Regional Operations for ERT installs. • Exploring procurement of additional ERTs
» Data Analysis & Evaluation	• Developing evaluation plan for pilots.

IRP Pilot – Detailed Work Stream Update

ENBRIDGE

SOUTHERN LAKE HURON PILOT

Work Streams	Update
» Demand Side – ETEE & DR	• Continuing to develop program design and budgets for ETEE & DR program • Touchpoint set up with IESO in early April to reconnect on their DR program and potential for collaboration
» Stakeholder Engagement	• Completed 2nd stakeholdering session with municipality & IESO/Hydro1/LDC • IRP webpage with an overview of Pilots is live • Mapping out timeline for public engagement and for obtaining letter of support from Council
» Baseline Data Collection – ERTs	• Collecting data from existing ERTs, on-going
» Data Analysis & Evaluation	• Developing evaluation plan for pilots.

IRP Pilot Application

Proposed Draft Timelines:

- April 18 – Enbridge to summarize key items & provide budget overview
- May 2 – Enbridge to send out draft evidence to TWG
- May 9 – Additional TWG Meeting to discuss and gather written feedback
- May 26 – Enbridge to file application

Annual Report Discussion

IRP Technical Working Group

Meeting #24

ENBRIDGE

April 18, 2023

Agenda

- IRP Pilots Update (1 hr)
- DCF+ Discussion (20 mins)
  - DCF+ Paper
  - Next steps
- Annual Report (20 mins)
  - Kingston
  - Comments timing
  - Timing of TWG Report
- Plan for 2023 (20 mins)
  - See OEB Staff presentation

IRP Pilots Update

Summary of Parry Sound

ENBRIDGE

- Supply Side IRPA – TCE Pressure increase for 2023 & 2024
- Supply Side IRPA - CNG to act as bridging solution for 2025 – 2027
- Demand Side IRPA – ETEE Program from 2024 – 2026
- Based on estimated savings, scope of facility project is reduced from 11.3km to 8.2km.

Scope of Facility & Proposed Pilot

	Baseline Project	Propose Pilot			
	Facility	TCE Pressure	CNG	ETEE	Facility
2023	-	4570 kPa	-	-	-
2024	-	4570 kPa	-	Y	-
2025	Emsdale Stn Rebuild	4000 kPa	Y	Y	-
2026	-	4000 kPa	Y	Y	-
2027	Reinforcement 11.3 km of NPS 6 4960 kPa MOP	4000 kPa	~	-	Emsdale Stn Rebuild
2028	-	4000 kPa	-	-	-
2029	Reinforcement 0.8 km of NPS 4 1725kPa MOP	4000 kPa	-	-	-
2030	-	4000 kPa	-	-	Reinforcement 8.2km of NPS 6 4960 kPa MOP
2031	-	4000 kPa	-	-	Reinforcement 0.6km of NPS 4 (1725kPa MOP)
Cost	**$29.6 M**	**TBD ($0.3 M)**	**$0.5 M**	**$3.2 M**	**$25.4 M**

Total Parry Sound Budget

CNG & TCE Pressure Reduction	$800,000
ETEE (Enhanced DSM)	$1,967,420
ETEE (New Technologies)	$1,252,500
Stakeholdering	$12,500
Measurement & Evaluation	$1,811,000
Other / Admin	$637,500
TOTAL	**$6,480,920**

ETEE - Budget Breakdown

	2023	2024	2025	2026	Total
ETEE - Enhanced DSM	$22,720	$705,600	$636,500	$602,600	$1,967,420
Incentive Cost	$0	$216,000	$199,000	$216,000	$631,000
Promotion & Delivery	$0	$469,000	$419,000	$369,000	$1,257,000
Admin Cost	$22,720	$20,600	$18,500	$17,600	$79,420
ETEE - New Technology	$0	$295,000	$449,300	$508,200	$1,252,500
Incentive Cost	$0	$244,800	$378,600	$429,600	$1,053,000
Promotion & Delivery	$0	$41,600	$57,600	$63,800	$163,000
Admin Cost	$0	$8,600	$13,100	$14,800	$36,500
Total ETEE Program	**$22,720**	**$1,000,600**	**$1,085,800**	**$1,110,800**	**$3,219,920**

Estimated ETEE Impacts

	# of Participants	Peak Hour Savings (m3/hr)
Enhanced DSM	189	111
New Technologies	121	48
Total	310	159

* Note: Scope and budgets are draft and not finalized.

Summary of Southern Lake Huron

ENBRIDGE

- Supply Side IRPA - CNG in Major Influence Area to act as bridging solution
- Demand Side – ETEE in Major Influence Area (Res/CI)
- Demand Side – ETEE in Sarnia Core (Com/Ind)
  - Recommendation to remove from pilot scope due to high costs and no impact to the facility project
- Demand Side – DR in all of Sarnia (Residential)
- Based on estimated savings, scope of facility project would be deferred.

Total SLH Budget (Draft)

CNG	$525,000
ETEE - Major Influence Area	$1,486,220
ETEE - Sarnia Core (Com/Ind)	$5,423,400
DR	$955,300
Stakeholdering	$12,500
Measurement & Evaluation	$2,714,400
Other / Admin	$637,500
TOTAL	**$11,754,320**

Scope of Facility & Proposed Pilot

	Baseline	Proposed Pilot		
	Facility	CNG	ETEE	Facility
2023	-	-	-	-
2024	-	-	Y	-
2025	Reinforcement: 1600m NPS 6 420kPa + New Station	Y	Y	-
2026		Y	Y	-
2027		Y	-	-
2028		-	-	Reinforcement: 1600m NPS 6 420kPa + New Station
Cost	$1.6 M	$0.5 M	$1.5 M	$1.6 M

Proposed SLH Budget

CNG	$525,000
ETEE - Major Influence Area	$1,486,220
DR	$955,300
Stakeholdering	$12,500
Measurement & Evaluation	$1,415,000
Other / Admin	$637,500
TOTAL	**$5,031,520**

* Note: Scope and budgets are draft and not finalized.

SLH – ETEE/DR Breakdown

ENBRIDGE

Total SLH Budget (Draft)

CNG	$525,000
ETEE - Major Influence Area	$1,486,220
ETEE - Sarnia Core (Com/Ind)	$5,423,400
DR	$955,300
Stakeholdering	$12,500
Measurement & Evaluation	$2,714,400
Other / Admin	$637,500
TOTAL	**$11,754,320**

ETEE/DR - Budget Breakdown

	2023	2024	2025	2026	Total
Major Influence Area - ETEE	**$32,720**	**$538,100**	**$483,200**	**$432,200**	**$1,486,220**
Incentive Cost	$0	$294,700	$291,400	$291,900	$878,000
Promotion & Delivery	$0	$227,700	$177,700	$127,700	$533,100
Admin Cost	$32,720	$15,700	$14,100	$12,600	$75,120
Sarnia Core (Learnings)	**$0**	**$1,779,700**	**$1,787,400**	**$1,856,300**	**$5,423,400**
Incentive Cost	$0	$1,207,800	$1,230,300	$1,312,200	$3,750,300
Promotion & Delivery	$0	$520,000	$505,000	$490,000	$1,515,000
Admin Cost	$0	$51,900	$52,100	$54,100	$158,100
SLH - DR	**$0**	**$345,300**	**$316,700**	**$258,600**	**$955,300**
Incentive Cost	$0	$28,400	$50,000	$42,800	$155,900
Promotion & Delivery	$0	$311,000	$261,000	$211,000	$783,000
Admin Cost	$0	$5,900	$5,700	$4,800	$16,400
Total SLH IRPA Program	**$32,720**	**$2,663,100**	**$2,587,300**	**$2,547,100**	**$7,864,920**

Estimated ETEE Impacts

	# of Participants	Peak Hour Savings (m3/hr)
Major Area of Influence	329	81
Sarnia Core (Com/Ind)	501	386
DR	997	261

* Note: Scope and budgets are draft and not finalized.

ETEE Pilot Program

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- Residential
  - Limited enhanced offering - leverage the DSM HER+ offer (NRCAN Greener Homes Partnership) and enhance by providing additional incentives above standard offering for targeted measures
    - Pilot Enhanced Incentives: insulation, air sealing, Air Source Heat Ppumps (to discuss)
    - Delivery Approach: using HER+ delivery approach (service organizations/contractors) with targeted marketing & community engagement strategies
- Commercial and Industrial
  - Limited enhanced offerings - leverage the existing DSM CI offerings (i.e. direct install, prescriptive, custom) with enriched incentives
    - Pilot Enhanced Incentives: focus on space heating measures (e.g. air curtains, destratification fans, controls, ventilation etc.)
    - Delivery Approach: dedicated/local resources delivering enhanced offerings with targeted marketing/engagement strategies
- Affordable Housing
  - No enhanced incentives for existing low-income programming; however, will implement targeted marketing
- Advanced Technologies
  - Direct install approach of gas heat pumps (residential and commercial), hybrid heating (residential) and thermal energy storage (residential) measures

DR Pilot Program

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- A new-to-market residential demand response pilot offer targeting gas space-heated customers with an eligible smart thermostat (bring-your-own device - BYOD)
- An initial incentive provided upon enrollment into program and annual incentive provided at the end of each heating season for eligible participants
- On-going discussions with IESO on potential collaboration with their Residential BYOD DR Program
  - Targeted marketing to be engaged (through service providers / smart thermostat manufacturers as well as company-run)

IRP Pilot – Application

Key Items	
Proposed Pilot Project Scope of SLH	• Proposing to pare down scope of SLH Pilot due to high costs to run program for Com/Ind for learnings only (no impact to reinforcement project). Budgets shown in previous slides
Proposed Pilot Project Attribution/Allocation between DSM & IRP	• Proposing that all incentives offered by the Pilot's ETEE program will be entirely funded by the Pilot Project and not DSM program. Accordingly, all results from the Pilot Project's ETEE program will be entirely attributed to the Pilot Project's ETEE program and not to DSM programs. • General policy on DSM-IRP attribution approach to be addressed in the first non-pilot IRP Plan.
Evaluation & Monitoring ERTs	• Proposing complete coverage of hourly flow measurement (via ERTs & hourly metering) in both Parry Sound and SLH (Major Influence Area). Measurement and data is critical in the evaluation of the ETEE/DR impacts to peak hour and will also inform whether detailed monitoring of individual customer hourly data is required for future IRP Plans.
Evaluation & Monitoring Reporting & Wrap Up	• Progress update for Pilots be included in IRP Annual Report. • At the conclusion of this pilot application period, impact of IRP on the system need will be assessed and will inform next steps; whether to continue an ETEE program or build the facility project. A new application would be required if ETEE is to continue beyond the pilot timeframe.

IRP Pilot – Application

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Key Items	
Project Cost & Budgets 2023-2027	• Proposing flexibility of budget to allow allocation of spend across the duration of the Pilot. • Applying the IRP Framework Decision of 25% threshold requirement
Cost Test	• Proposing to include a simplified cost test to provide a high-level comparison of the facility project to the IRPA alternative (i.e. Stage 1 of EBO 134), as the DCF+ test has yet to be finalized. • Finalized version of DCF+ test will be addressed via the guide and filed as part of the first non-pilot IRP Plan. The economics for the pilots can be refreshed as part of the annual reporting going forward.
Cost Recovery & Allocation	• Proposing to capture pilot costs under the IRP Deferral account and allocate the costs based on Enbridge's proposed 2024 Rebasing Cost Allocation factors
IRP Incentive Mechanism	• Not proposing or seeking approval within the Pilots application, will be addressed in the first non-Pilot IRP Plan

DCF+

Discussion – Next Steps

Annual Report Discussion

Annual Report

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- Timelines:
  - April 17 - Draft #2 issued
  - April 18 - Discussion at TWG meeting
  - April 30 - TWG written feedback
  - May 9 – Final review/discussion at TWG meeting
  - May 30 - File the IRP Annual Report with the 2022 Annual Deferral Account Disposition Evidence
- Discussion: TWG Report timing/process

Kingston Project

- The East Kingston Creekford Rd Reinforcement project required $24.3 million of capital reinforcement for 2024 to meet increased demands driven by growth on the system
- The proposed facility project was designed to meet incremental natural gas demands in the project area by constructing new pipelines
- Enbridge's Asset Management Plan included this investment in the 2024 - 2028 Rebasing application (Exhibit 2.6.2 Appendix A p. 25 of 59)
- In addition to addressing the increased demands the proposed project would also address class location and depth of cover issues on the current Kingston lateral

Kingston IRP Alternatives

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- Enbridge initiated an IRP assessment including:
  - Incremental pressure from TC Energy
  - Compressed Natural Gas ("CNG")
  - Enhanced Targeted Energy Efficiency (ETEE)
  - Contract and Interruptible Rates review

- The IRP assessment concluded the following:
  - Incremental TCE pressure is not technically feasible due to the location of the TCE connection and the load growth
  - ETEE is not feasible due to cost
  - CNG injection is technically feasible
  - A reverse capacity open season resulted in one firm contract customer requesting a demand reduction

Kingston IRP Alternatives

- Enbridge pursued both the CNG and Customer Contract demand reduction IRP alternatives to ensure Enbridge had enough natural gas capacity and pressure for Winter 2022/2023
- Enbridge contracted for a third party CNG service for Winters 2022/2023 and 2023/2024 in Q2 2022
- Enbridge worked with a Contract Customer over Q3/Q4 2022 to reduce their firm contracted demand

Kingston Cost Recovery

- Enbridge included the costs of the IRP alternatives in the IRP Operating Costs Deferral Account given the costs are O&M-related
- Enbridge is proposing to recover the total IRP alternative costs from rate payers
- The OEB's IRP Decision states:

> *An IRP Plan approval will be mandatory if the forecast costs of the IRP Plan exceed the minimum project cost (currently $2 million, proposed to increase to $10 million) that would necessitate a Leave to Construct approval for a pipeline project.*

- Enbridge did not file an IRP Plan with the OEB due to the timing of the need and the cost of the IRP alternatives are less than $2 million

Plans for 2023

IRP Technical Working Group

Meeting #26

ENBRIDGE

May 23, 2023

Agenda

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- Reports (5 min)
- CNG Discussion (15 min)
- Kingston (10 min)
- Stakeholder Update (10 min)
- Pilots Update (30 min)
- IRP Assessment Process (50 min)

CNG Update

CNG – Decentralized vs. Centralized

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Decentralized Solution

- Smaller CNG compressor stations are built at distribution system low points and CNG tube trailers are filled directly at site from distribution system in the off-peak hours of the day
- CNG tube trailers discharge their inventory during the peak hours of the peak days through co-sited daughter stations to maintain pressure in distribution system
- This approach aims to balance the high and low flow periods in the distribution system to achieve higher overall load factor and improved pipeline throughput efficiency

Centralized Solution

- One larger CNG compressor "mother" station is built in a central Ontario location on a high-pressure, high-capacity pipeline with highway access for CNG tube trailers to be filled quickly at any time
- CNG tube trailers are then pulled by truck to "daughter" station locations to discharge their inventory during peak hours at distribution system low points as needed
- Can use C/RNG trucks to pull trailers to minimize emissions relative to diesel

Benefits of Centralized Solution

- **Reduced capital costs to build CNG compressor station(s)**
  - One higher HP station is > 50% lower cost than multiple smaller stations
  - Need full equipment redundancy on 1 station vs multiple stations
  - Can locate at high pressure and high-capacity location on pipeline system
- **Reduced land footprint and cost to build 1 CNG compressor station vs multiple**
  - Potential to build at existing Enbridge property with staffing and highway access
  - Eg. 75% of Ontario's population lives within a 3 hr drive of Parkway station (Milton)
- **Reduced costs (> 50%) to operate and maintain CNG compressor station(s)**
  - Less staffing needed to maintain 1 CNG station vs. multiple decentralized stations
  - Faster response & travel time to attend for scheduled/unscheduled maintenance
  - Fewer points of mechanical failure and smaller spare part inventory
- **Improved environmental impact and efficiency**
  - Building, operating, and maintaining 1 large CNG station vs multiple smaller ones dramatically reduce parts/equipment, utilities, land footprint & technician travel
- **Avoids pulling incremental gas volume from a constrained distribution system**
  - May not be sufficient low-demand hours to fill trailers for the peak hours
- **Better versatility for additional functions**
  - Centralized station allows trailers to be filled and utilized outside the winter season for emergencies, construction outages, and vehicle filling

Kingston

(Discussion)

Kingston Cost Recovery

ENBRIDGE

- Enbridge included the costs of the IRP alternatives in the IRP Operating Costs Deferral Account given the costs are O&M-related
- Enbridge is proposing to recover the total IRP alternative costs from rate payers
- The OEB's IRP Decision states:

  An IRP Plan approval will be mandatory if the forecast costs of the IRP Plan exceed the minimum project cost (currently $2 million, proposed to increase to $10 million) that would necessitate a Leave to Construct approval for a pipeline project.

- Enbridge did not file an IRP Plan with the OEB due to the timing of the need and the cost of the IRP alternatives are less than $2 million

Stakeholdering Update

IRP Stakeholder Engagement

Regional Stakeholdering

- Seven regional stakeholder engagement sessions held beginning in April 2023

Region	Webinar Date
Southeast	April 4, 2023
Southwest	April 6, 2023
Northern	April 25, 2023
Eastern	April 11, 2023
GTA East	April 13, 2023
Toronto	April 18, 2023
GTA West	May 4, 2023

- Next regional sessions happening in November, early December

Pilot Stakeholdering

- Pilot geotargeted stakeholder engagement sessions – Parry Sound and Southern Lake Huron area's
  - Municipalities, LDC's, HONI, IESO from December to February
- Open houses held in Parry Sound – May 10th and SLH – May 17th
  - Virtual Open house will be available on the IRP web page – June 2023
  - A webinar will be offered – Date TBD
- IRP Web page has been updated

IRP Regional Webinars

Audience	Communication Tactic
Mayors, council, clerks/municipal staff	Two emails advising to sign up for updates and a reminder
IESO	Email with webinar links
LDC	Ad in newsletter
AMO members	Ad in newsletter
Indigenous communities	Two emails advising to sign up for updates and a reminder
Social Media	Geotargeted Facebook ads
IRP update registrants	Email invite to the webinar
Webinar registrants	Email reminder
Conference Attendees	Solicited sign ups to receive updates

IRP Pilot Open Houses

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Pilot Project	Date	Location	Advertising
Parry Sound	Wednesday May 10 5-8 p.m.	Charles Stockey Centre	• Emails to Municipal Staff • Ads in local newspaper • Facebook ads • Email to regional IRP update registrants
Southern Lake Huron	Wednesday May 17 5-8 p.m.	Camlachie Community Centre	• Emails to Municipal Staff • Ads in local newspaper • Facebook ads • Email to regional IRP update registrants

IRP Pilots Update

IRP Pilot – Application

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Key Items	

Proposed Pilot Project
ETEE residential programming
	• Proposed offerings for residential:
	  • Enhanced DSM via HER+
	  • Limited enhanced electric measures via HER+ (ASHP + GSHP) *[only in Parry Sound]*
	  • Advanced technologies (hybrid heating, thermal energy storage, gas heat pumps) *[only in Parry Sound]*
	• Acknowledge that IRP Framework indicates no electrification. Eligibility of electrification not to be extended beyond the Pilots.

Proposed Pilot Project Scope of SLH	• Proposing to include ETEE for Com/Ind in Sarnia Core for additional learnings.
Proposed Pilot Project Attribution/Allocation between DSM & IRP	• Proposing that all incentives offered by the Pilot's ETEE program will be entirely funded by the Pilot Project and not DSM program. Accordingly, all results from the Pilot Project's ETEE program will be entirely attributed to the Pilot Project's ETEE program and not to DSM programs. • General policy on DSM-IRP attribution approach to be addressed in the first non-pilot IRP Plan.

IRP Pilot – Application

ENBRIDGE

Key Items	
Data Collection ERTs & Hourly Metering	• Proposing complete coverage of hourly flow measurement (via ERTs & hourly metering) in both Parry Sound and SLH (Major Influence Area). • Measurement and data is critical in the evaluation of the ETEE/DR impacts to peak hour and will also inform whether detailed monitoring of individual customer hourly data is required for future IRP Plans.
Data Analysis & Evaluation Reporting & Wrap Up	• Progress update for Pilots be included in IRP Annual Report. • At the conclusion of this pilot application period, impact of IRP on the system need will be assessed and will inform next steps; whether to continue an ETEE program or build the facility project. A new application would be required if ETEE is to continue beyond the pilot timeframe.

IRP Pilot – Application

Key Items	
Project Cost & Budgets 2023-2027	• Proposing flexibility of budget to allow allocation of spend across the duration of the Pilot. • Applying the IRP Framework Decision of 25% threshold requirement
Cost Test	• Proposing to include a simplified cost test to provide a high-level comparison of the facility project to the IRPA alternative (i.e. Stage 1 of EBO 134), as the DCF+ test has yet to be finalized.
Cost Recovery & Allocation	• Proposing to capture pilot costs in the IRP Deferral account and allocate the costs based on Enbridge's proposed 2024 Rebasing Cost Allocation factors
IRP Incentive Mechanism	• Not proposing or seeking approval within the Pilots application, will be addressed in the first non-Pilot IRP Plan

IRP Assessment Process

Overview & Discussion

IRP Evaluation Process

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Please refer to JT 5.36 Attachment 1

IRP Evaluation Process

Initial Technical Evaluation

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Customer Connections

Enbridge reviewed the investments in this category to see if IRPA's could be identified and, upon review, has confirmed that they should be screened out through the Binary Screening. In its Technical Evaluation, Enbridge Gas determined that implementing an IRPA could not reduce the size of the distribution mains, services or regulating equipment, as these cannot be downsized any further. In addition, there are no non-gas IRPAs available within the current IRP Framework that can be offered to avoid the customer connection service being requested. Note that any associated main reinforcement investments will go through the Binary Screening and Technical Evaluation process.

Example

- Investment # 3738 - Area 30 - Residential - New Construction* | 2023-2032 Forecast: $77.07 M

Hydrogen Blending

There are investments in the AMP related to the use of hydrogen in the distribution system. Since these investments are focused on reducing the carbon footprint of the existing transmission and distribution system, they cannot be offset by IRPA's. Enbridge Gas will remove investments in the GTH – Hydrogen Blending Asset Class/Program from Technical Evaluation going forward.

- Expansion of the existing Low Carbon Energy Project (LCEP),
- A Hydrogen Grid Study to establish what would be required to prepare the natural gas distribution system for the introduction of more hydrogen,
- A study to establish how the company could use hydrogen to fuel compressors, and
- A study to establish how the company could use hydrogen to station heating.

Example

- Investment #736972 - Area 10 - Hydrogen Fuel Heating Systems Feasibility Assessment | 2023-2032 Forecast: $2.33 M

IRP Evaluation Process

Initial Technical Evaluation

Compressor Stations

The investments in the Compression Stations Asset Class are related to the maintenance of the existing fleet of compressors and include the periodic OEM prescribed overhauls and replacement of components that are not performing as intended or are obsolete. Enbridge Gas expects that technically feasible IRPA's will only be identified for Compressor Station investments where growth is a driver.

Example

- Investment # 733780 - Dawn D Gas Generator – Mid-life Overhaul | 2023-2032 Forecast: $2.77 M

  Overhauls - A compressor overhaul is the process of taking apart the components of a compressor, examining it thoroughly and servicing elements in need of repair and/or rebuilding. The compressor package is comprised of a gas turbine engine driver, compressor, power turbine and ancillary equipment such as lube oil, fuel supply, and electronic control systems, which are required for the compressor to operate. These components are subjected to mechanical and thermal stresses during their operation, and over time will require maintenance, repair, or replacement to maintain the safe and reliable operations of the compressor station. When the risks associated with discontinued OEM support of critical engine parts increase as the global inventory of spare components diminishes, compressor station replacement will be required to maintain the existing compression station capabilities.

Storage Pools & Wells

The investments in the Asset Management Plan for Wells and Pools relate to maintenance and compliance driven upgrades to allow for ongoing deliverability from the storage pools. Enbridge Gas will remove these investments from the IRP Technical Evaluation moving forward as the projects relate to drilling of an observation well for compliance reasons and work that arises annually from the Integrity Management Program.

Example

- Investment # 503024 - 2024 Waubuno | 2023-2032 Forecast: $5.32 M

  The well UI20 is in a flood plain which is inaccessible during the spring months. Any response to a well incident would be severely impacted by access to the well. The proposed abandonment of this well will reduce deliverability. This project abandons one well UI20 and drills two new 8 5/8-inch wells. The two new wells will offset the reduction of deliverability due to the relines and abandonments.

IRP Evaluation Process

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JT 5.36 Attachment 2

Summary

Enbridge is reviewing 2023-2032 investments through a combination of both detailed project reviews and systematic methods through which groups of investments are prioritized for evaluation or eliminated. Through these evaluations, lessons have been learned, which are incorporated in this document to develop guidance for evaluations going forward. At this time (for the reasons discussed above), the following Asset Class/Asset Programs will be screened out systematically when future AMPs are reviewed:

- Compression Stations
- Customer Connections
- Distribution Pipe (Programmatic Spend)
  - Class Location
  - Corrosion
  - Integrity
  - Service Relay
- Distribution Stations (note that any Stations with an element of Growth will be moved to the Growth Asset Class)
- Growth
  - Hydrogen Blending
- LNG
- Transmission Pipe & Underground Storage (Programmatic Spend)
  - Class Location
  - Improvements
  - Integrity
  - Land/Structures – Improvements
- Utilization

As the remainder of the Technical Evaluations are completed as well as economic evaluation and pilots, it is expected that this document will be updated for use on subsequent cycles of investment evaluation.

Example

Category: Corrosion
Investment #4671 Anode Blanket - Area 60*

Justification: The Corrosion Department conducts pipe-to-soil readings each year on EGI's steel pipelines. When a corrosion area is identified as having fallen below EGI's minimum specifications, an order for an anode installation is processed. The capital request is for 12 months.

This programmatic spend covers the replacement of depleted anodes, work arising from bridge crossing inspections, and repairs to rectifier beds. Once found, these problems must be addressed quickly to avoid degradation of the pipe and, as such, will be removed from IRP Evaluation based on timing.

IRP Evaluation Process

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Please Refer to JT 5.36 - Attachment 2

IRP Evaluation Process

Technical Evaluation

In Enbridge Gas's technical evaluation, the investment categories Enbridge Gas considers to be driven in part or in full by design hour/day demand include projects with the asset class of "growth" or "distribution pipeline."

Enbridge Gas determines the level of design hour/day demand reduction required to meet a system need by calculating:

- Total customer design hour/day demand for natural gas based on existing customer design demands plus forecasted customer growth in design hour/day minus projected reductions in the system design hour/day.
- Total current design hour/day capacity that can be provided by the existing natural gas infrastructure within the project area.

The difference between these two factors determines the design hour/day demand capacity required to meet the system needs.

Enbridge Gas assesses the technical potential of IRPAs to meet a system need as follows:

- Enhanced targeted energy efficiency (ETEE)'s technical potential is assessed by comparing the required design hour/day demand reduction to the achievable design hour/day demand reduction potential in the project's area of impact. The achievable potential is calculated by modelling the ETEE's design hour/day impacts, which includes the estimated impact ETEE has on design hour/day as well as customer participation uptake. As learnings are gained in the IRP Pilot projects, they will be applied to the ETEE's achievable potential modelling.
- Compressed natural gas (CNG) is being assessed by choosing a potential CNG location near the system's low-pressure location and calculating injection volumes that offset the system need.
- Market-based supply side is assessed by determining the availability of higher pressures or capacity from a third-party source to impact the project scope.

Following the above noted IRPA technical evaluations, Enbridge Gas applies the following technical evaluation guidance criteria:

- CNG is intended as a bridging solution in conjunction with ETEE to meet system needs rather than a permanent solution. The exception is when CNG is used as a limited peaking service.
- All IRPAs must be operationally prudent, meaning system reliability is maintained and that bottlenecks in the system, which could restrict the ability to do maintenance, are prevented

IRP Evaluation Process

Technical Evaluation

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CNG Considerations: Flow and Location

Flow	Flow Category
< 500 m³/hr	High
500 - 1000 m³/hr	Medium High
1000 - 2000 m³/hr	Medium
> 2000 m³/hr	Low

Location Category	Description
High	CNG location in a remote/rural area or at existing station. Minimal potential disturbance to surrounding communities
Medium	CNG location in area with medium to small population centers or outskirts of urban area. Moderate potential for disturbance to surrounding communities
Low	CNG location in an urban area with difficulty obtaining land for CNG injection. High potential for disturbance to surrounding communities

Flow Category	Location Category		
	Low	Medium	High
Low	Low	Low	Low
Medium	Low	Medium	Medium
Medium - High	Low	Medium	High
High	Low	High	High

IRP Evaluation Process

Technical Evaluation

ETEE Considerations:

- Technical evaluation of ETEE based on the ability to defer, reduce or eliminate project scope
- Projects prioritized based on the relative assessment of the following considerations:
  - ETEE demand reductions required (incremental to Enbridge's forecasted SRP reductions)
  - Time horizon to achieve reductions
  - Posterity Group's forecasted maximum ETEE reductions
  - Firm contract demand on the system
  - System specific constraints
- No projects to date have been screened out due to the ETEE demand reduction required.

IRP Technical Evaluation Walkthrough

Please refer to JT 5.36 – Attachment 3 and Attachment 4

ONTARIO ENERGY BOARD | COMMISSION DE L'ÉNERGIE DE L'ONTARIO

Meeting Notes

Integrated Resource Planning Technical Working Group (EB-2021-0246)

Working Group Meeting #1

Meeting Date: January 18, 2022 Time: 2:00 p.m. - 4:00 p.m.
Location: MS Teams

Attendees

IRPTWG Members	Role
Michael Parkes	OEB staff representative (Working Group chair)
Stephanie Cheng	OEB staff representative
Chris Ripley	Enbridge Gas representative
Amrit Kuner	Enbridge Gas representative
Amber Crawford, Association of Municipalities of Ontario	Non-utility member
John Dikeos, ICF Consulting Canada Inc.	Non-utility member
Tammy Kuiken, DNV	Non-utility member
Cameron Leitch, EnWave Energy Corporation	Non-utility member
Chris Neme, Energy Futures Group	Non-utility member
Dwayne Quinn, DR Quinn & Associates Ltd.	Non-utility member
Jay Shepherd, Shepherd Rubenstein Energy Professional Corporation	Non-utility member
Kenneth Poon, EPCOR Natural Gas LP	Observer
Steven Norrie, Independent Electricity System Operator	Observer

Additional Attendees	Role
Valerie Bennett	OEB staff

Purpose

These notes summarize the information discussed during the working group (WG) meeting on each of the key points presented in the published materials.

Meeting Agenda

1. **Welcome – Member Introductions**

- All attendees provided a brief introduction on their background, experience, and perspectives on integrated resource planning (IRP)

2. OEB Update on IRP Related Developments

Discussion Comments	Discussion Outcome	Action Items
OEB staff provided an update on several developments subsequent to the issuance of the IRP Framework with potential implications for IRP, including the Mandate Letter from the Minister of Energy to OEB Chair, activities of the Framework for Energy Innovation working group, and recent Enbridge Gas Leave to Construct applications.	OEB staff (and IRP WG members who also sit on other relevant working groups) will stay abreast of potentially relevant/overlapping activities and update the IRP WG as needed.	N/A

3. Review Draft Terms of Reference (ToR)

Discussion Comments	Discussion Outcome	Action Items
OEB staff led a discussion on the key points of the draft ToR, and solicited feedback from members, to be provided verbally during meeting and/or through written comments over the next week.	Members provided comments or suggestions on several aspects of the draft ToR: • Clarity that WG has a role in consideration of pilots, but that Enbridge, not the WG, is responsible for pilot project implementation • Correction noting that Enbridge Gas representatives (unlike non-utility members) are expected to act on behalf of organizational (Enbridge) interests. • Discussion as to whether the ToR should provide additional guidance on how to document outcomes if the WG cannot reach consensus (e.g. documenting number of members in favour/ against specific viewpoints, or positions of specific members) • Discussion as to how confidentiality provisions should be applied, including cases where there may be disagreement as to whether material should be considered confidential. Suggestions that existing OEB guidance on confidentiality can be used as a guide, and that goal should be to make most materials public, in spirit of openness	Written comments should be submitted to OEB staff within 1 week from the date of the initial working group meeting (January 25, 2022). Members can CC all working group members in their submission. OEB staff will take all comments (verbal and written) into consideration, amend draft ToR as appropriate, and seek internal approval of a final ToR.

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	and transparency. • Discussion of cost awards - whether default multiplier of 1.5x meeting time is sufficient to cover member time, and whether this is adequately addressed by provisions enabling additional time for specific tasks; whether cost awards process can be done more frequently (e.g. semi-annually versus annually).	

4. Enbridge Update on IRP Implementation

Enbridge provided a verbal update on various items that are currently in progress and the projected timeline of each deliverable. In completing these tasks, Enbridge is also seeking guidance and clarification from the Working Group on various items. See below for details:

Discussion Comments	Discussion Outcome	Action Items
Annual Report • Drafting of the annual IRP report has begun. A draft of annual report should be ready for member review in March 2022. • Will include best available information on demand-side IRPAs • May include study on interruptible rates (alternatively, this would be filed with rebasing application)	N/A	Draft annual report to be provided to WG members by Enbridge
Website Enbridge has created a website to provide information to customers on IRP activities.	N/A	N/A
Other Updates • Deferral and Variance Account disposition application to be filed in late May 2022 (which will include annual IRP report) • Rebasing application to be filed November 2022. Will incorporate elements of IRP (e.g. development of Asset Management Plan including baseline facility assessment and screening of IRP Alternatives).	N/A	N/A

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Pilot Projects Enbridge provided a brief update on IRP pilots. IRP Framework indicates that Enbridge is expected to deploy 2 IRP pilots by the end of 2022. Enbridge indicated a preliminary intention to focus on demand-side solutions for the pilots, such as hybrid heating and geotargeted demand-side management. Enbridge indicated that input from the WG on the budget to be allocated to pilots, and on the timing of pilot evaluation and execution would be valuable. Enbridge indicated that it has been exercising the discounted cash flow-plus (DCF+) evaluation methodology on its potential pilot projects, and sought input as to whether potential pilots that may fail the DCF+ test should still be considered if they would otherwise make a good pilot. Enbridge indicated that it will bring forward a list of candidates of system needs potentially suitable for IRP pilots at a future meeting.	Throughout Enbridge's update, members provided input on areas of focus, resources to consider, evaluation criteria, and what members are expecting from Enbridge's reported results on pilot considerations. WG members indicated that supply-side alternatives (potentially in combination with demand-side alternatives) should not be ruled out at this stage from consideration in pilots, that gas demand response was a potentially promising IRP pilot, and that Enbridge may wish to consider multiple IRP alternatives and evaluation approaches within the pilot(s). Members recommended setting reporting expectations for demand response technologies and other IRP alternatives, including impact analysis on peak hours/peak days WG members provided suggestions as to criteria to consider when assessing which system needs (and which potential IRP alternatives) might be suitable for pilot projects, including: • Mix of customers (residential, commercial, industrial, etc.) • Areas requiring upgrade • Needs where load reduction is within reasonable target range and need is several years out (sufficient lead time to implement and evaluate IRP alternatives) • Potential for transferrable learnings • Proof of concept/ scalability Further input from members on	Enbridge Gas to return with more detailed materials on pilots for WG consideration in upcoming working group meeting(s), including proposed timelines. Enbridge Gas and OEB staff to return with more detailed materials on DCF+ evaluation and an approach to development/refinement in upcoming working group meeting(s).

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	selection criteria is expected at future meetings. WG members indicated that while cost-effectiveness should be a consideration in selecting IRP alternatives for pilots, potential pilots should not be eliminated from consideration at this stage if they fail the DCF+ test (or stage 1 of the DCF+ test), given we are still at an early stage in finalizing the approach for this test, and the categories of costs and benefits. It was suggested that WG (or a subgroup) should play a key role in development/refinement of DCF+ for IRP, given extensive expertise on group.	

5. Priority activities/ Next steps

Discussion Comments	Discussion Outcome	Action Items
OEB staff noted that draft ToR indicated that initial priorities of WG should be consideration of pilots, DCF+ methodology, and review of annual IRP report, and listed other potential areas of work.	Working group expressed no concerns with near-term priorities, and noted consideration of risk and load forecasting might be two additional topics for longer-term consideration.	See earlier items on pilots and DCF+ test
WG briefly discussed next meeting date and next steps	N/A	OEB staff to circulate summary of outcomes for meeting #1 and schedule times for future meetings. OEB staff (working with Enbridge Gas) to establish agenda for meeting #2.

List of Action Items

Action Item	Assignment/ Owner	Due Date
Circulate summary of meeting outcomes	OEB staff	As soon as possible
Provide written comments on draft ToR	Working Group Members (except for OEB staff)	January 25, 2022

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Finalize ToR	OEB staff	As soon as feasible following receipt of comments.
Provide draft annual IRP report for WG consideration	Enbridge Gas	Likely March 2022
Return with more detailed materials on pilots for WG consideration, including proposed timelines	Enbridge Gas	For future working group meeting(s)
Return with more detailed materials on DCF+ evaluation and an approach to development/refinement for WG consideration	Enbridge Gas and OEB staff	For future working group meeting(s)
Send out MS Teams Working Group Meeting Invites for the next 6 months	OEB staff	As soon as feasible
Establish agenda for meeting #2	OEB staff (with input from Enbridge Gas)	Prior to meeting #2

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Meeting Notes

Integrated Resource Planning Technical Working Group (EB-2021-0246)

Working Group Meeting #2

Meeting Date: February 15, 2022 Time: 2:00 p.m. - 4:00 p.m.
Location: MS Teams

Attendees

IRPTWG Members	Role
Michael Parkes	OEB staff representative (Working Group chair)
Stephanie Cheng	OEB staff representative
Chris Ripley	Enbridge Gas representative
Amrit Kuner	Enbridge Gas representative
Amber Crawford, Association of Municipalities of Ontario	Non-utility member
John Dikeos, ICF Consulting Canada Inc.	Non-utility member
Tammy Kuiken, DNV	Non-utility member
Cameron Leitch, EnWave Energy Corporation	Non-utility member
Chris Neme, Energy Futures Group	Non-utility member
Dwayne Quinn, DR Quinn & Associates Ltd.	Non-utility member
Kenneth Poon, EPCOR Natural Gas LP	Observer
Steven Norrie, Independent Electricity System Operator	Observer

Additional Attendees	Role
Valerie Bennett	OEB staff

Regrets

IRPTWG Members	Role
Jay Shepherd, Shepherd Rubenstein Professional Corporation	Non-utility member

Purpose

These notes summarize the information discussed during the working group (WG) meeting on each of the key points presented in the published materials.

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Meeting Agenda

1. Preliminary matters (OEB staff)
2. Discussion of annual IRP report and IRP pilots (Enbridge)
3. Discussion of next steps on economic evaluation of IRP alternatives (OEB staff)

1. Preliminary Matters

Item Description	Discussion Comments/Outcome	Action Items
Meeting #1 Notes OEB staff asked if there were any comments on meeting #1 notes.	There were no comments on meeting #1 notes. Therefore, the notes are accepted by working group members.	OEB staff to post meeting #1 notes on IRP webpage.
Final Terms of Reference (ToR) OEB staff indicated that the OEB had approved a final ToR, and described the changes made in response to WG member comments on the draft ToR discussed at meeting #1, in particular, changes to the confidentiality and participant cost sections	• WG members asked for clarity on provision in confidentiality section for Enbridge to request that specific members not participate in discussion of matters of a “commercially sensitive nature” • OEB staff clarified that the intent of the statement was to address the possible circumstance of a WG member gaining a real or perceived commercial advantage if participating in discussion of specific Enbridge projects. • Enbridge also indicated that it may request confidential treatment of materials containing customer data or providing information on active applications before the OEB. • Questions on confidentiality can be further discussed (as needed) as specific circumstances arise. • OEB staff will proceed to draft a confidentiality agreement for WG members to sign if they wish to view confidential materials.	OEB to issue the final ToR. OEB staff to draft a confidentiality agreement for the WG.

2. Discussion of Annual IRP report and IRP pilots

Item Description	Discussion Comments/Outcome	Action Items
Annual IRP Report Enbridge provided an update on the contents and proposed timeline of the IRP annual report. Enbridge noted that the report would largely cover the topics as described in the IRP decision but some aspects (e.g. results of approved IRP Plans) will not be relevant to the initial report. Once IRP Plans are in place, Enbridge will monitor and report on results. Tentative Timelines: • Enbridge plans on having the annual report drafted by April 2022. WG members will have 2 rounds of review and comments throughout April and May, prior to Enbridge's finalization of the annual report for submission to OEB by end of May 2022 as part of its DSMVA application. OEB staff will submit a report of the WG's activities on behalf of the WG in the same proceeding as Enbridge files its annual IRP report.	Contents of Annual Report: • Some WG members expressed an interest in knowing the principles and process by which Enbridge will refine its list of system needs to prioritize and identify proposed IRPAs that will be included in the asset management plan (AMP), and having an opportunity for the WG to provide input on this process (e.g. through the annual IRP report review) prior to Enbridge filing its rebasing application. • Enbridge indicated that there will be a section in the annual IRP report discussing the integration of IRP into AMP, but that this issue (and specifics of projects in the AMP) would be addressed in the AMP to be filed with the rebasing application in November 2022, and properly considered in that application. • WG members noted that the "IRPA template" referenced in Enbridge's materials is missing. Enbridge will bring this to the next WG meeting. Timeline of Annual Report: • WG members and OEB staff noted the initial review of the draft IRP annual report will require more time than the secondary review. Enbridge agreed to adjust timelines by providing 2 weeks for preliminary review and 1 week for secondary review. • WG will give further thought as to approach to submitting WG comments (e.g. whether an attempt at consensus should be made). • The proposed timeline for drafting the WG's report was adjusted to May 15 – 31, to allow for any reply to Enbridge's final annual IRP report.	Enbridge will take WG comments into consideration when drafting the content of the annual report

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<tr>
<td>IRPA Pilots
Enbridge provided an update on their progress in evaluating potential pilots and requested guidance/ input from WG members on the following matters:
1) Objective of the pilots
2) Proposed Timeline
3) Potential IRPAs of interest and the selection process</td>
<td>Objective
WG members generally were of the view that Enbridge's proposed objective for the pilots ("Determine how an IRPA can impact peak hour and peak demand to avoid, delay or reduce the need for future infrastructure") was directionally correct but framed too narrowly.

One proposed rewording was to "Improve understanding of how to design, deploy and evaluate IRPAs that cost effectively delay or avoid the need for future infrastructure spending."

Timeline
Members did not express any concerns with Enbridge's proposed timeline for the pilots.

Potential IRPAs of interest to WG/ Selection Process:

There were varying views on the technologies of interest when selecting the 2 IRPA pilots:
• Some members proposed one demand side IRPA (e.g. geotargeted enhanced targeted energy efficiency (ETEE) or gas demand response) and one supply side IRPA (e.g. compressed natural gas, renewable natural gas)
• Some members felt that there may be less new information that can be learned from supply-side IRPAs and that demand-side IRPAs should be prioritized in the pilots (although supply-side IRPAs may still have a role in the AMP).

Members discussed what gas demand response might look like in the Ontario context, and how it interacted with efforts to improve uptake of interruptible rates. There was general agreement that (among demand-side options), ETEE might be more promising than gas demand response, but that neither option should be ruled out. Members also noted that one pilot could potentially include multiple IRPAs.

Enbridge was encouraged to make use of</td>
<td>Enbridge will return with more detailed materials on pilots for WG consideration, including more specifics of pilot proposals.</td>
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	learnings from its previous Ingleside ETEE pilot, and IRP efforts in other jurisdictions, including Con Ed's performance-based and direct load control gas DR programs and market-based RFPs for non-pipeline solutions. In addition to specific types of IRPAs, members made additional suggestions regarding the IRPA selection process, including: • Whether we have the ability and technology to collect good data on the IRPA selected • Identifying where information gaps are and focusing IRPAs in that area while leveraging relevant and existing learnings from other jurisdictions • IRPAs should not be restricted to a specific customer class (i.e. residential or industrial) as there have been successful pilots for both classes in other jurisdictions • Interruptible rates should not be ruled out due to low uptake to date, since there could be improvements made to increase consumer buy in. Need to understand what changes customers are seeking in order to decipher what changes will be successful • Cost-effectiveness is important but there are other factors to consider before eliminating potential pilots from consideration. This includes the 5 factors brought forth in the first WG meeting: 1) Mix of customers (residential, commercial, industrial, etc.) 2) Areas requiring upgrade 3) Needs where load reduction is within reasonable target range and need is several years out (sufficient lead time to implement and evaluate IRP alternatives) 4) Potential for transferrable learnings 5) Proof of concept/ scalability	

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3. Discussion of next steps on economic evaluation of IRP alternatives

Item Description	Discussion Comments/Outcome	Action Items
OEB staff described the IRP decision's findings on the economic evaluation of IRP alternatives, including the 3 phases of the Discounted Cash Flow-plus (DCF+) test, then proposed an approach for the WG's role in contributing to guidance on an enhanced DCF+ test, which will ultimately be filed for OEB approval for Enbridge.	• Members generally agreed with the considerations identified by OEB staff in developing guidance for the DCF+ test. • Concerns were raised about Enbridge's approach to summing the 3 phases of the DCF+ test, and it was suggested that the test should include a combined look at all 3 factors, but not sum these factors. Members also suggested that the potential to make minor changes to the categories of benefits and costs proposed by Enbridge for each of the 3 phases should be kept open for further consideration. • Process-wise, members expressed a preference for further dialogue on DCF+ test enhancements and components during WG meetings, prior to providing any written suggestions for Enbridge's consideration.	Chris Neme will share his perspective on DCF+ test guidance at a future meeting (likely meeting #3). Other WG members are encouraged to review the first 2 sources forming the foundation of the DCF+ test (as per OEB meeting materials) and to look at additional resources (e.g. NSPM and Con Ed BCA Handbook), in order to participate in discussion.

List of Action Items

Action Item	Assignment/ Owner	Due Date
Circulate summary of meeting #2 outcomes	OEB staff	As soon as possible
Issue Terms of Reference	OEB staff	Completed (Issued February 17, 2022)
Draft Confidentiality Agreement for WG members	OEB staff	As soon as possible
Provide draft annual IRP report for WG consideration	Enbridge Gas	Likely April 2022
Return with more detailed materials on pilots for WG consideration, including more specifics of pilot proposals	Enbridge Gas	For future working group meetings
Discuss guidance on DCF+ test	Chris Neme, all WG members	Future working group meeting(s) (likely meeting #3)
Establish agenda for meeting #3	OEB staff (with input from Enbridge Gas)	Prior to meeting #3

ONTARIO ENERGY BOARD | COMMISSION DE L'ÉNERGIE DE L'ONTARIO

Meeting Notes

Integrated Resource Planning Technical Working Group (EB-2021-0246)

Working Group Meeting #3

Meeting Date: March 22, 2022 Time: 2:00 p.m. - 4:00 p.m.
Location: MS Teams

Attendees

IRPTWG Members	Role
Michael Parkes	OEB staff representative (Working Group chair)
Stephanie Cheng	OEB staff representative
Chris Ripley	Enbridge Gas representative
Amrit Kuner	Enbridge Gas representative
Amber Crawford, Association of Municipalities of Ontario	Non-utility member
Jay Shepherd, Shepherd Rubenstein Professional Corporation	Non-utility member
John Dikeos, ICF Consulting Canada Inc.	Non-utility member
Tammy Kuiken, DNV	Non-utility member
Cameron Leitch, EnWave Energy Corporation	Non-utility member
Chris Neme, Energy Futures Group	Non-utility member
Dwayne Quinn, DR Quinn & Associates Ltd.	Non-utility member
Kenneth Poon, EPCOR Natural Gas LP	Observer
Steven Norrie, Independent Electricity System Operator	Observer

Additional Attendees	Role
Sue Mills	Enbridge Gas guest
Rich Szymanski	Enbridge Gas guest

Regrets

IRPTWG Members	Role
N/A	

Purpose

These notes summarize the information discussed during the working group (WG) meeting on each of the key points presented in the published materials.

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Meeting Agenda

1. Preliminary matters (OEB staff)
2. Further discussion of annual IRP report and IRP pilots (Enbridge, 1 hour)
3. Considerations Regarding Cost-Effectiveness Guidance for IRP (Chris Neme, 1 hour)

1. Preliminary Matters

Item Description	Discussion Comments/Outcome	Action Items
Meeting #2 Notes OEB staff asked if there were any comments on meeting #2 notes.	The following change was flagged by WG members to be updated by OEB staff: • Reference to November 2023 for filing of Enbridge's rebasing application should be updated to November 2022 Once the above change has been made to Meeting #2 Notes, they are accepted by WG members.	OEB staff to make date change noted by WG members. OEB staff will then post meeting #2 notes on IRP webpage (*completed*).
General Remarks from WG members on various matters	IRPA Template • Per meeting #2 notes, Enbridge's annual IRP Report update referenced an IRPA template that was to be shared with WG members by meeting #3. However, this is still outstanding. • Enbridge acknowledges that the "IRPA template" has yet to be shared and clarifies that this template would be used in the IRP annual report, highlighting the best available information on IRPAs like geotargeted DSM, demand response, gas source heat pumps, etc. Enbridge is still working on this template and will share when it becomes available, likely as part of draft annual IRP report. • WG member sought clarification as to whether/why supply-side IRPAs were excluded. Enbridge and OEB staff clarified that OEB's decision specifically required Enbridge to include best available information on demand-side alternatives in annual IRP report. This does not prevent Enbridge from considering supply-side and/or a combination of both demand- and supply-side alternatives, in IRP pilots or IRP activities more generally. Posterity IRP Analysis • WG member asked if Enbridge can share the model and assumptions for the "IRP	Enbridge to report back to the WG on the following items (first two by meeting #4, third ASAP): • IRPA templates (if available) • Update on what information from Posterity IRP Analysis can be shared with WG members • Update on whether responses to WG Questions on Enbridge Gas Activities can be put on the IRP webpage *(completed – responses included as appendix to meeting notes)*

	Analysis" of targeted DSM (conducted by Posterity Group) filed in the St. Laurent proceeding (EB-2020-0093) with the WG. Enbridge will look into the confidentiality of its contents and report back to the working group as to what can be shared. WG Questions on Enbridge Gas Activities • Subsequent to meeting #2, WG member posed questions via e-mail to Enbridge on its activities, and responses were provided by Enbridge. Another WG member requested that these responses be put on the public record through the IRP webpage. Enbridge will review the responses and advise as to whether they are OK with this.	

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2. Further Discussion of Annual IRP report and IRP pilots

Item Description	Discussion Comments/Outcome	Action Items
Annual IRP Report Enbridge provided a brief update on the contents and adjusted timeline of the IRP annual report.	Contents of Annual Report: • WG member proposed the use of a dashboard/metric to see how much spending Enbridge has allocated to IRPAs, and a potential metric for capital spending avoided/deferred • Enbridge indicated that the data on spending on IRPAs would be included in future years as IRPAs were developed, as part of the "annual and cumulative summaries" of actual peak demand reductions/ energy savings generated by each IRP plan to-date, including comparisons to the initial forecast reduction/ energy savings and the actual amount of expenditure on each IRP plan to-date. Enbridge was also receptive to considering the idea of reporting on capital spending avoided/deferred.	Enbridge will take WG suggestions into consideration when drafting the content of the annual report
	WG Review of Draft Annual Report: • OEB staff suggested the use of a shared document to facilitate phase 1 and phase 2 of WG members' review and comments on Enbridge's IRP annual report. • A shared document gives WG members the flexibility to update their thoughts based on WG meeting discussions. Although consensus is not required, the discussion gives WG members the ability to revise and build on each other's comments. • Comments would be discussed at WG meeting #4, and members given several days to revise comments if needed. • No objections from WG members on this shared document approach.	OEB staff and Enbridge will coordinate to determine the technology to be used in facilitating the review of the IRP annual report via a shared document amongst WG members

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<tr><th>Item Description</th><th>Discussion Comments/Outcome</th><th>Action Items</th></tr>
<tr><td>IRPA Pilots
Enbridge provided an update on their projected timelines and approach in evaluating potential pilots</td><td>Projected Timelines

Enbridge plans to ramp up their pilot related activities starting the end of March 2022. Enbridge representatives are starting to look at all potential pilots.
Enbridge plans to return to WG meeting #4 in April 2022 with a more detailed plan/ discussion of the role and purpose/ objectives of each IRP alternative and Enbridge's proposed alternatives for the pilots.
Enbridge plans to return to WG meeting #5 in May 2022 with a list of proposals for specific potential pilot projects (including system need addressed, and community(ies) impacted), for WG consideration, based on the discussion and decisions from the April meeting.

WG member requested Enbridge provide a decision matrix allowing members to see how Enbridge came up with the list of potential pilots.
WG member requested Enbridge present multiple alternatives to the group, with Enbridge outlining what are its favourite proposals, and why. Enbridge indicated that it would bring forward about 10 potential projects for consideration, with two preferred options.

Thoughts/Concerns on Potential IRPAs:
In addition to discussion previously on this topic (meeting #2), members provided further comments on IRPA technologies:

Geotargeted IRPA, potentially in combination with a supply side alternative. For this alternative, pilot could focus on a single community where appropriate metering technology is already in place. Enbridge expressed that they are also very interested in this option.
Demand response (DR)/interruptible rates – various WG members believe that this IRPA should not be eliminated from consideration, despite survey results conducted by Enbridge suggesting that interest among industrial customers in participating in interruptible
</td><td>Enbridge will return with more detailed materials on pilots for WG consideration at the April and May meetings.</td></tr>
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	rates (or in paying higher costs due to other customers being on interruptible rates/demand response) is limited. Additional discussion comments on DR: o Customers may be willing to pay to support these solutions if it avoids future infrastructure (pipe) costs. o Gas DR underway in other jurisdictions like NY (National Grid, Con Ed). o "Enhanced" interruptible rates can reward customers for curtailing demand/ load without risk of shutoff, potentially enhancing pool of participants; however, the fact that the curtailed load is not as dependable needs to be considered. o Demand response IRPAs can come in different forms like shifting loads, adjusting thermostats, and utilizing water heaters, in addition to "standard" interruptible rates WG member expressed concerns that natural gas heat pumps are poor candidates as the technology has yet to be proven. Enbridge indicated that it was unlikely that gas heat pumps would be part of the pilots. Thoughts on IRPA Evaluation and Selection Approach: • WG member suggested that Enbridge's proposed approach starts with potential IRPA solutions instead of identifying problems/ constraints and that this approach should be flipped - Enbridge should start with a project that is part of their existing plan and consider what IRPAs can delay or eliminate the project entirely. • WG member noted that system needs are not identical, and solutions will vary in magnitude, range and applicability based on constraints, so it is important to identify these first. Enbridge should consider things like what is the customer mix? What drives and contributes to system peak? • WG members also noted that constraints vary	

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	between industrial vs. residential customers so solving problems for each customer class should be approached differently • Enbridge clarified that their pilots will take place within the context of Enbridge's system plan and will address real and not hypothetical constraints/ needs. Enbridge indicated that they are considering IRPAs to help with long-term growth. They are interested in a long-term pilot implementing a geotargeted program in an area, monitoring and ensuring that the alternative can reduce peak needs (potentially also involving supply-side bridging components). Enbridge wants to buy more lead time with the execution of pilots to defer infrastructure projects while gaining insight on realized demand reduction. Some WG members expressed additional thoughts on how to view, evaluate and maximize pilot learnings: • WG member suggested that pilots are an opportunity to learn about the effectiveness of IRPAs. It allows one to think about the issues and what potential solutions there are in deferring infrastructure build. • WG member describes a pilot as a stress test on how to handle certain scenarios. It is an opportunity to assume extreme scenarios like the banning of pipes to see what alternatives there are and the benefits the pilot can bring instead of selecting options you know have worked in the past	

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3. Considerations Regarding Cost-Effectiveness Guidance for IRP

Enbridge requested for additional Enbridge staff (Rich Szymanski and Sue Mills) to join the call during this segment of WG meeting #3. No objections from WG members.

Item Description	Discussion Comments/Outcome	Action Items
DCF+ Test Enhancements WG member Chris Neme shared his views on potential refinements to Enbridge's IRP cost effectiveness test by leveraging concepts from NSPM while remaining consistent with OEB IRP decision. Other WG members provided their input on his suggestions.	Enbridge's Proposed DCF+ Test Some key proposals by Chris included the following (see slides for more details): • Simplifying to a two-stage test. The first stage would address the rate impact of IRPA/facility solutions, and the second stage would address broader customer/societal impacts. Results of these two stages would be presented individually for the OEB's consideration, but not added together. Chris indicated that this would align with the intent of the IRP decision, but be more logically consistent. • Comparing an IRPA to the default facility solution, rather than comparing both IRPAs and facility solutions to a "do nothing" alternative. • Using a societal discount rate for the second stage of the test, instead of weighted average cost of capital (WACC), and potentially for stage 1 as well. Chris indicated that WACC reflects the time value of money for shareholders, not society, and that the net present value of alternatives is heavily impacted by the choice of discount rate. • Using best forecasted estimates of key inputs, including carbon price • Addressing the impact of IRPAs on gas supply price, and the hedge value of IRPAs • Additional proposals regarding specific costs/benefits relevant to each stage WG members generally agreed that Chris had made some useful suggestions that warranted further consideration by Enbridge and the WG. Additional points raised in discussion: • How much latitude the WG has to deviate from the IRP decision. Chris indicated that	• Enbridge to consider DCF+ input provided to date. Discussion to resume at future meeting (likely May)

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	proposals had been drafted to be consistent with the intent of the IRP decision. • Whether by not considering sunk costs there is a bias towards existing infrastructure. WG members generally agreed that evaluation needed to be marginal and forward-looking, and should include opportunity costs and avoided costs. • Whether the "do nothing" alternative is a preferable starting point if the system need is driven by new customers. • A suggestion that the DCF+ test should include qualitative consideration of benefits and costs that cannot be quantified • Whether there is value in trying to evaluate impact of an IRPA on gas supply costs and, if so, how to do this (i.e. linear impact or step change). Enbridge and a WG member indicated that they do not think this factor will make a big enough impact to be worthwhile to include. Enbridge indicated that it expected to present some DCF+ refinements it was considering (as part of its pilot work) at the May meeting. OEB staff suggested resuming discussion on DCF+ at that meeting. Enbridge indicated that it may request a few minutes at the April or May meetings to also ask any clarifying questions regarding Chris's suggestions.	

List of Action Items

Action Item	Assignment/ Owner	Due Date
Update meeting #2 notes with changes flagged by WG members	OEB staff	Completed
Verify approval to publicly post responses to WG member's questions on Enbridge activities	OEB staff & Enbridge	Completed
Circulate summary of meeting #3 outcomes	OEB staff	Completed

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Draft Confidentiality Agreement for WG members	OEB staff	As soon as possible
Provide draft annual IRP report for WG consideration (including update on IRPA template, and update on what information from Posterity IRP Analysis can be shared)	Enbridge Gas	Likely April 2022
Return with more detailed materials on pilots for WG consideration	Enbridge Gas	Meetings #4 and 5 (April & May 2022)
Further discuss guidance on DCF+ test	All WG members	Future working group meeting(s). Delayed until May 2022.
Establish agenda for meeting #4	OEB staff (with input from Enbridge Gas)	Prior to meeting #4

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Appendix: Responses to WG Questions on Enbridge Gas Activities
(responses by Enbridge Gas (and IESO for question 7) provided in red)

Questions about Utility Operations or Typical Practice

1. When is the Enbridge system peak? Is it weather driven? Enbridge's system peak is in the winter and it is weather driven. However, there are some isolated system peaks during the fall due to grain dryers and asphalt plants.
2. How is the forecasting Design Day defined? Enbridge's Design Day is a set of criteria used to determine peak requirements which are:
   - Design temperature condition, based on historical temperatures experienced within a given region
   - Firm contract demands On; and
   - Interruptible customer demands Off.
3. I believe Enbridge has said it currently accounts for DSM in its utility forecasts. Does the current forecast derate DSM as a resource? If so, how much? Enbridge includes historical DSM savings in the demand forecast. The forecast does not include forecast savings from upcoming DSM programs.
4. Are there currently any supply constraints on the Enbridge distribution system? Yes, there are distribution system constraints. The Asset Management Plan identifies those constraints including the required facilities to mitigate the constraint.
5. How many Leave to Construct applications does Enbridge typically file in a calendar year? If the answer is less than one, then how frequently does Enbridge typically file an application? The number of LTC applications varies year to year but will be in the range of 2-25 per year.
6. At which locations does Enbridge measure volumetric flow in its system? How frequent are those measurements? How many customers are typically downstream of each measurement? The volumetric flow is measured at numerous points across Enbridge's system.
7. Have Ontario electricity customers ever had the option to participate in a thermostat-controlled demand response program? This question is best answered by the IESO.
   {*Additional information provided by IESO representative on WG*}: The IESO has in the past been involved in the administration of the peaksaver and peaksaverPLUS residential demand response program. Funding of new device installations under this program was ceased in 2014 and the program was subsequently wound down. Technically, residential DR has been able to participate in the IESO's Demand Response Auction (and now Capacity Auction) since 2017. Initially there was some limited participation, including by LDCs that leveraged devices previously installed through peaksaver and peaksaverPLUS. I am not aware of any residential demand response participation the auctions for at least the last two years. While this may be anecdotal, discussions between the IESO and DR aggregators provide some insight into the lack of participation, including challenges related to Measurement & Verification, and challenges related to satisfying an auction requirement for the DR capability to cover a six-month summer commitment period (as the savings potential is primarily air conditioning load, there's isn't generally much AC load to curtail in May or October, for example). Attached please find the two last peaksaverPLUS evaluation reports. Inside you should find various metrics for penetration rates, cost-effectiveness, etc. Please note that while these reports are not confidential, I only ask that they don't be shared publicly in any formal manner unless they can be remediated to be in compliance with AODA requirements (*NB: referenced evaluation reports are not included in notes due to AODA requirements*). We've also managed a few other LDC-led smart thermostat pilots and there should be some evaluation reports for these initiatives on the IESO website, if you are interested.

8. In the last few years, traditional natural gas infrastructure projects have become more uncertain, even those that have been regulatorily approved. The developer may be denied environmental permits, for example, and may abandon the project. Has Ontario seen any similar reliability risk related to natural gas infrastructure? No.

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Questions specific to the IRP D&R or process:

9. The Decision and Order says that electrification is not an available IRPA under the current Framework. Are electric projects allowed if they are not attached to the electric grid? Or are all gas-to-power projects unavailable for the first generation? No. Per the OEB's IRP Decision Enbridge is not pursing electric IRPAs. Specifically, the OEB stated at p. 35: "*Enbridge Gas also proposed non-gas IRPAs, specifically electricity-based alternatives. The OEB has concluded that as part of this first-generation IRP Framework, it is not appropriate to provide funding to Enbridge Gas for electricity IRPAs. This may be an element of IRP that will evolve as energy planning evolves, and as experience is gained with the IRP Framework.*"
10. In the Decision and Order, Enbridge was encouraged to work with IESO or the LDCs on electricity IRPAs. If they do so, are they able to recover the cost of their time? Enbridge does not know the answer to this question.
11. Must all IRP solutions be connected to the gas distribution grid? Or can independent DERs be considered? (e.g. microgrids for gas) The IRP alternatives approved by the OEB are connected to Enbridge's natural gas system. We can have further discussion regarding "microgrids for natural gas" at the March meeting.
12. What is the pre-installation timeline for the IRP process? Is it initiated with an Enbridge IRP plan? How long does the OEB have to review that plan? What are the next steps? Etc. Please see the evidence filed by Enbridge in the IRP proceeding for a detailed discussion of the IRPA process. At a high level the process is:
    1. Enbridge will identify needs on its system which include the facilities required to meet the need.
    2. Enbridge will then use the OEB-approved screening criteria to screen projects.
    3. For the projects passing screening Enbridge will review IRP alternatives.
    4. Enbridge will review the technical feasibility of the IRPAs ability to meet the identified need.
    5. For those IRPAs that meet the identified need Enbridge will evaluate the economic value of the IRPAs using the DCF+ test and compare it to the facility solution.
    6. Per the OEB's Decision, the lowest cost option will be implemented.
    7. Enbridge will file an IRPA Plan application with the OEB for approval. The timing of the application is dependent upon timing of the system need and the type of IRPA.
    8. The OEB has established timelines for its regulatory proceedings.

Meeting Notes

Integrated Resource Planning Technical Working Group (EB-2021-0246)

Working Group Meeting #4

Meeting Date: April 26, 2022 Time: 1:00 p.m. - 3:00 p.m.
Location: MS Teams

Attendees

IRPTWG Members	Role
Michael Parkes	OEB staff representative (Working Group chair)
Stephanie Cheng	OEB staff representative
Chris Ripley	Enbridge Gas representative
Amrit Kuner	Enbridge Gas representative
Jay Shepherd, Shepherd Rubenstein Professional Corporation	Non-utility member
John Dikeos, ICF Consulting Canada Inc.	Non-utility member
Tammy Kuiken, DNV	Non-utility member
Cameron Leitch, EnWave Energy Corporation	Non-utility member
Chris Neme, Energy Futures Group	Non-utility member
Dwayne Quinn, DR Quinn & Associates Ltd.	Non-utility member
Kenneth Poon, EPCOR Natural Gas LP	Observer
Steven Norrie, Independent Electricity System Operator	Observer

Additional Attendees	Role
Valerie Bennett	OEB staff

Regrets

IRPTWG Members	Role
Amber Crawford, Association of Municipalities of Ontario	Non-utility member

Purpose

These notes summarize the information discussed during the working group (WG) meeting on each of the key points presented in the published materials.

Meeting Agenda

1. Preliminary Matters & Update/ Discussion on Working Group Activities including WG report and work plan (OEB staff, 30 minutes)
2. Discussion of comments on Enbridge Annual IRP report (Enbridge, 30 minutes)
3. IRPA Pilots (Enbridge, 1 hour)

1. Preliminary Matters & Discussion on Working Group Activities (WG Report and Work Plan)

Item Description	Discussion Comments/Outcome	Action Items
Meeting #3 Notes OEB staff asked if there were any comments on meeting #3 notes	One correction had previously been noted via e-mail and incorporated. No additional changes flagged by the working group. Therefore, the notes are accepted by WG members. Posterity Model WG members inquired as to an update on the status of whether Enbridge can share the Posterity model filed in the St. Laurent proceeding and when they will receive this information (action item from WG meeting #3). • Enbridge indicated that the Posterity model will not be shared with the working group since the model does not belong to them. Enbridge provides their customer data to Posterity who then provides Enbridge with information used to assess IRPAs. Chris R. plans to draft an email to the working group addressing the rationale for Enbridge's course of action. • WG members including OEB staff noted concerns with lack of access to this information, as it is an important input into Enbridge's determinations on the technical and economic viability of IRPAs to meet system needs, and should not be a "black box". • WG members question whether Enbridge has grounds to withhold this information from the working group. OEB staff indicated that since this is not an adjudicative proceeding, the Working Group likely does not have authority to compel Enbridge to share the model. WG member requested that OEB staff seek opinion from legal counsel on this issue, as the authority of the WG stems from a board order.	OEB staff to post meeting #3 notes on IRP webpage Enbridge to provide response to WG request for Posterity model (including input from legal). OEB staff to request legal opinion from in-house counsel on WG's authority to compel information.

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Scheduling of Future WG meetings OEB staff discussed the timing and scheduling of upcoming WG meetings. OEB also addressed the cost awards process for this working group	WG Meetings • Several WG members have conflicts with the current scheduled times for the upcoming May (May 17) and June (June 21) WG meetings. • Monthly meetings will continue over the summer, at times to be scheduled. Cost awards for WG Members OEB staff intends to initiate the cost awards process after June's WG meeting. Cost awards will cover the first 6 months of activity by WG members.	OEB staff will send out a doodle poll to determine the best available time slot for May-August 2022 WG meetings.
WG annual report OEB staff discussed the content and process regarding the filing of the WG annual report	Proposed approach As per the IRP decision, a report from the working group should be filed by the OEB in the same proceeding Enbridge files its annual IRP report. OEB staff discussed proposed approach regarding technical working group report. The proposed approach is to have the WG report drafted by OEB staff The WG report would be signed off by all WG members (including Enbridge members). However, there would be a section for individual comments for members to address matters where a consensus could not be reached. The individual comments section does not have to be signed off by the working group. WG members raised several concerns with this approach: • Whether Enbridge needs to sign off on the WG report since the WG report is essentially evaluating Enbridge's annual IRP report/ actions/ deliverables. This makes the process circular if Enbridge needs to agree with their own report that the WG is evaluating. OEB staff indicated that Enbridge would not need to agree with all member comments, but would sign off that the report was an accurate representation of WG views.	OEB staff will circulate a first draft of the WG report in advance of May meeting

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	• Whether OEB staff is the appropriate author. OEB staff suggested this was appropriate since OEB staff is the chair of the working group, has an impartial stance, and has allocated time and resources to do so. • Whether the individual comments section of the WG report will essentially become WG members drafting their own submissions • Whether the outline for the WG report proposed by OEB staff places too much emphasis on other activities of the Working Group, and not enough on the review of Enbridge's annual IRP report, which (in the view of one WG member) is intended from the IRP decision to be the primary purpose of the WG report. Timing • The WG annual report is to be drafted in advance of the May WG meeting but will need final modifications to account for changes to Enbridge's annual report. • Enbridge has some concern that the timing of the WG report should not slip since Enbridge has a deadline for the filing of their annual IRP report at the end of May 2022. The working group agreed to consider a first draft of the WG report from OEB staff (which will take into account concerns raised by members) to see if any changes need to be made to the approach.	

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WG work plan OEB staff shared the draft work plan with WG members to seek feedback on the workstreams identified.	The terms of reference (ToR) call for OEB staff to establish a work plan with priority activities for the working group. In OEB's draft work plan, 5 workstreams are identified, speaking to the priority of tasks. It is a living document that will be kept up to date and will be included in the WG report to be filed by OEB staff. Workstream 4 – IRP considerations in Enbridge's rebasing application • OEB staff proposed an opportunity for Enbridge to inform the working group on how IRP is considered in their rebasing application, so WG members have a chance to provide comments before the application is filed. OEB staff feels this could be valuable since rebasing will impact Enbridge's operations over the next decade. • Some WG members question whether this workstream should be part of the working group agenda: ○ Some members note that comments made will not have an impact on Enbridge's rebasing application and in particular its asset management plan (AMP) due to timing of application (although WG comments may prove useful to intervenors). Member time may be better spent on other tasks. • Enbridge confirmed that the details of the AMP will not be shared with the working group prior to the filing of its rebasing application. Therefore, Enbridge does not believe it will be helpful to get comments from the working group. • OEB staff will give more thought on whether workstream 4 is valuable given the points raised by WG members. Members can also comment on this item in the draft workplan. Other Tasks • Some WG members raised the need for Enbridge to undergo additional stakeholdering activities in advance of filing application. Enbridge responded that this will be dealt with separately.	OEB staff will post updated workplan on Sharepoint site. WG member comments on the draft WG work plan is requested by May 10, 2022

2. Discussion of Comments on Enbridge IRP Annual Report

Item Description	Discussion Comments/Outcome	Action Items
Addressing Comments from WG Members on Enbridge's draft IRP Annual Report Enbridge discussed comments provided by WG members (via e-mail and via comments in draft files) on Enbridge annual IRP report. Not all comments were discussed, as OEB asked WG members if there are any key areas of concern they would like to highlight to Enbridge in the IRP report for clarification/ updates	WG member asked if May 31 was a hard deadline for filing annual IRP report. Enbridge indicated that there was some flexibility, but this was Enbridge's preference as the report is a mandatory component of its annual DVA application. Some areas of concern with the annual IRP report highlighted by WG members are noted below: General • WG member notes the general message received from reading the annual IRP report is the limited work Enbridge has done on IRP apart from building a website. • Enbridge acknowledges the limited content in this year's IRP report and attributes this to a timing issue with a December 31,2021 cut off date, and not because of Enbridge's productivity. • Enbridge informed the working group that the AMP (identifying system needs) was completed April 25, 2022. As a result, Enbridge now has a lot of work that lies ahead with screening potential projects and compiling the IRP appendix. However, WG members noted that Enbridge has been working on the AMP for over a year and several projects like St. Laurent had already been screened for IRP alternatives. WG member suggested that Enbridge representatives on the IRP working group should have been actively involved in these determinations, and these screenings should be noted in the IRP report. Stakeholder Engagement There are diverging views between Enbridge and various WG members when it comes to when stakeholders should be engaged in options to meet system needs, and the extent of reporting on such activities by Enbridge in its annual report.	Enbridge to update annual report taking into consideration both the written and verbal comments provided by the working group. Enbridge will document how they considered WG comments. To get to draft #2 of the annual report, Enbridge may follow up individually with WG members if required.

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	• WG member suggested that Enbridge should talk to customers to identify their needs and preferences before developing a plan. • Enbridge indicated that stakeholders should be engaged on solutions for specific system needs once AMP is filed in Nov 2022. Enbridge highlights the importance of researching different regions to know where constraints exist and questions why they would approach a customer without knowing if there is an issue/constraint first. • However, other WG members add that constraints do not change overnight. Enbridge should know what problems are on the horizon and should take those forward to stakeholder customers, to avoid predetermining the proposed solution and including it in the rebasing application. Despite the differing views on the timing of stakeholder engagement, Enbridge confirmed they have various stakeholder activities underway for indigenous communities and municipalities. WG members suggested for Enbridge to revise this section of the IRP report to describe what stakeholder engagement is already underway, and what would be done after AMP filing. A WG member also suggested broader stakeholder engagement for process planning questions that are not region specific. Enbridge responded that this is part of the evidence in the rebasing application. IRP Website • WG member noted that the IRP website cannot be reached from the Enbridge or Sustainability page. Enbridge will check to ensure website is functioning as intended • WG member suggested having the option on the website to view all regions as opposed to selecting a specific location. Enbridge agreed to add this functionality. Details of Aspects of IRP Assessment • Members noted that the level of detail	

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	regarding several aspects of the IRP assessment process was very high-level in the IRP report. Areas noted include the details of the binary screening process, the system modeling done to confirm a constraint, the approach to demand forecasting, the details of baseline facilities and the level of redundancy built into system planning. Enbridge indicated that the annual IRP report was only a high-level summary of these aspects, and more details in these areas would be included or referenced in the rebasing application, or has been included in the record for the IRP proceeding. Member indicated that, where possible, the annual IRP report could highlight what has changed in Enbridge's approach due to the IRP decision. Results of IRP screening for specific system needs • WG member noted that IRP decision requires Enbridge to include list of forecasted needs for a 10-year horizon highlighting status and results of IRPA consideration (e.g. where IRPAs have been screened out). Enbridge confirms that this will be an appendix in the AMP. However, it can not be included in the current year's annual IRP report since previous AMP did not include IRP. Enbridge will provide this information in next year's IRP report. WG member suggested identifying in the report where there are OEB requirements for the annual IRP report that Enbridge has yet to complete. Enbridge agreed. Best available information • WG member noted that the IRP annual report's appendix on best available information on IRPAs is quite limited. This information is important because it is a starting point for technical and economic evaluation of IRPAs in meeting system needs. Example: Adding mention of Posterity analysis of feasibility of DSM.	

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3. IRPA Pilots

Enbridge provided materials outlining the pilot objectives, general criteria, and 4 IRPA categories Enbridge is considering. Details of the discussion are detailed in the table below. Since the AMP was recently completed, Enbridge anticipates they will need the month of May to review the AMP, complete initial screening, and will return with 6-10 potential pilots targeting specific system needs for consideration by the working group meeting in June 2022.

Item Description	Discussion Comments/Outcome	Action Items
General Questions / Comments	Hydrogen WG member questions whether hydrogen is being considered as a potential IRPA pilot. Enbridge feels the tech is in its infancy stage so it may not be suitable for pilot testing just yet Renewable Gas • WG member questions why renewable natural gas (RNG) is on the list and wants clarification on what makes it an IRPA. • Enbridge notes RNG is named in the OEB decision. Enbridge agreed that, in principle, RNG is a subset of NG supply options, which could also include conventional natural gas produced locally. It is the location of the injection point that makes RNG or other natural gas supply sources a potential IRPA (supply downstream from the constraint). Upcoming Pilot Discussions • Enbridge plans on bringing a list of potential projects with details to identify what pilots the working group is interested in testing	
General Pilot Criteria	Long vs. Short term Projects Enbridge clarifies that reference to "long-term" and "short-term" in the proposed pilot descriptions is a reference to when the system constraint needs to be met, not when the IRPA targeting the constraint is implemented. WG members expressed a desire for pilots to enable learnings within 6-12 months so Enbridge can apply those learnings into future AMPs (although the pilots may run for longer periods of time). They do not want pilots where learnings can only be applied in 5 years time. Enbridge confirms that the timing factor will be	

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	evaluated and addressed for each specific pilot. WG member noted that pilot should not be set up for failure by being rushed to deliver results on a time frame that is too compressed, in order to address a near-term need. Cost Effectiveness Enbridge clarifies positive cost effectiveness of a pilot is a target but will not prevent a pilot from moving forward if it has great potential. WG members agreed that the pilots should not be required to be cost-effective, noting that the methodology for the cost effectiveness test (DCF+) will still be in development and methodological changes could potentially change the results of the test, and that pilots may incorporate measures/approaches to facilitate learning, even if this lowers cost-effectiveness. Customer Mix All other things being equal, WG member noted that a diverse customer mix for the pilots is preferred. Enbridge confirms that the customer mix will be specifically addressed for each pilot. Scalability WG members note that the pilots selected should be representative of Enbridge's system needs and customer mix. This factor falls under the scalability criterion.	
Pilot #1: Enhanced Targeted Energy Efficiency (ETEE) + Supply side IRP	WG members generally support this IRPA, but made some suggestions to improve effectiveness. Customer Mix WG member noted concern if there are large customers disinterested in participating, as this will significantly impact the results of the pilot Automated meter reading (AMR) • Enbridge Gas indicated that the IRPA would be an area with a single source natural gas feed, at a single gate station with hourly metering and telemetry. Enbridge would supplement this with strategically placed AMR at a random sample of customers at targeted customer locations. Enbridge believes this will	To be further discussed at upcoming working group meetings. For the working group meeting in May, Enbridge requests for a DSM colleague to join. No objections received from the working group.

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	provide good data collection to better understand how different customers will react to different measures. • WG members suggested Enbridge carefully review the need for and extent of customer metering, noting that Enbridge already has a lot of information on customer demand and on the peak demand impact of measures that can be drawn on, and metering data may not be necessary for all measures (i.e. those where impact is quite well known). The goal is to know what happens at peak hour and what measures can be put in place to reduce peak hour. • Enbridge notes AMRs needs to be installed but could require a year of baseline data to assess impact of IRPA. Members expressed concern for this delay, and indicated that if a baseline established through AMR is absolutely necessary, it should be in place for the coming heating season, to avoid losing another year of pilot implementation. Enbridge acknowledges the concerns raised by WG members but is fairly certain this will be selected as one of the pilots. Therefore, further details will be discussed at future working group meetings.	

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<table>
<tr>
<td>Pilot #2:
Compressed Natural Gas (CNG) / Liquified Natural Gas (LNG)</td>
<td>Working group discussion was primarily focused on clarifying how the pilot would be implemented. This is summarized below:

Learnings
Enbridge plans to own this type of equipment for peak shaving purposes in addressing short term needs. Enbridge believes this will allow them to learn more about how to use the equipment

Location
• Enbridge clarifies it can potentially deploy equipment at a specific customer site or within its pipeline network, serving multiple customers. WG members advise for Enbridge not to rule out specific customers. Enbridge agrees to look at both network and individual customers as possible injection sites.

Other Comments and Considerations
• WG members seek clarification on the difference between pilot #1 vs. pilot #2, in terms of the supply-side component. WG member noted that CNG could also be implemented as part of pilot #1, and the additional learnings may not justify a separate pilot. Enbridge indicated that the supply-side component in pilot #1 may be a method that has previously been used (e.g. contracted deliveries), whereas pilot #2 would test a new approach to address peak shaving.
• WG member noted that LNG may require more upfront capital investment, and may be less desirable for that reason. Enbridge generally agreed that LNG was likely to have a larger capital component.</td>
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Pilot #3: Demand Response	Working group discussion was focused on key points to consider when structuring a demand response pilot. Customer Mix • Enbridge plans to focus the pilot on residential and small commercial customers. WG member noted it would be undesirable to have too many contract customers. DR Options • WG member notes it may be desirable for Enbridge to test multiple approaches to delivering DR (e.g. direct thermostat control by the utility, or customer-controlled, potentially in response to price signals). This will result in more learnings like which option is more responsive. Members noted that aggregators had had success in delivering DR capacity for the electricity system. • WG member suggested that there may be synergies between EE and DR and Enbridge could look at combining these, potentially increasing savings and reducing marketing costs (e.g. customers may be more willing to participate in DR if their house has been insulated).	
Pilot #4: Demand Response (version 2)	Main difference between pilot #3 and #4 is that pilot #4 is focused on contract customers. To be further discussed in upcoming meetings. WG member requests for 1 of the 10 pilots to be presented by Enbridge in upcoming meetings to involve contract customer utilizing dynamic pricing as a form of demand response	

List of Action Items

Action Item	Assignment/ Owner	Due Date
Post meeting #3 notes	OEB staff	As soon as possible
Circulate summary of meeting #4 outcomes	OEB staff	As soon as possible
Draft Confidentiality Agreement for WG members	OEB staff	As soon as possible

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Create doodle poll to secure monthly WG meeting dates and times for May through to August 2022	OEB staff	As soon as possible
Provide draft #2 of annual IRP report for WG consideration	Enbridge Gas	Early May 2022
Post draft WG workplan for member comments	OEB staff	Early May 2022
Provide draft #1 of annual TWG report for WG consideration	OEB staff	Prior to May 2022 WG meeting
Verify with respective legal counsel on whether information on the Posterity model can and should be shared with the working group	OEB staff and Enbridge	May 2022 WG meeting
Return with more detailed materials on pilots for WG consideration	Enbridge Gas	Meetings #5 and 6 (May & June 2022)
Further discuss guidance on DCF+ test	All WG members	Future working group meeting(s), likely including May 2022.
Establish agenda for meeting #5	OEB staff (with input from Enbridge Gas)	Prior to meeting #5

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Meeting Notes

Integrated Resource Planning Technical Working Group (EB-2021-0246)

Working Group Meeting #5

Meeting Date: May 24, 2022 Time: 2:00 p.m. - 4:00 p.m.
Location: MS Teams

Attendees

IRPTWG Members	Role
Michael Parkes	OEB staff representative (Working Group chair)
Stephanie Cheng	OEB staff representative
Chris Ripley	Enbridge Gas representative
Whitney Wong (Replacing Amrit Kuner)	Enbridge Gas representative
Amber Crawford, Association of Municipalities of Ontario	Non-utility member
Jay Shepherd, Shepherd Rubenstein Professional Corporation	Non-utility member
John Dikeos, ICF Consulting Canada Inc.	Non-utility member
Cameron Leitch, EnWave Energy Corporation	Non-utility member
Dwayne Quinn, DR Quinn & Associates Ltd.	Non-utility member
Kenneth Poon, EPCOR Natural Gas LP	Observer
Steven Norrie, Independent Electricity System Operator	Observer

Additional Attendees	Role
Valerie Bennett	OEB staff
Lynn Ramsay	OEB staff
Malini Giridhar	Enbridge Gas guest
Craig Fernandes	Enbridge Gas guest
Cara-Lynne Wade	Enbridge Gas guest

Regrets

IRPTWG Members	Role
Chris Neme, Energy Futures Group	Non-utility member
Tamara Kuiken, DNV	Non-utility member

Purpose

These notes summarize the information discussed during the working group (WG) meeting on each of the key points presented in the published materials.

Meeting Agenda

1. Preliminary Matters (OEB staff, no time allotment)
2. Enbridge Gas Annual IRP Report and Working Group Report (Enbridge/OEB staff, 40 minutes)
3. IRP Pilots – Enhanced Targeted Energy Efficiency (Enbridge, 20 minutes)
4. IRP Pilots – AMP Update and Geographical IRPA Plan (Enbridge, 40 minutes)
5. Working Group Scheduling/ Workplan and Next Steps (OEB staff, 20 minutes)

1. Preliminary Matters

Item Description	Discussion Comments/Outcome	Action Items
Meeting #4 Notes OEB staff asked if there were any comments on draft meeting #4 notes	There were no comments on meeting #4 notes. Therefore, the notes are accepted by working group members.	OEB staff to post meeting #4 notes on IRP webpage
Posterity Model / Sharing of Information/ Confidentiality Agreement OEB staff provided an update on the opinion received from their legal counsel on the grounds OEB and/or the working group has in compelling Enbridge to share information like the Posterity model.	• OEB staff indicated that their legal counsel is of the view that the working group (or chair of the working group) does not have the authority to compel Enbridge to provide information. Under certain circumstances, the OEB as an organization could do so, as could a Panel of Commissioners in the case of a hearing. OEB staff indicated that WG members who believe access to information is a key concern could document this as part of their individual comments to the working group report. • Enbridge indicated that they want to share information where they can with the Working Group. Specific to the Posterity model, Enbridge confirmed that Posterity prefers for the model not to be shared. Enbridge also notes that changes are being made to the model to improve its accuracy in assessing the impact of energy efficiency IRPAs. However, given the level of interest expressed by WG members on gaining more insight to the model, Enbridge will	Enbridge to follow up with Posterity and legal counsel and to report back to the working group via e-mail on whether the Posterity model can be shared (and to what extent) and if a confidentiality agreement will need to be drafted and signed by WG members.

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	consider what details of the model can be shared at future meetings in the context of discussion on energy efficiency IRPAs. • Based on the discussion, WG member questioned whether a confidentiality agreement would facilitate better information sharing between members and Enbridge; and if so, whether drafting of the agreement is underway. WG member also noted that if any IRPAs reference the Posterity model in Enbridge's AMP and rebasing application, the model will need to be shared or it will not be approved since it is currently a "black box" – as such, WG members prefer to have the model sooner since it needs to be shared eventually • OEB staff indicated that drafting of the confidentiality agreement had been put on hold, as Enbridge had not indicated a need to declare any materials confidential or make use of such an agreement, and asked Enbridge to request OEB staff to develop such an agreement if it believed this would be helpful.	

2. Enbridge Gas Annual IRP Report and Working Group Report

Item Description	Discussion Comments/Outcome	Action Items
Enbridge's Annual IRP Report Enbridge provides an update on next steps based on WG member comments and the current draft of Enbridge's annual IRP report	Enbridge will circulate an updated draft IRP report (including appendix of IRP alternatives) to the working group which will include the following new content: • Details of what IRPAs have been scoped in/out of consideration • Details on the process for developing pilots Timing and Filling Approach • Enbridge will circulate an updated draft IRP annual report to the working group by Wednesday, May 25, 2022* • The plan is to file the working group report as an appendix to Enbridge's	Enbridge to provide the following items by Wed, May 25, 2022: • an updated draft annual IRP report • an update on the timeline and how the IRP annual report and WG report will be filed* *Enbridge and OEB staff confirmed via e-mail the following timeline changes: **May 26, 2022** – updated

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	annual IRP report. However, if Enbridge plans to file their annual IRP report on Tuesday, May 31, 2022, along with it's annual DVA application, WG members are concerned there will be insufficient time for members to review the updated IRP annual report, provide comments to Enbridge for potential updates to their report, and to review the working group report while drafting any potential individual comments by the May 31, 2022 deadline. • WG members proposed for Enbridge to proceed with filing their DVA application on May 31, 2022. However, Enbridge should include a note in their cover letter stating that Enbridge's annual IRP report along with the appendices (including the working group report) will be filed as a single package one week later (June 7, 2022*). This will give WG members more time to review and compile comments. • Enbridge agrees with member concerns of tight deadlines and will verify with regulatory on the proposed approach and timelines in filing the IRP annual report. Website Enbridge is in the process of updating and resolving matters associated with the website that were identified in meeting #4.	draft annual IRP report **May 31, 2022** – filing of DVA application noting in cover letter IRP annual report and appendices (including WG report) will be filed a week later **June 8, 2022** – filing of Enbridge's annual IRP report and appendices (including WG report)
Working Group Report	WG members recognize that the individual comments section will likely be the heart of the matter for the working group report. • One WG member indicated general support for the draft OEB staff comments that are currently in the draft working group report. Some other WG members indicated they are in the process of drafting individual comments. • OEB staff encouraged members to start adding their comments in the draft WG report ASAP, so that all other members are aware of their perspective. Members will have the opportunity to update and finalize their comments after Enbridge has finalized its updated IRP annual report.	WG members are encouraged to comment on the draft working group report on the sharepoint site and to draft any individual comments since the deadline for member comments has been confirmed for June 2, 2022, and submission has been confirmed for June 8, 2022.

ONTARIO ENERGY BOARD | COMMISSION DE L'ÉNERGIE DE L'ONTARIO

3. IRP Pilots – Enhanced Targeted Energy Efficiency

This agenda item of the WG meeting was presented by Enbridge Staff, Craig Fernandes.

Item Description	Discussion Comments/Outcome	Action Items
Pilot #1: Enhanced Targeted Energy Efficiency (ETEE) Enbridge provided more insight on their measures of focus and input assumptions on ETEE measures for peak hour shaving. WG members shared their input.	Enbridge noted that the premise of the pilot is for the ETEE measures to be geotargeted to reduce peak system demand. Customer Mix Enbridge identified 4 classes of customers (residential/ commercial/ multi-residential/ industrial) and potential conservation measures of focus based on space heating energy use (heating system advancement, air infiltration prevention measures like ventilation, and building envelope improvement) where the objective is to make each measure of focus as similar as possible between customer groups. WG members generally supported the focus on space heating measures (due to their high correlation with peak demand) and noted a few items for Enbridge to consider based on the materials presented: • Recommissioning – WG member proposed for recommissioning to be a fourth category in Enbridge's table of measures of focus. Enbridge is encouraged to give customers the ability to change their operation approach since one of the WG members notes that this appears to be of interest in previous proceedings. • New equipment requirements – WG member expressed concerns about including heating system advancement for that would lock in new gas-fired equipment, particularly for measures with long lifetimes. • Uptake by Customers – WG members noted that ETEE program design strategy and marketing are just as important as the type of pilot/ measures chosen, and emphasized the need for Enbridge to consider how they will package these measures to encourage uptake by customers in the geotargeted areas. Enbridge acknowledged the importance of this step but clarified that they have yet to refine their approach since it is a function of first determining the specific area being	Enbridge to consider WG comments as it continues to refine its proposal for an ETEE IRPA

ONTARIO ENERGY BOARD | COMMISSION DE L'ÉNERGIE DE L'ONTARIO

	targeted and its customer mix. ETEE Input Assumptions WG members noted the following concerns and recommendations based on input assumptions presented by Enbridge: • Enbridge and WG members noted that the Technical Resource Manual of energy efficiency measures is not 100% applicable since the pilot focuses on peak savings as opposed to annual savings • Enbridge proposed that only gross impact would need to be measured. WG members agreed that the primary metric of interest might be gross peak demand reduction in the area being targeted. However, WG members thought there were subtleties (e.g. cost-effectiveness testing, impacts on program design, aligning impacts with broader demand forecasts and avoiding double-counting) that likely warranted Enbridge measuring both net and gross impacts, to assess incremental program impact. • Regarding Enbridge's proposal to use an in-situ baseline for measure impact, WG member noted the importance of clearly defining the duration of the program impact (e.g. expected life of existing equipment) instead of using a blanket statement. • WG members noted the importance of gathering any required baseline data during the next (2022/2023) winter heating season.	

4. IRP Pilots – AMP Update and Geographical IRPA Plan

Item Description	Discussion Comments/Outcome	Action Items
Asset Management Plan (AMP) update	Enbridge provided an update on where its asset management plan stands and how the AMP projects will be assessed. Enbridge Gas indicates that the status of IRP assessment for system needs will be included as an appendix to the AMP. There will be 3 phases of IRP assessment. At the time of filing the rebasing application, only the first phase (binary	Enbridge to bring forward materials on screening criteria for June WG meeting and confirm what information from the draft AMP will

	screening) will be complete, but updates addressing phases 2 and 3 will be provided in 2023 through interrogatories/evidence updates. Enbridge noted it will provide its interpretation and operationalization as to the IRP Framework's screening criteria, and how system needs were screened in/out of the AMP at the next WG meeting in June 2022. The purpose is for WG members to understand the process Enbridge takes as opposed to seeking WG approval. WG member requested to see the complete draft AMP. Enbridge indicated it would confirm what information can be shared with the WG in advance of filing the rebasing application. WG member inquired as to why storage was listed in the asset classes being considered for IRP alternatives, noting that storage was typically an asset owned by Enbridge's parent company, not its distribution business, and that these assets were large and lumpy, such that it would be difficult to design an IRP alternative to avoid such a project.	be shared
Pilot Strategy Discussion Enbridge discussed a new proposal for a broader geographical IRPA that could address multiple system needs, and include a suite of technologies.	Geographical IRPA Plan • WG members expressed general support for the concept of a geographical IRPA plan, or other options noted by Enbridge of trying to group system needs into project portfolios in determining the appropriate role for IRPAs. WG member noted that this had the potential for improved economy of scale in using IRPAs. • Several WG members suggested that the City of Ottawa is an ideal location for a geographical IRPA since the OEB rejected Enbridge's proposal to replace a pipeline in Ottawa so alternatives will need to be considered. Another WG member cautioned that the large amount of peak demand reduction that would be needed might make this a challenging system need to address through IRP	Enbridge to return to the June WG meeting with 4-5 potential geographical pilots for discussion

5. Working Group Scheduling/ Workplan and Next Steps

ONTARIO ENERGY BOARD | COMMISSION DE L'ÉNERGIE DE L'ONTARIO

Item Description	Discussion Comments/Outcome	Action Items
Frequency of WG Meetings Enbridge provided an update on items for future meetings and requested an opportunity for more frequent meetings	Enbridge anticipates an increase in workload with the ramp up of pilot projects and a related WG item of exploring DCF+ enhancements. As such, Enbridge proposed bi-weekly WG meetings to get timely feedback from members. WG members were supportive of a more frequent meeting schedule if needed. Proposed Schedule: • Bi-weekly WG meetings starting July 2022 • Of the 2 meetings scheduled per month, one will be a "general meeting" and the second will be focused primarily on the DCF+ • WG members are expected to attend the general meetings (when they can), but have the option to attend the DCF+ meeting as well.	OEB to set up and send out bi-weekly meeting invites July 2022 onwards *{done for July and August}*
DCF+ Subgroup Enbridge/OEB staff proposed the formation of an informal subgroup to discuss DCF+ test enhancements	Enbridge and OEB staff mentioned the option of a DCF+ subgroup to be formed by leveraging voluntary participation from WG members with expertise on benefit cost analysis. Cost awards would be available for this work, in line with the OEB's policies. • Cameron L. and John D. expressed interest in being on this group. Various WG members nominated Chris N. and Tamara K. (who were unable to attend meeting #5) as potential candidates for the DCF+ subgroup given their expertise on BCA analysis. • WG members agreed that all members will have the option to attend these meetings if interested, e.g. to learn more about the topic. • Enbridge shared that they have made a lot of progress on DCF+ test enhancements, and expect to be able to provide their DCF+ study and recommendations in July. WG members expressed an interest in getting an update from Enbridge on these DCF+ enhancements at the next meeting, prior to detailed subgroup discussion. Enbridge will try to provide a quick update since the priority of discussion will be on pilots at the next meeting.	Membership of the DCF+ subgroup to be determined as soon as possible Enbridge to potentially provide an update on DCF+ enhancements at June WG meeting

ONTARIO ENERGY BOARD | COMMISSION DE L'ÉNERGIE DE L'ONTARIO

List of Action Items

Action Item	Assignment/ Owner	Due Date
Post meeting #4 notes	OEB staff	As soon as possible
Circulate summary of meeting #5 outcomes	OEB staff	As soon as possible
Verify with Posterity and legal counsel on what information on the Posterity model can be shared with working group and whether a confidentiality agreement needs to be drafted to facilitate	Enbridge Gas	As soon as possible
Work to finalizing annual IRP report and WG report per agreed-upon schedule	All Working Group members	June 8, 2022
Return with more detailed materials on pilots and AMP screening criteria for WG consideration	Enbridge Gas	Meeting # 6 (June 2022)
Provide information on AMP screening criteria and confirm what information from the draft AMP will be shared	Enbridge Gas	Meeting #6 (June 2022)
Further discuss DCF+ test enhancements and formation of the DCF+ subgroup	All WG members	Future working group meeting(s). Update & subgroup formation potentially June 2022
Establish agenda for meeting #6	OEB staff (with input from Enbridge Gas)	Prior to meeting #6

ONTARIO ENERGY BOARD | COMMISSION DE L'ÉNERGIE DE L'ONTARIO

Meeting Notes

Integrated Resource Planning Technical Working Group (EB-2021-0246)

Working Group Meeting #6

Meeting Date: June 21, 2022 Time: 2:00 p.m. - 4:00 p.m.
Location: MS Teams

Attendees

IRPTWG Members	Role
Michael Parkes	OEB staff representative (Working Group chair)
Chris Ripley	Enbridge Gas representative
Whitney Wong	Enbridge Gas representative
Amber Crawford, Association of Municipalities of Ontario	Non-utility member
John Dikeos, ICF Consulting Canada Inc.	Non-utility member
Tamara Kuiken, DNV	Non-utility member
Chris Neme, Energy Futures Group	Non-utility member
Dwayne Quinn, DR Quinn & Associates Ltd.	Non-utility member
Jay Shepherd, Shepherd Rubenstein Professional Corporation	Non-utility member
Steven Norrie, Independent Electricity System Operator	Observer
Kenneth Poon, EPCOR Natural Gas LP	Observer

Additional Attendees	Role
Valerie Bennett	OEB staff
Malini Giridhar	Enbridge Gas guest
Craig Fernandes	Enbridge Gas guest
Cara-Lynne Wade	Enbridge Gas guest

Regrets

IRPTWG Members	Role
Stephanie Cheng	OEB staff representative
Cameron Leitch, EnWave Energy Corporation	Non-utility member

Purpose

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These notes summarize the information discussed during the working group (WG) meeting on each of the key points presented in the published materials.

Meeting Agenda

1. Preliminary matters - including approach and membership of IRP DCF+ subgroup, WG cost awards (10 min)
2. Debrief/discussion on concerns raised in WG report and options/approach moving forward (30 min)
3. Enhanced targeted energy efficiency IRPA (20 min)
4. IRP Pilots (30 min)
5. CNG as an IRPA (15 min)
6. Miscellaneous (15 min, or as time permits)

1. Preliminary Matters

Item Description	Discussion Comments/Outcome	Action Items
Meeting #5 Notes OEB staff asked if there were any comments on draft meeting #5 notes	There were no comments on meeting #5 notes. Therefore, the notes are accepted by working group members.	OEB staff to post meeting #5 notes on IRP webpage
Cost Awards OEB staff indicated that it would initiate a cost awards process in the near future for the first 6 months of IRP WG activities. DCF+ Subgroup OEB staff discussed the DCF+ subgroup.	• Several members have not previously used OEB cost claims process. • Members noted that there are some challenges using the online cost claims process, and training/extra time for filing would be helpful. • Per previous meeting, a subgroup will look at DCF+ test enhancements. • Non-utility members expressing interest include Tamara Kuiken, Chris Neme, John Dikeos, Cameron Leitch. Other members are welcome to attend as desired. • In general, the intent will be that the first WG meeting of each month will be specific to the DCF+ test, with the second meeting to be more general in nature. However, members are asked to keep the first meeting slot open in their calendars where possible, to provide flexibility to move faster on other IRP topics if needed. However, the July 5 meeting will be	OEB staff to schedule optional training session for IRP WG members on OEB cost claims process. OEB staff to send IRP WG meeting invites (DCF+ and full group) for fall 2022 Enbridge to circulate Guidehouse report on DCF+ recommendations in advance of July 5 meeting

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	specific to the DCF+ test. • Enbridge included some material on the DCF+ test arising from Guidehouse's review, but this was not discussed due to time constraints. The full Guidehouse report will be shared in advance of the first DCF+ meeting.	

2. Debrief/discussion on concerns raised in WG report

Item Description	Discussion Comments/Outcome	Action Items
Members discussed the concerns raised in the recently filed IRP Working Group report	• Enbridge confirmed that its annual IRP report (including the Working Group report) has been filed with the OEB, and is expected to be made public in the next few days, once a notice of hearing in Enbridge's DVA applications is issued. • OEB staff noted that management had been made aware of concerns raised in WG report, and that the report would be filed on the public record shortly, which provided a marker of the WG's concerns. WG member commented that there did not appear to be a legal avenue for the WG to further advance its concerns, and it would be up to the OEB to take additional action if required. • Two concerns raised in the WG report were the pace and quantity of information provided on key topics (including pilots) and the topics the WG could consider. • Enbridge indicated that the pace of work and quantity of information would pick up, now that Enbridge had an Asset Management Plan in place. • WG members discussed several topics, noting the demand forecast (and sensitivity of system needs to the forecast), the treatment of risk and stranded assets, as issues that would be important to IRP, and would be likely be addressed in the rebasing application, where the group could potentially provide some useful information and where Enbridge's determinations would impact the work of the WG on other IRP topics.	WG members to further identify what aspects of the rebasing application would be useful to the WG. Enbridge to consider information requests.

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	• Enbridge indicated that it would consider the requests received and would attempt to bring forward information from the rebasing application (in advance of filing) that would be useful to the WG. For the demand forecast in particular, Enbridge noted that it would be helpful to have the electricity sector at the table. OEB staff noted that IESO member was an observer and could likely help facilitate this discussion. • WG member noted that it should be up to the WG to determine priorities, not limited based on what Enbridge would agree to bring forward.	

3. IRP Pilots – Enhanced Targeted Energy Efficiency

This agenda item of the WG meeting was presented by Enbridge Staff, Craig Fernandes.

Item Description	Discussion Comments/Outcome	Action Items
Continuing discussion on the approach to an Enhanced Targeted Energy Efficiency (ETEE) pilot.	Continued discussion on the role gas-fired heating system replacements should or should not play in an ETEE pilot: WG members offered various suggestions, including: protocol prioritizing envelope improvements before heating system replacements, ruling out heating system replacements unless there is no feasible alternative, downsizing or future-proofing (e.g. account for hydrogen blending) any heating system replacements. Enbridge did not commit , but indicated that economics may lead to envelope improvements being prioritized regardless. Discussion on whether low-income housing would be part of residential pilot: WG members generally expressed a preference for including low-income customers, noting potential savings, improvements to affordability, and equity aspect of energy transition, although recognizing the higher upfront costs utilities may have to pay for this sector. Discussion on mix of measures for ETEE pilot: WG supported focus on space heating, but indicated some other measures (e.g. custom industrial, commercial kitchen) may also be	Enbridge to provide additional explanation of ETEE items (slide 4 of deck) and circulate for any written WG comments

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	worth considering, and could provide valuable learnings in the pilot. Enbridge agreed to consider, but also indicated that it might not want to cast such a wide net for the pilot, to allow for greater focus on analyzing effectiveness of most important measures. Discussion curtailed due to time – members asked if Enbridge could provide (in writing) a bit of additional context on the items not covered, and allow for WG members to provide written comments. Enbridge agreed to this.	

4. IRP Pilots

Item Description	Discussion Comments/Outcome	Action Items
Discussion of 4 specific system needs potentially suitable for IRP, and information required to assess and evaluate potential IRP pilots	Enbridge provided snapshots of 4 potential pilots where the AMP had identified system needs that may be suitable to meet with an IRPA (Sarnia, Ottawa, Parry Sound, Brooklin), with more to come at a future meeting. Enbridge indicated that 2 of the potential pilots could involve multiple IRPAs. WG held initial discussion regarding the type of information needed to assess and compare potential pilots, as well as a few specifics of these 4 pilots. WG agreed that measurement capability was an important consideration, and suggested that a glossary explaining some of the specific measurement technologies described would be helpful. Other information identified by the WG that would be useful: map, timing by when the constraint would need to be met (perhaps with supporting info on rate of load growth and/or amount of demand reduction that would be needed), expected cost of baseline facility solution, considerations regarding ETEE potential (vintage of building stock, customer mix) With regards to the Brooklin project, WG members noted that this was a greenfield area, with great potential for avoiding lost opportunities. Pilot design should consider	Enbridge to consider comments and refine information provided regarding pilot proposals, and bring forward additional pilots for consideration

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	aspects such as partnering with electric utilities, and sizing the system in advance to meet a lower level of demand due to EE measures that will be put in place. However, another WG member noted that if the need must be met as soon as 2024, pilot options may be constrained (although a supply-side solution might be possible).	

5. CNG as an IRPA

Item Description	Discussion Comments/Outcome	Action Items
Enbridge discussed considerations regarding using compressed natural gas (CNG) as an IRPA	Enbridge indicated that it thought there were good opportunities to use CNG as an IRPA to address short-term or seasonal constraints, and avoid putting in pipelines, and sought the WG's views. WG was generally supportive of CNG solutions of this nature being considered under the IRP Framework. WG members noted the importance of verifying and validating system constraints prior to implementing a solution, and also noted that CNG could allow needs to be met sooner than the 3-year criterion in the IRP Framework. Enbridge agreed with these points.	

6. Miscellaneous and Next Steps

Item Description	Discussion Comments/Outcome	Action Items
Miscellaneous	Time did not allow for discussion of the DCF+ material or Enbridge's on IRP screening criteria. Comments on screening criteria can be provided in writing, while DCF+ material will be discussed at July 5 meeting. Enbridge also indicated that it will bring Posterity in to discuss their DSM model, at the July 19 meeting.	WG members to send any comments on the IRP screening criteria to Enbridge Enbridge to bring Posterity in to discuss DSM model

ONTARIO ENERGY BOARD | COMMISSION DE L'ÉNERGIE DE L'ONTARIO

List of Action Items

Action Item	Assignment/ Owner	Due Date
Post meeting #5 notes	OEB staff	As soon as possible
Circulate summary of meeting #6 outcomes	OEB staff	As soon as possible
Schedule optional training session for IRP WG members on OEB cost claims process.	OEB staff	As soon as possible
Send IRP WG meeting invites (DCF+ and full group) for fall 2022	OEB staff	As soon as possible
Circulate Guidehouse report on DCF+ recommendations	Enbridge Gas	As soon as possible, in advance of July 5 meeting
Identify what aspects of the rebasing application would be useful to the WG.	All Working Group members, Enbridge Gas to consider requests	As soon as possible
Provide additional explanation of ETEE items (slide 4 of deck) and circulate for any written WG comments	Enbridge Gas	As soon as possible
Refine information provided regarding pilot proposals, and bring forward additional pilots for consideration	Enbridge Gas	For July 19 meeting
Send any comments on the IRP screening criteria to Enbridge	All Working Group members	As soon as possible
Bring Posterity in to discuss DSM model	Enbridge Gas	Likely July 19 meeting
Further discuss DCF+ test enhancements	Interested WG members	Beginning July 5, 2022
Establish agenda for meetings #7 (DCF+) and 8 (full WG)	OEB staff (with input from Enbridge Gas)	Prior to meetings #7 and #8

ONTARIO ENERGY BOARD | COMMISSION DE L'ÉNERGIE DE L'ONTARIO

Meeting Notes

Integrated Resource Planning Technical Working Group (EB-2021-0246)

Working Group Meeting #8

Meeting Date: July 19, 2022 Time: 2:00 p.m. - 4:00 p.m.
Location: MS Teams

Attendees

IRPTWG Members	Role
Michael Parkes	OEB staff representative (Working Group chair)
Stephanie Cheng	OEB staff representative
Chris Ripley	Enbridge Gas representative
Whitney Wong	Enbridge Gas representative
Amber Crawford, Association of Municipalities of Ontario	Non-utility member
Tamara Kuiken, DNV	Non-utility member
Dwayne Quinn, DR Quinn & Associates Ltd.	Non-utility member
Jay Shepherd, Shepherd Rubenstein Professional Corporation	Non-utility member
Steven Norrie, Independent Electricity System Operator	Observer
Kenneth Poon, EPCOR Natural Gas LP	Observer

Additional Attendees	Role
Valerie Bennett	OEB staff
Craig Fernandes	Enbridge Gas guest
Cara-Lynne Wade	Enbridge Gas guest
Malini Giridhar	Enbridge Gas guest
Alex Tiessen	Posterity Consultant
Dave Shipley	Posterity Consultant
Paula Claudino	Posterity Consultant

Regrets

IRPTWG Members	Role
Cameron Leitch, EnWave Energy Corporation	Non-utility member
Chris Neme, Energy Futures Group	Non-utility member
John Dikeos, ICF Consulting Canada Inc.	Non-utility member

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Purpose

These notes summarize the information discussed during the working group (WG) meeting on each of the key points presented in the published materials.

Meeting Agenda

1. Preliminary matters (10 min)
2. Enhanced targeted energy efficiency IRPA (10 min)
3. Posterity end use model (45 min)
4. IRP Pilots (45 min)
5. Next steps (10 min, or as time permits)

1. Preliminary Matters

Item Description	Discussion Comments/Outcome	Action Items
Meeting #6 Notes OEB staff asked if there were any comments on draft meeting #6 notes	There were no comments on meeting #6 notes. Therefore, the notes are accepted by working group members.	OEB staff to post meeting #6 notes on IRP webpage
Cost Claims	Reminder to WG members that cost claims must be filed by this Thursday, July 21, 2022. Contact Mike P and/or OEB staff if you have any questions regarding the process.	WG members must file cost claims by the deadline of Jul 21/22

2. Enhanced Targeted Energy Efficiency (ETEE)

This agenda item of the WG meeting was presented by Enbridge Staff, Craig Fernandes.

Item Description	Discussion Comments/Outcome	Action Items
Continued discussion on approach to a geotargeted Enhanced Targeted Energy Efficiency (ETEE) pilot.	Enbridge led the discussion leveraging ETEE slides from last WG meeting with additional points denoted in red font to provide more context. WG members note several concerns over some of Enbridge's assumptions as noted below. Derating factor of 20% • Some WG members do not agree with the assumption of a default derating factor of 20% • WG member questions whether there is a derating factor used for other capital investments. Enbridge confirms there is not. WG member also notes that Enbridge regularly overbuilds pipeline investments in areas where anticipated growth does not materialize. Hence,	Enbridge to confirm what the derating factor covers per the ICF report and will report back to the WG. Enbridge will clarify what was done for Ingleside/Deep River project (along with any learnings) and will update the WG via email

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	there is concern that Enbridge may be derating for an overbuild. • There is debate on differing levels of certainty between DSM (focused on overall savings) versus the ETEE pilot which is focused on peak hour impact. • WG member questions whether derating factor covers forecast uncertainty regarding customer uptake; or is it covering error variability in the amount of peak demand reduction or both. Enbridge believes it is both but will cross reference the ICF report and report back to WG. • Enbridge notes that prior to the filing of the ETEE pilot application, sensitivity analysis will be conducted where results will lead to further discussion with the working group and potential refinement of assumptions and plan. Contract Customers (case by case basis) • WG member notes the importance of looking at contract customers on a case-by-case basis since contract customers have tools in their toolkit that residential customers do not. • Enbridge confirms the assumptions noted per the slides were for general service industrial customers and that contract customers will be looked at on a case-by-case basis. • There was additional WG discussion on the need to potentially amend contracts and the importance of considering the legal implications if contract customers were part of the ETEE pilot (reducing contractual demand). Enbridge confirms that discussions have begun with internal legal team on this matter. General Comments • WG members are concerned that Enbridge is looking at this pilot from the wrong perspective – a forecast, when it should be a budget/target (something Enbridge should meet and achieve). • Enbridge notes the plan is to propose a suite of ETEE (which can include	

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	demand response, where applicable) to address a particular need. However, the means and methodology must fall within the budget, restrictions and policy boundaries set out by the OEB. This may place limitations on Enbridge's ability to make adjustments on approved IRPAs. Net versus Gross impact • Some WG members are also not in agreement with Enbridge's proposal to forecast and track results on a gross basis only. WG member indicated that pilot design should look at a way to measure net impact (build into pilot design)	

3. Posterity

This agenda item of the WG meeting was presented by 3 Posterity Consultants on the call – Alex Tiessen, Dave Shipley and Paula Claudino.

Item Description	Discussion Comments/Outcome	Action Items
Posterity Model Posterity is working with Enbridge to support their IRPA analysis using Enbridge's Navigator End-Use Model. The presentation will be focused on walking through the Navigator software/ model and the main information inputs.	Issue: Posterity confirms they will not supply a copy of the software code to the WG since it is a proprietary model. However, Posterity can share the inputs (with Enbridge's approval). This is of concern to WG members since the group is interested in the algorithms utilized. WG members believe that if the model is used in OEB proceedings, Posterity will eventually have to share the software code. Posterity does not believe this to be true. Background: Navigator Tool Posterity notes that the Navigator tool reduces the chance of human error since it eliminates calculations being manually performed in excel. Moreover, Posterity notes the model runs 1000 times faster than excel allowing for various test scenarios to be computed in a timely and accurate manner. Navigator is a visual basic product written from scratch by Dave but will be rewritten in Python language. WG member discussion on Posterity Model: • WG members note the importance of inputs being split by vintage of building stock since there is a huge difference in terms of energy efficiency opportunity depending on	Posterity to provide examples of peak factor calculations

ONTARIO ENERGY BOARD | COMMISSION DE L'ÉNERGIE DE L'ONTARIO

	the age of a building. Posterity notes they have to ability to do this, but presentation materials have been based off Achievable Potential Study. • Some WG members question the ability to validate the Posterity model to give WG members confidence that the model forecasts expected results within a reasonable range. However, another WG member notes that the WG should not have unrealistic expectations regarding accuracy as the model is essentially a potential study where results are typically adjusted +/- 30%. Under this view, the model is useful in assessing whether it is plausible to achieve a level of energy savings for an approximate level of cost effectiveness. • WG member questions whether behavioral and financial inputs of the model are engineering assumptions and if adoption assumptions are based on empirical study – Posterity confirms it is not. There was discussion over the use of payback model as a starting point and thereby adjusted, but this is of concern to WG members as some believe that method has been debunked. • WG member questions the set up of the peak factor formula since the peak factor cannot be the same in base consumption and modified (Up) consumption as they have different load shapes. Posterity will share examples with the WG to bring clarity on this matter. • WG member questions how Enbridge intends to use the Posterity model for IRPAs since it appears to only be applicable in preliminary stage of the initial screening. Enbridge confirms they will feed Posterity detailed customer data to run the model. Once Enbridge gets the numbers back from Posterity, if the results show there is potential to satisfy/ eliminate/ defer needs in future, Enbridge can start planning and developing a geotargeted program. As such, Posterity is anticipated to go beyond the technical assessment into a deeper dive by giving them all the data they need to run those models (e.g. types of commercial customers like convenience stores vs.	

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	apartments vs. bakery, since they have very different energy needs).	

4. IRP Pilots

Item Description	Discussion Comments/Outcome	Action Items
7 Potential Pilots In the pre-meeting materials, Enbridge provided details on 7 single IRP Pilot Options along with an evaluation matrix (not completed for the specific pilots). Through discussion, Enbridge is interested in seeking feedback from the WG on what information is missing/ good/ bad/ what they should focus on so Enbridge can narrow down to 2-3 potential pilots by September 2022.	St. Laurent Update WG member noted that Enbridge has been approaching the top 5 customers in the St. Laurent area to discuss the need for a new pipeline. There is talk of potentially refiling an amended St Laurent application. As such, WG members share some concern that they should not be wasting time talking about IRPAs for St. Laurent if Enbridge will not consider it. Enbridge confirms they are looking at some of the recommendations in the OEB decision regarding improving monitoring capabilities and looking at the operational ability of the existing pipeline in the St Laurent area. The work is expected to be completed this year. This would not preclude additional consideration of IRPAs. Asset Management Plan WG members continue to request access to Enbridge's AMP, and related information including demand forecast assumptions, to support discussion of pilots. One WG member noted that information on the system needs in the AMP would be useful even if the underlying demand forecast assumptions were not provided, but another member disagreed. WG member noted that the AMP can be used to see how common or frequent specific types of system needs and customer mixes are across Enbridge's system, to help prioritize potential pilots that will be scalable and representative. Enbridge confirms the AMP is still a work in progress and not in a format that is ready for filling. However, Chris R will follow up with Malini to see what aspects of the AMP they can provide to the WG. General Comments on Pilots • WG member notes that Demand Response has not been mentioned as a possible solution for any of the system needs for the	Chris R. will speak to Malini to see what Enbridge can provide from the AMP to the WG. Enbridge plans on presenting a few more potential pilots at the August 23 WG meeting. WG members can send any comments to Enbridge on the specific pilots based on the materials available at this time, as soon as possible. The comments should be circulated to all WG members. Enbridge to provide larger maps for potential pilots identified and to provide more detailed information on these 7 potential pilots including whether constraints are validated (best efforts for Aug 23 meeting)

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	7 pilots and questions whether this solution is still being considered. Enbridge confirms it is still a possibility and they are looking into this option with some of the bigger customers by reducing demand through incentives during peak periods, but does not see a DR program for general service customers as a likely initial pilot (unless WG disagrees). • WG member questions whether constraints have been validated or if it is based off a model. Enbridge confirms it is a mix. Some are based off models; some are identified as low-pressure points in Enbridge's system today. Enbridge plans to return to the WG by flagging whether a constraint is validated for each identified pilot. WG member also encourages the prioritization of constraint validation and for Enbridge to invest in the tools to do so. • WG member inquires on the rationale for why these 7 specific pilots/system needs were selected – was it based on Enbridge's AMP? Enbridge confirms it is a mix of projects that have a degree of varying needs in terms of timing, volume, location, etc. They are more self identified samples and Enbridge confirms they are planning to bring more potential pilots for WG consideration. • WG members question whether ETEE is completely siloed from DSM in the pilots or if there are opportunities to integrate. Enbridge notes the purpose of DSM and ETEE are slightly different. However, WG member encourages for DSM programs to be leveraged (where they can) instead of having Enbridge reinvent the wheel with ETEE programs (e.g. home retrofit program with different incentive package for pilots). Enbridge notes they are considering this. • WG member requests larger maps and more detailed information for each potential pilot to be provided in support of each potential pilot identified by Enbridge (not new materials, but materials Enbridge already has for its internal analysis). This includes things like gross analysis, source documents, reports on the condition of the	

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	existing pipe to be replaced, population/ regional plan, etc. WG members may not read all the materials, but they would like access to the source documents should they need to reference it to give an informed input. Another WG member noted that having access to the preliminary analysis conducted by Enbridge (scoring against screening criteria) would be helpful. Parry Sound Pilot WG member notes that the long pipeline is coming from TransCanada where they enhanced the ability to compress gas going North and South. WG member suggests contacting TransCanada to inquire on their ability to increase the pressure to that line; if they can, Enbridge can potentially forego a significant investment that is not necessary. Enbridge confirms they are in dialogue with TransCanada for any system needs close to TransCanada lines. Sarnia Pilot Enbridge to provide update in August WG meeting for this potential pilot as they still need to understand the status of the need for vintage steel main replacement and whether IRPAs could address such a need.	

5. Next Steps

Item Description	Discussion Comments/Outcome	Action Items
Future Meetings	The next meeting (#9, August 9) will be focused on the DCF+ test. Enbridge provided a quick update to the WG that Chris R. intends on bringing other Enbridge staff to upcoming DCF+ subgroup meetings to better facilitate discussions. Enbridge hopes to reach agreement (if not consensus) on the enhanced DCF+ test so it can be used as part of the pilot discussions. OEB staff also indicated they will have new materials for this meeting. The following meeting (#10, August 23) will likely focus entirely on pilots.	OEB staff (with input from Enbridge Gas) to develop agenda and circulate materials for meetings #9 and #10.

List of Action Items

Action Item	Assignment/ Owner	Due Date
Post meeting #6 notes	OEB staff	As soon as possible
Circulate summary of meeting #8 outcomes	OEB staff	As soon as possible
File cost claims	WG members	July 21, 2022
Provide any comments (in writing) on the 7 potential pilots to Enbridge	WG members	As soon as possible
Enbridge to clarify the following items with the WG: • What Derating factor covers per ICF report • Outcome/ learnings from Ingleside/Deep River project	Enbridge	As soon as possible
Posterity to provide example(s) of peak factor calculations	Posterity in collaboration with Enbridge	As soon as possible
Enbridge to return to the WG with some details of the AMP/demand forecast (to be determined)	Enbridge	Meeting #10
Additional potential pilots with the following updated information for old and new pilots: • Larger maps • More detailed information (access to source documents) • Identification of whether constraints are validated	Enbridge	Best efforts for Meeting #10
Establish agenda for meeting #9 (DCF+) and #10	OEB staff (with input from Enbridge Gas)	Prior to meetings #9 and #10

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Meeting Notes

Integrated Resource Planning Technical Working Group (EB-2021-0246)

Working Group Meeting #10

Meeting Date: August 23, 2022 Time: 2:00 p.m. - 4:00 p.m.
Location: MS Teams

Attendees

IRPTWG Members	Role
Michael Parkes	OEB staff representative (Working Group chair)
Stephanie Cheng	OEB staff representative
Chris Ripley	Enbridge Gas representative
Whitney Wong	Enbridge Gas representative
Amber Crawford, Association of Municipalities of Ontario	Non-utility member
Dwayne Quinn, DR Quinn & Associates Ltd.	Non-utility member
Jay Shepherd, Shepherd Rubenstein Professional Corporation	Non-utility member
Steven Norrie, Independent Electricity System Operator	Observer
Kenneth Poon, EPCOR Natural Gas LP	Observer
Cameron Leitch, EnWave Energy Corporation	Non-utility member
John Dikeos, ICF Consulting Canada Inc.	Non-utility member

Regrets

IRPTWG Members	Role
Tamara Kuiken, DNV	Non-utility member
Chris Neme, Energy Futures Group	Non-utility member

Purpose

These notes summarize the information discussed during the working group (WG) meeting on each of the key points presented in the published materials.

Meeting Agenda

1. Preliminary matters (OEB staff – 10 minutes)
2. IRP Pilot – Background and Options (Enbridge – 110 minutes)

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1. Preliminary Matters

Item Description	Discussion Comments/Outcome	Action Items
Meeting #8 Notes OEB staff asked if there were any comments on draft meeting #8 notes	There were no comments on meeting #8 notes. Therefore, the notes are accepted by working group members.	OEB staff to post meeting #8 notes on IRP webpage
Cost Awards	OEB staff notes decision on cost awards for the IRPWG will be issued shortly • WG member inquires on the timing of when the cost awards will be paid. Consistent with DSM WG, OEB staff confirms it will be part of the quarterly billing to gas distributors (Enbridge and EPCOR). • WG members are concerned about the delay in payment and would like direct payment from Enbridge. OEB staff will consider making this change for IRP cost awards going forward.	
Follow up items from last WG meeting 1) Posterity Memo RE: calculation on peak demand reduction 2) St. Laurent Update 3) Derating Factor	See below for discussion on some follow up items from the last WG meeting: • Some WG members did not understand the math presented in Posterity's memo. Further discussion on this matter will be delayed until the next WG meeting when Tammy and Chris Neme are in attendance. John D. will also look through the calculations and report back to the WG at the next meeting. • Enbridge notes that discussions are being held between district managers and a few customers to inquire on pressure requirements. Enbridge also confirms the goal is to reassess the needs of the area to determine if there needs to be another project application brought forward to the OEB. • Enbridge clarified its intent for derating factors - to cover uncertainty in both customer uptake and peak demand impacts.	Posterity memo John D. to review Posterity's calculations and report back to the WG at the next meeting Derating Factor Discussion delayed until the next full WG meeting when Tammy is in attendance

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	• WG member notes that the uncertainty band should decrease as more is learned on peak demand impacts through pilot projects. • WG member is concerned that the general approach is in favour of overbuilding for the max and then some in case estimates are off. Another WG member noted that there may already be a safety margin built into the pipeline capacity being considered, and that should be considered when assessing whether additional safety margin needs to be added on top of what's planned for non pipe solution. WG member also noted that combination solutions (including a supply-side aspect) may require less of a safety margin/derating factor. • Further discussion on derating factor as needed at the next full WG meeting when Tamara and Chris Neme are in attendance.	

2. IRP Pilots – Background

Item Description	Discussion Comments/Outcome	Action Items
2 Pilots – Scope	Enbridge notes there will be 2 types of pilots: 1) "Single project" – looking at a specific need in a specific area 2) "Portfolio" – bigger project for a larger area that could potentially have multiple alternatives beyond ETEE and supply side (suite of IRPAs)	
Demand Response (DR)	Enbridge confirms demand response (DR) is still in scope for pilots although this option has not been referenced in today's slides. For example, DR can be considered in the Sarnia pilot. However, Enbridge is still working through how to implement DR for a contract customer vs. residential/ small commercial customer. Enbridge has also investigated other jurisdictions for reference. Some concerns Enbridge has include: Contract Customers:	Enbridge to conduct further research on demand response examples and to consider how they can be implemented as part of the pilots. Enbridge may reach out to John D. offline for guidance.

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	• Enbridge feels their contract customers are generally not interested in trying to reduce demand or shift demand through DR. WG member notes this does not mean contract customers are resistant to it, but it is a matter of price to get them to do it. • For contract demand, Enbridge seeks clarification on whether DR means shift in peak demand and/or reduce overall consumption? WG members note both can be achieved by restructuring contracts to get them to behave a specific way – e.g., contracts that include peak component. Other Jurisdictions: • Enbridge notes there hasn't been a lot of success for DR in other jurisdictions. WG member notes that results from other jurisdictions are not necessarily indicative of what can be achieved in Ontario due to things like different weather patterns, and colder weather on average. • WG member affirms that a lot can be learned by having DR as part of a pilot. Some areas Enbridge should reference include National Grid and ConEd which focuses on peak hour. Enbridge will do more research on DR in those areas and may reach out to John D. for further discussion on tweaking strategy to enhance savings.	
ETEE – Incentives	Enbridge notes they are considering what FEI working group is doing when it comes to incentive mechanisms	

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IRP Pilot Selection Process	• Enbridge described the step-by-step process they underwent to arrive at the shortened list of potential pilots Enbridge is sharing with WG members today. This process includes looking at the full list of projects (~695), conducting binary screening, considering things like geotargeted programs, gas supply and demand response.
	• Enbridge agreed to provide the full list of projects (~695 projects) along with their screening as WG members noted this would be useful information to have
	
	Evaluation Matrix
	WG members seek clarification on some items noted in Enbridge's evaluation matrix and suggested for some additional points to be added to it:
	• *Balanced customer mix & potential for scalability:*
	    ○ WG members suggested adding "*transferrable learnings*" to this second point in the evaluation matrix
	• *Feasibility of Supply Side IRPA implementation in the short term*
	    ○ Enbridge clarifies that a pilot would score better in this category depending on where the customer and/or need is – is it near a place where we can bring incremental gas (CNG)? Is it accessible? How long and how many trucks/ equip would be needed? Does it make sense from a technical perspective?
	• *Feasibility for ETEE*
	    ○ Enbridge clarifies this factor considers the ability to meet needs like growth rates, demand growth rates, etc.
		Enbridge to provide the full list of projects along with the screening conducted to WG members

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System Reinforcement Plans	• Enbridge rep, Chris R. confirms his approach is to look at projects and to verify the need exists and to determine what the actual need is. WG members agree with this approach given the shortcomings of the Ingleside pilot. WG member noted that Enbridge needs to verify the simulation before proceeding - for example: they should determine if their actual infrastructure is lacking and if so, where investments need to be made as opposed to finding out after the fact that they do not have the data they need to come up with any conclusions relative to effectiveness. • WG member notes the sources of information on local circumstances should be expanded beyond regions and districts; instead, it should reference municipal official plans and zoning bylaws. Amber to assist Enbridge with exact language.	Amber to assist Enbridge with updating language referenced in sources of information

3. IRP Pilots – Options (Portfolio and Single)

During this segment of the WG meeting, Enbridge provided WG members with a walk through of some details, considerations, and highlights from the potential pilot options. WG members asked questions for clarification and noted items for Enbridge to consider as documented in the table below.

Item Description	Discussion Comments/Outcome	Action Items
Pilot Option #1: Sarnia Camlachie Wyoming	Enbridge describes this pilot as a larger portfolio option with significant areas of growth. Enbridge acknowledges there are lots of ERTs already in place to readily obtain useful data. This pilot also has potential for ETEE and DR. WG members commented on the following: • <u>Customer base</u>: WG members inquire if all 30,000 customers are in scope for potential CDM DR solution or if it is 5,000 in an area of need that would contribute to an IRPA. Enbridge thinks it would be the 5,000 that would contribute to avoiding reinforcement however they will confirm with internal planning staff and report back to WG. • <u>Vintage steel main:</u> WG members question the nature of the vintage steel main project consideration as it cannot be a driver of IRP	Enbridge to return to next WG meeting to confirm: 1) what is the hydraulic area Enbridge is focused on, 2) what number of customers, and 3) to provide energy efficiency numbers

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	unless Enbridge is looking to downsize it. Enbridge confirms this to be the case. • Pressure Monitoring: WG member notes the importance of implementing pressure monitoring now and in strategic locations. This way, Enbridge can start collecting data to know more about their system and to ensure there is no error in their model • Cost of ERTs: WG member also notes the importance of knowing the costs of ERTS/ electronic meters. How much does it cost per unit and is it proven to be economical? If Enbridge seeks full deployment, WG will require a business case. • Step code homes: WG member suggests looking into step code homes which has been used in BC for building larger homes as it can significantly reduce overall demand • Bare unprotected mains: Enbridge clarifies that they would be replacing these regardless, but an IRPA may enable a downsized replacement • Station rebuilds and low-pressure points on mains: Enbridge clarifies that demand reduction may help avoid these projects.	
Pilot Option #2: Ottawa	Enbridge describes this pilot as a larger portfolio option that is not as attractive as Sarnia since it has complicating factors that may not deliver clear results of the objectives set for pilots. • WG members agree there is a lot of customers, a lot of money, and a lot of different issues associated with Ottawa. However, the pilot is attractive from the standpoint that it will allow the OEB to see what Enbridge will do in response to a decision that rejected their original facility proposal, and where a municipality is interested in alternatives. • WG members note that the pilot selection criteria should not include options that are the easiest to execute. In fact, it should consider some of the hardest options to learn more • Further discussion on this pilot (vs. Sarnia) to take place in September WG meeting. Enbridge will invite internal planning staff to contribute to the discussion	Discussion of Ottawa pilot to continue at the September WG meeting. Enbridge will bring in more details and internal planning staff

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Pilot Option #3: Brantford IP System	Enbridge describes this as a larger portfolio option that is newly under consideration and largely driven by significant growth in the South side of Brantford which was a low spot in Enbridge's system. The need came about a few weeks ago when growth was originally anticipated in 2027. However, there are no ERTs in the area. • WG member suggests for Enbridge to also look into the Brantford urban core plan which is not the area Enbridge is considering for this pilot in but will impact gas and so coordination would be required. • Discussion as to how much emphasis should be placed by Enbridge on municipal energy plans that may be aspirational in nature and not yet fully developed. WG members note that communication and coordination is crucial, and that discussions about aligning municipal energy plans and utility load forecasts are ongoing. WG member also noted that Enbridge's actions have an impact so they should behave in a way that will help municipalities achieve their goals.	Enbridge to return to upcoming WG meetings with updates on the Brantford pilot as it progresses
Pilot Option #4: Bayfield	Enbridge describes this as a single project that is relatively small with no real ERTs. • Enbridge is currently looking at CNG for areas that need to meet lower pressure points. Consideration ongoing as to whether system reinforcement can only be delayed or permanently deferred. • Enbridge may also consider ETEE as a potential reinforcement on an ongoing basis depending on how real the consumption is over winter months as there are a lot of cottages in this area.	
Pilot Option #5: Brooklin	Enbridge describes this as a single pilot option where the customer growth has now grown to 14,000 instead of the 1,350. • WG member notes the growth is 20,000 customers and 15 schools. • WG member suggests for Enbridge to coordinate with Elexicon to develop a plan that significantly reduces Enbridge's capital needs to service this area. This maybe a one-off scenario that cannot be simply applied to other regions. However, WG members note it is an approach that	

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	Enbridge can learn a lot from.	
Pilot Option #6: Kemptville	Enbridge describes this as a single pilot option just outside the Ottawa area. It is a smaller project with no ERTs. No significant comments were made from WG members.	
Pilot Option #7: Parry Sound	Enbridge describes this as a single pilot option. Enbridge originally had an agreement with TC Energy to provide incremental pressure near Parry Sound to help with meeting load until 2032. However, potential reinforcement work is now bumped to the next 2-3 years since TC energy is pulling back on the operating pressure. Enbridge will need to put in some CNG until geotargeted program can be implemented. Enbridge finds this pilot attractive since it is an isolated system that allows them to easily monitor and measure. • WG members were concerned about the TC action and the sudden change from 2032 to the next 2-3 years and questioned if the decision could revert abruptly. Enbridge clarifies that TC energy provided the 2 years notice required in going back on the contracted pressure. • WG members are also inquisitive about TC energy's decision to pull back since their utilization should be up having completed enhancements to their compressor 119 which is relatively close to the area. WG members do not understand the rationale as to why TC is choosing to reduce the pressure on the Parry line and encourages Enbridge to circle back with TC to understand the reason and to see if it is justified since OEB told Enbridge, Union and Trans Canada to work together to minimize infrastructure costs for Ontarians during the GTA project – pulling back on pressure may require Enbridge to install segment pipes to meet growth needs in a relatively new community in order to have pressure reduced. • Enbridge has agreed to circle back with their internal control group to sort out the rationale and report back to the WG. Target is for Monday, Aug 29/22.	Enbridge to circle back with internal control group and/or TC to get the rationale for pulling back on pressure. Enbridge to report back to the WG on this matter ASAP. Target date Mon. Aug 29/22

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Pilot Option #8: Southampton System	Enbridge described this as the smallest of the potential single pilots. There are no ERTs, so more upfront work needs to be completed to get it going. However, there is growth in the area. No comments provided by WG members.	
Municipal Energy Plans	Enbridge notes that Municipal energy plans are being looked at while trying to evaluate the potential pilots. These plans have been provided to the WG as part of the pre-meeting materials. • WG members encourage Enbridge to also look at other things like development plans that include specific points for developers to including efficiency which could be used as collateral benefit when working with new developments like Brooklin. • WG members also reference other sources that might be helpful including official plans (upper and single tier municipalities), climate action plan, GHG plans, municipal comprehensive reviews, population projections, etc. Amber will connect with Enbridge to help locate these documents for consideration.	Amber to connect with Enbridge in locating various documents for their consideration.
Evaluation Matrix / Next Steps	• Enbridge would like WG members to help determine which pilots to discard and which pilots to proceed with. Enbridge wants to have this decided by end of Sept 2022 so they can begin writing evidence so they can file the 2 pilots by end of year. • Discussion that WG members cannot fully sign off on Enbridge's rankings as they do not have all the information Enbridge has to make such a decision, and can't replace Enbridge's experts. Enbridge has only provided the working group with some data, concepts, and their own conclusions as summarized in the pilot option slides and the evaluation matrix. The WG feels they can only provide general input like things to consider and areas to investigate, which the WG feels they have been doing to date, with different members having different areas of expertise to assist Enbridge in making the final decision of which pilots to proceed with. • WG member suggested the WG could perhaps come to a conclusion as to whether there were any concerns with the	Enbridge to provide justification for the rankings in the evaluation matrix by the next WG meeting. Enbridge to coordinate with OEB staff (and potentially other WG members) on next steps prior to the next meeting

	selection process – e.g., the relative weighting of the different factors in the evaluation matrix, and whether any key factors have been missed. • Pilot selection and detailed review of Enbridge's evaluation matrix will be further discussed at September WG meeting. Enbridge will likely bring internal planning staff to participate in the discussion. As suggested by WG members, Enbridge will also provide a summary of how they arrived at the rankings in the matrix for the next meeting. • Enbridge and OEB staff to regroup in a few days to discuss next steps for upcoming WG meetings. Enbridge may contact other WG members for ideas.	

List of Action Items

Action Item	Assignment/ Owner	Due Date
Post meeting #8 notes	OEB staff	As soon as possible
Circulate summary of meeting #10 outcomes	OEB staff	As soon as possible
Posterity Memo Discussion	John D (look into calculation) WG members	Meeting #12
Amber to assist Enbridge in locating various documents related to Municipal Energy Plan and to help update language referenced in sources of information under the system reinforcement plan slide	Amber Enbridge	As soon as possible

Enbridge to return to the next WG meeting with the following items:
• Additional information on the following pilots as discussed during meeting #10:
    ○ Sarnia
    ○ Ottawa
    ○ Brantford (if applicable)
• Additional findings and considerations for demand response
• Parry Sound Pilot – Rationale why TC Energy is pulling back on pressure
• Evaluation Matrix – short justification for each ranking
	Enbridge	Meeting #12

Establish agenda for meeting #11 (DCF+) and #12	OEB staff (with input from Enbridge Gas & WG members)	Prior to meetings #11 and #12

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Meeting Notes

Integrated Resource Planning Technical Working Group (EB-2021-0246)

Working Group Meeting #12

Meeting Date: September 27, 2022 Time: 2:00 p.m. - 4:00 p.m.
Location: MS Teams

Attendees

IRPTWG Members	Role
Michael Parkes	OEB staff representative (Working Group chair)
Stephanie Cheng	OEB staff representative
Chris Ripley	Enbridge Gas representative
Whitney Wong	Enbridge Gas representative
Amber Crawford, Association of Municipalities of Ontario	Non-utility member
Dwayne Quinn, DR Quinn & Associates Ltd.	Non-utility member
Jay Shepherd, Shepherd Rubenstein Professional Corporation	Non-utility member
Steven Norrie, Independent Electricity System Operator	Observer
Kenneth Poon, EPCOR Natural Gas LP	Observer
Cameron Leitch, EnWave Energy Corporation	Non-utility member
John Dikeos, ICF Consulting Canada Inc.	Non-utility member
Tamara Kuiken, DNV	Non-utility member
Chris Neme, Energy Futures Group	Non-utility member

Purpose

These notes summarize the information discussed during the working group (WG) meeting on each of the key points presented in the published materials.

Meeting Agenda

1. Preliminary matters (OEB staff – 10 minutes)
2. Follow Up Items from last meeting (WG members – 20 minutes)
    - Peak Hour Calculation – Posterity Memo
    - Derating Factor – Slide 2 of Enbridge Slides from August 2022 WG Meeting
3. IRP Pilot Selection – Continued Discussion & Guidehouse IRP Programming in other Jurisdictions (Enbridge – 90 minutes)

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1. Preliminary Matters

Item Description	Discussion Comments/Outcome	Action Items
Meeting #10 Notes OEB staff asked if there were any comments on draft meeting #10 notes	There were no comments on meeting #10 notes. Therefore, the notes are accepted by working group members. Confidentiality on pilot related notes for posting onto IRP webpage • OEB staff notes acknowledges that the meeting minutes will discuss aspects of the potential pilots and seeks to confirm with Enbridge on whether there are confidentiality concerns with publicly posting this content in the minutes (e.g. discussion on Trans Canada) • Enbridge will discuss this matter with their internal group and report back to OEB staff by tomorrow morning. • OEB staff will postpone posting of meeting notes and materials until confirmation has been received from Enbridge.	• OEB staff to post meeting #10 notes as appropriate on IRP webpage once Enbridge identifies whether it has any confidentiality concerns

2. Follow Up Items from Last Meeting

Item Description	Discussion Comments/Outcome	Action Items
Follow up items from last WG meeting Posterity Memo RE: calculation on peak demand reduction	See below for discussion on some follow up items from the last WG meeting: Some WG members did not understand the math presented in Posterity's memo and requested review of the calculation to be carried out by WG members with expertise in this area. Their findings are as follows: • Review by WG members with expertise found that Posterity's math is a bit convoluted, but does seem to calculate the peak demand reduction accurately. Posterity's approach makes sense as long as the peak factor used is specific to the measure as opposed to a system average ratio. • OEB staff notes that Posterity's	

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	approach enables Enbridge to bring in peak factors for multiple measures more easily than trying to calculate an aggregate peak reduction factor. WG member agreed but cautioned that this must be done in the correct order (i.e. when dealing with interactive effects between multiple measures, load reducing measures should go first, followed by load shifting measures second) Once the pilot process begins, Enbridge plans to work closely with WG members in order to work through the calculations and program development for the pilot programs to get evidence developed.	
Derating Factor	Additional discussion on the use of derating factors as several WG members were unable to attend the last meeting. • WG member noted that forecasting assumptions will need to be made in the beginning for costing and planning. However, energy efficiency is not binary so if the initial forecast is not realized (e.g. energy efficiency measures save less/ more), Enbridge can ramp up/ down the energy efficiency along the way to accommodate). • Another WG member agreed and emphasized the need to revisit planning assumptions on an ongoing basis since efficiency of distributed resources may differ than planned and the forecast underpinning a need may change since load forecasts change over time. • WG member cautioned that it is problematic to apply risk mitigation through a derating factor and not deal with risk mitigating benefits of the same solution. • Some WG members mention the need to consider/ balance demand forecast risk vs. stranded asset risk. • Some WG members are concerned that derating is like double counting since it assumes you must build in an	

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	uncertainty band for non-pipe solutions whereas when you build a pipe, you set a load forecast on the basis of assumptions that you do not have uncertainty the other way. WG members feel there needs to be some symmetry in the way risk is assessed. • WG member notes the amount of risk and uncertainty is specific to the solution under consideration. With growing implementation and evolution of non-pipe solutions (e.g. a supply side measure being coupled with demand side options as a way of reducing risk), there is knowledge to be gained and applied from these experiences. • Some WG members note that supply side risk can be reduced by verifying the simulation to verify whether the system is genuinely in need during peak hours. This allows the utility to learn real demand vs. forecasting demand. Enbridge acknowledges they have more experience at forecasting load vs. peak savings from energy efficiency. As such, Enbridge plans to leverage the expertise of WG members in evaluating pilots and IRPAs to determine whether things like derating factors are warranted based on the system and non-pipe solution(s) in question. Enbridge also reckons that the derating factor will differ on a case-by-case basis depending on the IRPA chosen. For example: a combind solution of efficiency/demand response/CNG may allow for easy ramp-up of CNG if the efficiency/demand response component underperforms. With such a scenario, the risk of the efficiency solution is limited, and a derating factor may not be needed.	

3. IRP Pilot Selection

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Item Description	Discussion Comments/Outcome	Action Items
Role of WG members RE: Pilot Selection	Per the last full WG meeting, there was a lack of consensus RE: the role of the WG as some members were uncomfortable endorsing Enbridge's ranking and choice of pilots without having access to all information used by Enbridge in arriving at the selection of pilots • Most WG members believe their role is to provide input to help inform and improve Enbridge's pilot selection and design process, but the ultimate decision remains in Enbridge's hands. • Enbridge acknowledges the above and confirms that they will select the 2 pilots to move forward with, having taken into account WG feedback. • Enbridge feels additional value of the WG will come as members help develop evidence, work through technical evaluation, discuss costing and development of the program for ETEE and demand response over the next few months. • Enbridge reckons that some of this work will need to be carried out with members offline between WG meetings for greater efficiency then shared with the broader group at the next WG meeting.	Enbridge to meet with several WG members offline to get further insight on successful DR examples and to provide advice on designing a demand response program
Update on AMP Enbridge provided an update on where the AMP stands and the project evaluation process that is underway/ to come.	• Currently, Enbridge does not have a list of projects in the AMP to share with the WG. This list will be filed at end of October/ beginning of November 2022 along with Enbridge's rebasing application. • Enbridge explains the project evaluation results have been as follows: initially 1500 projects went through binary screening, 600 passed binary screening and proceeded to technical evaluation. From there, an estimated 70-100 projects will likely proceed to more detailed technical evaluation • Enbridge clarifies that the timing criterion in the IRP framework was not a constraint in terms of whether a project would pass the initial binary screening. • WG members inquire on Enbridge's general principles for technical evaluation (e.g. types of solutions under consideration) before filtering on specific projects.	Enbridge to provide list of projects in AMP

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	Enbridge clarifies that all solutions were on the table (e.g. DR, CNG, energy efficiency).	
Update on TC Energy	As a takeaway from the last WG meeting, Enbridge circled back with their internal gas controller who confirms that TC Energy provided a letter to Enbridge advising that the incremental pressure provided to Enbridge in the Parry Sound area will be pulled starting November 2023. This will impact project needs for Enbridge and no further rationale has been provided beyond the letter given. • WG member raises several concerns: 1) why the Parry Sound project is being fast tracked without consideration of other options given the anticipated reduction in pressure from Trans Canada, and 2) why the pressure is being pulled without explanation from TC energy since they have the capability to provide the pressure and the OEB expects TC Energy to work with utilities to come up with solutions to reduce infrastructure. As such, WG member advises that further questioning will be raised either by the WG now or by intervenors through rebasing hearing/pilot hearing to uncover the rationale. As such, support for Parry Sound as an IRP pilot is conditional on Enbridge having demonstrated that a solution involving TC is not possible. • Enbridge confirms that if the Parry Sound issue is resolved with Trans Canada, Kemptville would be the next best pilot option. WG member suggested that Enbridge should have a backup pilot plan in place if the TC issue is resolved. However, Enbridge does not believe the Parry Sound pressure issue will be resolved anytime soon, and believes the pilot learnings will be useful even if the issue is resolved at a later date. Therefore, Enbridge intends to proceed with the Parry Sound project as an IRP pilot (CNG and ETEE energy efficiency) or an IRP plan in any event, as a bridging solution instead of a bigger pipe. • Enbridge confirms that the Parry Sound geographic area is a low spot on the system. The pilot project is intended to	

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	meet organic growth in the existing service area, not to facilitate expansion to new communities.	
IRP Pilots – Evaluation Matrix Enbridge walks WG members through how the pilot projects were ranked against the criteria in the matrix	As per the evaluation matrix, Enbridge has flagged Sarnia as the best portfolio option and Parry Sound as the best single pilot option. Referencing the slide deck from the meeting materials, Enbridge provided further insight as to why projects were ranked the way they were. Findings are summarized below: Criteria: Feasibility for ETEE and DR • Enbridge confirms that scoring for this criterion is based on the energy efficiency potential in the area (e.g. whether the pilot would involve old or new homes and the progress made for DSM in that area in the past.) Criteria: Feasibility and timeframe • For the AMP, Enbridge is focusing on needs that must be met in the 2024-2029 period given future uncertainty of demand beyond that time. • Enbridge clarifies that for ETEE, they are looking at 3-5 years as a minimum lead time before the need must be met (unless CNG or other supply side measures can be used as a bridging solution). Criteria: Feasibility of Supply Side IRPA • Enbridge is looking at broader strategies like use of CNG on a more regular basis for construction outages and bridging solutions General WG Comments/ Concerns: *Weighting of Evaluation Criteria* • WG members questioned why a fixed percentage is assigned to each evaluation criterion. Some members feel the weighting should be dependent on the project (e.g. for near term project then the weight for supply side feasibility would be higher vs. a project further down the line where the need for supply side is not as urgent rendering it a lower weighting). Understanding this, some members questioned whether feasibility of supply side and DR should be considered together at 35% • Some WG members feel that the current	

	evaluation structure is set up at a weight of 65% on how good a pilot is from a learnings perspective and 35% on how feasible it is for the solution to meet system needs. There was a range of views as to whether this was appropriate. Some WG members feel this may be appropriate since the primary purpose of a pilot is learnings. One WG member emphasized that technical and economic feasibility is very important, as we want to study and improve something that has the potential to be successful and scaled up. *Classification of Potential Projects* • OEB staff notes that if a project is not selected as a pilot via the evaluation matrix, it is not ruled out from screening for IRPAs under the IRP Framework. However, under a pilot, the OEB may provide more latitude to Enbridge in trying things out than it would in a non-pilot project. • WG members want the record to show that if any of the potential pilots do not proceed with a (non-pilot) IRP solution in rebasing or as part of AMP, it is due to Enbridge's review, not because the working group did not recommend them, as WG discussions are focused solely on which projects to proceed as a pilot. WG Suggestions: *Sharing of learnings* • Enbridge shares with the WG that there is already a non-pilot IRP planned where a contract customer was not fully utilizing their gas supply and the customer is willing to recontract part of the distribution contract giving Enbridge 4-5 years to forego investment in facility equipment. WG members commend Enbridge's proactive approach but would like to see the economic analysis Enbridge took to uncover this potential. *Project progress updates to WG* • WG members request for Enbridge to provide updates on what happened to the potential pilot projects that were brought forth to the WG for consideration – i.e. whether Enbridge proceeded with the	

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	project or not, was it a pilot, was it implemented, how much did it cost, etc. Enbridge confirms this information will be reported in the AMP and/or annual report. Next Steps: *Potential Subgroup/ Work between meetings* Enbridge acknowledges that a lot of work must be completed in the next 3 months by WG members in terms of evidence development and walking through technical feasibility for the Parry Sound and Sarnia pilots Enbridge has selected for ETEE and DR. • Enbridge requests for permission to create a subgroup (like the DCF+) and/or to have measures to compensate WG members for work completed offline. Potential members would have DR or ETEE experience • OEB staff to give this some thought and report back to WG on whether a subgroup is the optimal solution from a workload and cost perspective in getting work completed between WG meetings. There is potential to have members send written suggestions for program design and program evaluation so Enbridge has something to consider before WG meetings. *Circulation of GH Report: Pathways to Net Zero* As per WG member request, Enbridge will circulate the Guidehouse report: Pathways to Net Zero for WG members to understand the context behind what Enbridge is doing since they have been referencing Guidehouse recommendations. *Collection of Baseline Data* WG members noted that Enbridge will need to create a baseline for peak demand (not overall throughput) and discussed how Enbridge is going to collect the baseline data for peak demand in order to assess impact of the IRPA, and what methodological assumptions will need to be made to normalize/ adjust the data for conditions Enbridge is planning for. • WG members note various assumptions will need to be made for things like weather conditions, population growth, price effects (commodity and carbon taxes), GDP/	• OEB staff to report back to WG on how to structure, execute and compensate members for any work completed between WG meetings • Enbridge to circulate to WG members the GH report: Pathway to Net Zero • Enbridge to report back to the group on plan/approach for converting interval data into IRP baseline, including reviewing

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	economic conditions, forecast of load growth and the underlying assumptions of efficiency improvements from the geotargeted efficiency programs • WG members noted the importance of collecting multiple sources of data (e.g. gate station, smart thermostats) where possible, to understand IRP impact. • WG members request for Enbridge to share how the data is being collected and what will be done with it. Enbridge agrees to share this at the October WG meeting. • Enbridge to verify and report back to the WG if hourly or daily data was collected from ERTs in place in the past as this may help Enbridge collect the most robust baseline data used to extrapolate and carry out peak hour calculation. • Enbridge to discuss with internal planning group whether peak load forecast is based on a 95/5 likelihood and how this might differ for DSP planning if a 50/50 likelihood was used. • Some WG members noted the potential use of a comparison community (without an IRPA), similar to the pilot community, to establish a baseline. Enbridge indicated it would consider this, but lack of ERT data in other communities might make this difficult. • WG member noted that test events might need to be initiated to evaluate the impact of a DR solution, as (depending on weather and other factors), a natural event may not occur naturally during the pilot period.	whether there is ERT data collected in the past that can be leveraged to formulate baseline • Enbridge to confirm probabilistic basis of load forecast (e.g. 5% likelihood of exceeding)
Sarnia Pilot (Portfolio Option)	• Enbridge feels that Sarnia makes the most sense for pilot purposes since there are various projects that can be looked at in the area and they already have smart meters/ monitoring equipment installed on stations and at several of the small commercial and residential customers. Once the ERTs are turned on (potentially in the next 2 weeks), Enbridge can start collecting baseline data this winter then start implementing the ETEE and DR programs next year given the input and suggestions received from the working group. • WG members want to ensure that the Sarnia pilot covers a large enough area to	

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	be statistically significant and assess potential for energy efficiency IRPAs for commercial customers. Enbridge confirms that the programs could be offered to up to potentially 30000 Enbridge customers in the larger Sarnia area, but that only demand reduction for a subset (perhaps 5000 customers) of these customers would actually contribute to addressing the system need.	
Parry Sound Pilot (Single Option)	• Enbridge believes Parry Sound is a good pilot option because there is a significant need where building a facility/ pipeline would be a large and uneconomical expense in a growing area. The use of CNG is a cheaper option that can help bridge Enbridge over until implementation of ETEE through costing and program design input from the working group. • Some WG members question why Parry Sound is a better pilot option than Bayfield. Enbridge indicates there is uncertainty about future growth in Bayfield and CNG is already being put in place (outside of pilots) as it is the lowest pressure points and needs immediate attention to make it through the winter season. • Enbridge asked the group if there were any final concerns they wanted to raise regarding the selection of Sarnia or Parry Sound as pilots. No additional concerns were raised.	

List of Action Items

Action Item	Assignment/ Owner	Due Date
Post meeting #10 notes	OEB staff	As soon as possible (Follow up with Enbridge)
Circulate summary of meeting #12 outcomes	OEB staff	As soon as possible
Coordinate with WG members to gain insight on successful DR examples and to help design a demand response program	Enbridge WG members	As needed

ONTARIO ENERGY BOARD | COMMISSION DE L'ÉNERGIE DE L'ONTARIO

Report back on how to structure, execute and compensate members for any work completed between WG meetings	OEB staff	As soon as possible
Circulate Guidehouse report: Pathway to Net Zero	Enbridge	As soon as possible
Report back to the group on plan/approach for converting interval data into IRP baseline, including reviewing whether there is ERT data collected in the past that can be leveraged to formulate baseline	Enbridge	Prior to meetings #14
Confirm probabilistic basis of load forecast (e.g. 5% likelihood of exceeding)	Enbridge	Prior to meetings #14
Provide list of projects in AMP	Enbridge	As soon as possible (Enbridge indicated this may not be possible until filing of rebasing application)
Establish agenda for meeting #14	OEB staff (with input from Enbridge Gas & WG members)	Prior to meetings #14

ONTARIO ENERGY BOARD | COMMISSION DE L'ÉNERGIE DE L'ONTARIO

Meeting Notes

Integrated Resource Planning Technical Working Group (EB-2021-0246)

Working Group Meeting #14

Meeting Date: October 25, 2022 Time: 2:00 p.m. - 4:00 p.m.
Location: MS Teams

Attendees

IRPTWG Members	Role
Michael Parkes	OEB staff representative (Working Group chair)
Stephanie Cheng	OEB staff representative
Chris Ripley	Enbridge Gas representative
Whitney Wong	Enbridge Gas representative
Dwayne Quinn, DR Quinn & Associates Ltd.	Non-utility member
Jay Shepherd, Shepherd Rubenstein Professional Corporation	Non-utility member
Cameron Leitch, EnWave Energy Corporation	Non-utility member
John Dikeos, ICF Consulting Canada Inc.	Non-utility member
Tamara Kuiken, DNV	Non-utility member
Chris Neme, Energy Futures Group	Non-utility member
Steven Norrie, Independent Electricity System Operator	Observer
Kenneth Poon, EPCOR Natural Gas LP	Observer

Additional Attendees	Role
Cara-Lynne Wade	Enbridge Gas guest

Regrets

IRPTWG Members	Role
Amber Crawford, Association of Municipalities of Ontario	Non-utility member

Purpose

These notes summarize the information discussed during the working group (WG) meeting on each of the key points presented in the published materials.

Meeting Agenda

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1. Preliminary matters (OEB staff – 10 minutes)
2. IRP Pilot Discussion: Application format, content, and timing (Enbridge – 110 minutes)
3. Pilot Program Design Issues (Enbridge – Time permitting **postponed to future meetings*)

1. Preliminary Matters

Item Description	Discussion Comments/Outcome	Action Items
Meeting #12 Notes OEB staff asked if there were any comments on draft meeting #12 notes	There were no comments on meeting #12 notes. Therefore, the notes are accepted by working group members.	• OEB staff to post meeting #12 notes as appropriate on IRP webpage once Enbridge identifies whether there are any confidentiality concerns
Follow up items from WG meeting #12	List of projects in AMP • Enbridge confirms the full AMP will be filed in Appendix B of Enbridge's rebasing application which is to be filed on Oct 31/22. Appendix B will include a list of IRP related projects with rationales of why projects have been screened in/out • Enbridge or OEB staff will share with WG members any IRP related content from Enbridge's rebasing application once the information becomes public. Enbridge notes there are a few items they would like to highlight in Appendix B with the WG. This will be discussed over the next few months. • Some WG members feel they need to allocate time (~15-20 hours) to understand the AMP to provide useful input on IRP since the AMP is the foundation of Enbridge's planning ○ OEB staff and Enbridge are of the view that, in the coming months, the WG can continue looking at pilot applications and evolving the DCF+ test then looking at aspects of the rebasing application in detail (to inform further WG work) early next year	• OEB staff to report back to WG on when and how members will be compensated for time spent on reviewing Enbridge's AMP

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	TransCanada Update • TransCanada gave Enbridge a 2-year notice they will be pulling their pressure agreement. In response, Enbridge plans to inquire/ request from TransCanada incremental pressure/ volumes as an IRPA. • WG members question what the contingency plan is if Enbridge is successful in resolving the Parry Sound issue with TransCanada. Enbridge advises they are looking at other potential pilot areas where IRPAs (like CNG, ETEE) could be tested, but Enbridge believes it will take more than a year to resolve the TransCanada situation, so an IRPA pilot for Parry Sound may still be valuable. • Enbridge will revisit this topic of discussion at the November WG meeting once they get a formal response from TransCanada	• Enbridge to report back to WG in Nov with an update on TransCanada's response to their request for incremental pressure/ volumes as an IRPA
Enbridge to coordinate with some members outside of WG meetings RE: geotargeted energy efficiency and DR plan development.	• Enbridge advises interested WG members they will reach out after the WG meeting to get their availability to continue discussing geotargeted energy efficiency program and DR development • Discussions/ work is anticipated to fall within the additional 6 hours set aside for potential extracurricular work. However, if more time is required, Enbridge will find a way to compensate members for their time • Enbridge confirms outcomes of these discussions will be reported back to the full group at the Nov and Dec WG meetings on how it has informed Enbridge's proposal.	• Enbridge to report back to full WG in Nov and Dec on how the discussions have informed Enbridge's proposal.

2. IRP Pilot Discussion

Item Description	Discussion Comments/Outcome	Action Items

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Enbridge spent a majority of the WG meeting discussing various items listed on slide 2 of the meeting materials. This includes worse case scenario timelines and inquiring on the level of detail required of evidence to be developed for the pilots. Discussion topic and any outcomes are documented on right.	**Application Timing** • Enbridge informs WG that the worst case scenario timeline is for Enbridge to file the 2 pilots towards the end of Q1 2023 given the amount of work required to develop a geotargeted energy efficiency program. • Enbridge hopes to bring the level of detail up a level or two so they can file at least the Parry Sound pilot application sooner (potentially January). • Timeline of pilots to be revisited at the Nov WG meeting once further progress has been made. See ***"Timing"*** section beginning on page 6 below for details. **Application and Evidence** • Enbridge shares a preliminary draft of the "evidence outline" intended to be included as part of the evidence package. Enbridge notes the outline is based off OEB's leave to construct requirements while layering on the IRP decision and framework as to the requirements for an IRP plan. • Enbridge acknowledges that the structure will change but asks WG members if there are any initial comments/ suggestions with the current state of the "evidence outline". WG member feedback is as follows: ***<u>Structure</u>:*** • WG member indicated that Enbridge's outline addresses most items required of an IRP plan but that the pilot evidence does not have to strictly follow the requirements of a (non-pilot) IRP plan application although it is good to have them close. • WG members recognise the need for Enbridge to adjust pilot program design (e.g. marketing/ incentive levels) in case it is not performing and delivering results as intended. This gives Enbridge the flexibility to provide a slightly higher level of detail ni terms of project specification than an LTC application • WG members suggest reordering sections of the outline to first address risk before providing rationale for pilot. • Some members believe evidence outline can be simplified for the pilot. However, all	 • Enbridge to return to Nov full WG meeting with a revamped evidence proposal/draft taking WG comments into consideration, and for further discussion of pilot details

ONTARIO ENERGY BOARD | COMMISSION DE L'ÉNERGIE DE L'ONTARIO

	members agree Enbridge must describe the baseline facility alternative. As for non-facility alternatives, there is disagreement among members on how much discussion of (non-selected IRPAs) is required o Some members feel Enbridge can say these specific IRPAs were chosen to learn more about them o Some members feel the IRPAs were chosen with the primary objective to deliver system need and that learnings are a secondary factor o Enbridge clarifies that the pilots were evaluated based on the pilot criteria established with the main objective being whether the IRPA (geotargeted and DR) can reduce peak hour consumption of a customer base ***<u>Content</u>:*** • WG member suggests for Enbridge to better distinguish between the rationale for a **pilot vs. project**. There should be a section on how the pilot will help contribute to broader system goals/ objectives vs. a sole focus on meeting a specific system need (as required of an LTC). A good reference is the hydrogen blending decision where the Board decision indicated that Enbridge satisfied the evidentiary burden of proof in the value of proceeding with the pilot. There will likely be a similar standard applied for an IRP pilot approval. • Similarly, another WG member would like to see a section on expected **learnings** from the pilot which also serves as a rationale for why it was selected • WG members flagged **shareholder incentives** as a potential area of concern since incentive mechanisms were not laid out in the IRP framework (although the potential for Enbridge to propose incentives is noted). o If Enbridge seeks approval of an incentive mechanism, members note this is a new area of complexity that may slow down the application and decision process. A new policy	

	proposal may cause concerns for intervenors from a ratepayer perspective. Members suggest for Enbridge to have a backup plan, if the OEB wants pilots to proceed on a strict cost recovery basis.. o WG members note there are several utility incentive models based on savings in addition to cost recovery (e.g. New York utilities – incentives are 30% of economic net benefits). However, members continue to emphasize that the speed of pilots is of the essence and new incentive model will surely slow it down. Enbridge acknowledges this and will take it back to see if it can be put on hold to be revisited in the future • WG member suggests adding a section on **risk** (i.e. how Enbridge addresses the risk of load forecast being off or not getting enough of the resources they are looking for in their assessment of the relative merits of the different pilot choices). • WG member suggests adding an **analysis** section detailing how Enbridge chose their pilots (including prior consideration by the WG). This will help inform commissioners on the various pilots considered and how Enbridge narrowed down the options. • WG member suggests 2 additional items to be addressed by Enbridge: 1) **rationale for delay** since the IRP decision asks for pilots to be executed by Dec 2022, and 2) explain **how pilots fit into the AMP** (i.e. objectives of pilot, how it will meet system needs, how learnings will be applied to upcoming projects in the application) ***<u>Timing</u>***: • WG members advise Enbridge that the pilot project schedules in the meeting materials can be updated with estimates. Regulatory applications follow a timeline of set activities like notice periods therefore, although the date may not be exact, Enbridge can calculate an estimated date (e.g., if Enbridge files in April, the earliest a decision can be issued is likely November –	

	approx. 7 months) • OEB staff notes that this is a new type of application so there is no set performance standard. However, it would best resemble that of a complex LTC which is ~7 months. However, all WG members including Enbridge and OEB staff expressed support for trying to speed up the process. The objective is to have the pilots underway and yielding results throughout this winter season. ***<u>Potential avenues to fast track the pilots:</u>*** **Option 1:** Per the IRP decision, the Board told Enbridge to execute 2 pilots by the end of 2022. As such, some WG members believe Enbridge can proceed without submitting a formal application for approval noting that the speed of executing the pilots is likely more critical than carrying out the regulatory process. Enbridge and various members like this option. • OEB staff clarified that the Board was likely expecting a formal pilot application from Enbridge since there is language in the decision of filing a pilot application. OEB staff to revisit the decision and to verify options with legal before reporting back to the WG in the next week or two. • WG members caution if a formal application needs to be put through then pilots will not be implemented until late in 2023 which may render them not as useful. OEB staff suggested that one avenue would be for Enbridge to pursue some pilot action and spending in advance of the formal approval. This requires Enbridge to take on some risk, but there is a deferral account in place for cost recovery. Enbridge confirms they have been proactive (e.g. meter reading routes have been set up for more frequent data collection in Sarnia; scoping is being done for ERTs meters and CNG for Parry Sound) **Option 2:** A WG member notes that another option is for Enbridge to file details of the 2 pilots as an amendment to the evidence in the rebasing application. In doing so, Enbridge will provide an overview of what they are planning	• OEB staff to discuss with legal on whether Enbridge is required to file a formal application for the pilots or if they can file as an amendment to evidence of the rebasing application (or no application at all)

ONTARIO ENERGY BOARD | COMMISSION DE L'ÉNERGIE DE L'ONTARIO

	to do for the pilots (e.g. how much it will cost, why the pilots were chosen) then request for a PO on whether Enbridge is able to proceed. WG members suspect that intervenors will not object. This option foregoes the notice period as it is subsumed in the AMP and it allows Enbridge to proceed on an interim basis by means of a PO rather than an entire discovery process. • OEB staff and WG members acknowledge there is no precedent where such procedures have been taken to expedite a process. It is a new potential solution that the OEB will have to take away and give some more thought to its viability All WG members are supportive of fast tracking the process emphasizing the importance of getting pilot learnings sooner rather than later to make them more valuable. Enbridge adds there are other projects in the AMP involving geotargeted energy efficiency that can leverage learnings from these pilots. This way Enbridge can use that information to start filing non-pilot energy efficiency IRP plans. ***<u>Implementation of DCF+</u>*** • Enbridge comments that the 2 pilots will proceed regardless of where the enhanced DCF+ test stands. Enbridge suggested that they could likely forego implementation of DCF+ until they file their first IRP plan • OEB staff acknowledges that the final DCF+ test enhancements will not align with the timing of pilots. As per the decision, Enbridge is also not required to apply any DCF+ enhancements to the economic test of the pilots but rather by the first non-pilot IRP plan. OEB staff suggested that some version of the DCF+ test should still be applied to the pilots as a working model, potentially creating a list of 'no regret' recommendations for the DCF+ test after the next DCF+ subgroup meeting so these factors can be considered in the cost effectiveness test of the pilots. **ERTS** • For Parry Sound, Enbridge is interested in	

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	gathering baseline data which involves installation of ERTs. This discussion will take place at the next WG meeting and/or via subgroup discussions with select WG members. Some questions for Enbridge and the WG to consider include what level of metering (number of meters) is necessary. ○ Enbridge informs the WG that they have not spoken to their internal research team in defining the exact number of ERTs required to make it statistically significant. However, Enbridge estimates for it to be more than 10 but less than 1,000 ERTs. Various WG members agree that Enbridge will likely be looking at 100 meters rather than 1,000. ○ Given the small # of ERTs required, WG members suggest for Enbridge to start installing the ERTs now to gather baseline data over the heating season. Installation does not have to be done all at once but collecting some data over the coldest parts of the months is crucial. Enbridge agrees to take this back to their research group. ○ WG members suggests for Enbridge to reach out to WG member (Tamara) for inquiries regarding sample sizing, level of sophistication and statistical analysis. Tamara also offers the potential for additional contacts in this area of expertise if Enbridge can provide more information • WG member does not recommend doing too many ERTs in the Parry Sound pilot, as these may not be needed in the event that a more viable supply side solution is reached with TransCanada **Budget** • Enbridge estimates that both pilots will likely cost no more than a few million dollars (~7 digits) which includes cost of meters, CNG, etc. • Enbridge is currently developing pilot cost and budgets where DR and ETEE are the	• Enbridge to review residential partnership agreement (federal government-Enbridge) with internal team and report back to WG on whether federal subsidies are applicable to IRPA.

ONTARIO ENERGY BOARD | COMMISSION DE L'ÉNERGIE DE L'ONTARIO

	significant contributors, but the values assigned are currently unknown. • WG members note there are potentially federal subsidies for residential customers (e.g. rebates if you live in the geographic area where feds would pick up half the cost). However, this may exclude geotargeted measures. Enbridge to verify with internal team while reviewing the residential partnership agreement **Stakeholder Engagement** • Enbridge plans to reach out to both Parry Sound and Sarnia communities by setting up meetings with municipality, local LDCs and IESO to better understand the needs/ energy plans of the community (including intersection with electricity) which will be used as a baseline forecast for pilots. • Enbridge indicated that stakeholdering is an important part of the IRP decison • WG members generally agreed with Enbridge's approach, but noted that initial stakeholdering should not be on the critical path to implementation or serve as a gating process. More important is ongoing engagement as the pilot is operationalized. • WG member noted that community engagement should include a communication strategy on how to refine roll out to get buy-in (marketing strategy) and can be used as an opportunity to explain how pilot differs from broader based DSM measures/ standard system wide programs that exist today. In doing this, Enbridge should also hope to get community leaders allied with Enbridge to help drive participation and education in the area • WG members and Enbridge agreed that communication procedures will happen in parallel to pilot implementation and will evolve while the pilot is operating. The pilot plan will need to stay flexible and will change based on learnings, and there may be a need to communicate pilot changes • OEB staff notes that if pilots are executed through the rebasing application route, there will not be a formal OEB notice to	

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	impacted communities (unlike an LTC) – however, this is likely to be a minimal risk given the low likelihood of negative land/environmental impacts associated with the proposed IRPAs. Any community stakeholdering efforts Enbridge does will be valuable in identifying if there are any community concerns. **Pilot Evaluation (Criteria & Timing)** Enbridge began discussions with the WG on when and how to evaluate the performance of DR and geotargeted energy efficiency plans over the first 3 years (e.g., what actions should Enbridge take if there is good uptake with good peak hour savings? Conversely, what should Enbridge do if things do not materialize as envisioned with limited program participation and people are leaving the program?) • WG members emphasize the importance of adaptive management and evolving the test based on the results experienced • WG members caution the importance of accurately evaluating how short Enbridge is compared to what they thought they would get in demand reduction. It is important to factor in the recalibration of load forecast to reflect what was required vs anticipated. Even if program is underperforming relative to initial assumptions, Enbridge may be achieving or exceeding what they need to avoid infrastructure build. • WG members note that the key question is whether the pilot has successfully deferred the need to build infrastructure. It will inform Enbridge on what to expect when they draw up plans for other projects on a fuller scale roll out. Need to see what is working and not working. • WG members also question what to do if the IRPA is working a bit but not enough – at what point should Enbridge give up and reconsider building a facility? o WG members reckon there are various energy efficiency activities. It is important for Enbridge to consider which other alternatives are potentially suitable and when to roll them out if the ones Enbridge	

ONTARIO ENERGY BOARD | COMMISSION DE L'ÉNERGIE DE L'ONTARIO

	initially put in place are not working. Enbridge confirms that these discussions have started internally and will be further discussed with the WG subgroup when developing the plans. ○ Enbridge acknowledges some potential bridge solutions – for example: in Parry Sound, CNG can be called upon more when ETEE is not working; and in Sarnia, the plan is to use DR and ETEE but perhaps another solution needs to be explored and Enbridge has started thinking about this • WG member notes that a main challenge in evaluating the impact of IRPA in many jurisdictions is that you do not get peak days every year. Therefore, planning for that early and building it into the evaluation process (e.g. extrapolating impacts, simulating test events) is important.	

List of Action Items

Action Item	Assignment/ Owner	Due Date
Post meeting #12 notes	OEB staff	As soon as possible (Follow up with Enbridge)
Circulate summary of meeting #14 outcomes	OEB staff	As soon as possible
Address when and how members will be compensated for time spent on reviewing Enbridge's AMP	OEB staff	As soon as possible
Update members on TransCanada's response to Enbridge's request for incremental pressure/ volumes as an IRPA	Enbridge	November meeting
Update members on how the geotargeted energy efficiency and DR discussions with select WG members have informed Enbridge's proposal.	Enbridge	November & December WG meetings
Share revamped evidence proposal/drafts taking into consideration WG comments, and for further discussion of pilot details	Enbridge	November meeting

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Clarify with legal on whether Enbridge is required to file a formal application for the pilots or if Enbridge can file an amendment to evidence in the rebasing application	OEB Staff	Within the next week or two
Review residential partnership agreement with internal Enbridge team and report back to WG on whether federal subsidies are applicable	Enbridge	November meeting
Establish agenda for November meeting (meeting #16)	OEB staff (with input from Enbridge Gas & WG members)	Prior to November meeting

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Meeting Notes

Integrated Resource Planning Technical Working Group (EB-2021-0246)

Working Group Meeting #16

Meeting Date: November 22, 2022 Time: 2:00 p.m. - 4:00 p.m.
Location: MS Teams

Attendees

IRPTWG Members	Role
Michael Parkes	OEB staff representative (Working Group chair)
Stephanie Cheng	OEB staff representative
Chris Ripley	Enbridge Gas representative
Whitney Wong	Enbridge Gas representative
Dwayne Quinn, DR Quinn & Associates Ltd.	Non-utility member
Jay Shepherd, Shepherd Rubenstein Professional Corporation	Non-utility member
Cameron Leitch, EnWave Energy Corporation	Non-utility member
John Dikeos, ICF Consulting Canada Inc.	Non-utility member
Tamara Kuiken, DNV	Non-utility member
Chris Neme, Energy Futures Group	Non-utility member
Steven Norrie, Independent Electricity System Operator	Observer
Kenneth Poon, EPCOR Natural Gas LP	Observer
Amber Crawford, Association of Municipalities of Ontario	Non-utility member

Additional Attendees	Role
Cara-Lynne Wade	Enbridge Gas guest
Geoff Chung	Enbridge Gas guest
Craig Fernandes	Enbridge Gas guest

Purpose

These notes summarize the information discussed during the working group (WG) meeting on each of the key points presented in the published materials.

Meeting Agenda

1. Preliminary matters (10 minutes)
2. Annual Report Discussion (10 minutes)

3. IRP Pilot Filing Requirements (10 minutes)
4. Pilot Update (30 minutes)
5. Evidence Discussion: Budget & DCF+ analysis (20 minutes)
6. DR/ETEE Open Discussion (30 minutes)
7. Wrap Up (10 minutes)

1. Preliminary Matters

Item Description	Discussion Comments/Outcome	Action Items
Meeting #14 Notes OEB staff asked if there were any comments on draft meeting #14 notes	There were no comments on meeting #14 notes. Therefore, the notes are accepted by working group members.	• OEB staff to post meeting #14 notes on IRP webpage once Enbridge identifies whether there are any confidentiality concerns
Meeting schedule OEB staff discussed WG meeting times for the remainder of 2022 and for early 2023	For the remainder of 2022, OEB staff notes there are 2 more WG meetings: • 1 DCF+ subgroup meeting (Dec 6) • 1 Full WG meeting (Dec 20) WG members confirm they can attend both meetings as planned. Therefore, meetings will take place as scheduled. For the new year, OEB staff proposes to continue with the standard Tuesday meeting times at 2-week intervals with the split between DCF+ and full WG meetings beginning on Jan 10 and Jan 24, 2023 as a starting point. • No concerns from WG members	• OEB staff to send out calendar invites for WG meeting times for 2023
Follow up items from last WG meeting	OEB staff notes that some follow up items from the last WG meeting will be addressed throughout today's agenda items. See below for highlights: **AMP** *(addressed in further detail under annual report agenda item #2 below)* • OEB staff notes that WG members will need to review Enbridge's AMP in order to comment on Enbridge's 2022 IRP related activities. WG should consider how Enbridge has incorporated IRP in their AMP planning process. As such, cost awards with a defined set of hours will be set up by OEB staff for WG member review of the AMP ○ Given the length of the	• Enbridge to flag key IRP related materials in AMP/rebasing application for WG member review • OEB staff to report back to WG with further guidance on cost eligibility of WG review of the AMP/rebasing

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	rebasing application, OEB staff requests for Enbridge to flag key IRP related pieces (including the AMP) as a starting point for WG member review (e.g. energy transition, demand forecast, design day demand, etc.) ○ OEB staff to report back to WG with further guidance on cost eligibility for review of rebasing application contents. **Filing Pilot Application** *(addressed in further detail under IRP pilot filing requirements agenda item #3 below)* • Following discussion at last month's IRP WG meeting, OEB staff provided e-mail to Enbridge on potential options for Enbridge to file IRP pilots. WG members are concerned that this e-mail was not shared with the entire WG but only with Enbridge especially since members provided suggestions on how Enbridge could potentially file the pilots at the last WG meeting and members want to better understand the range of options that were considered and limitations to the approaches • OEB staff indicates that it does not believe there is confidential information contained in the staff e-mail and will verify with legal if the document can be shared with the WG • Enbridge plans to share/discuss options presented in OEB staff's e-mail during today's meeting and to provide Enbridge's view on how to proceed with filing of IRP pilots under agenda item #3 (taking into consideration any WG comments) **DR/ ETEE** *(addressed in further detail under agenda item #6 below)* • Enbridge had difficulties arranging	application from an IRP perspective • OEB staff to verify with legal if the document on pilot filing options can be shared with the WG. OEB staff to report back to WG ASAP

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	a DR/ETEE subgroup meeting with select WG members as planned. Enbridge will try to schedule a meeting before the holidays. • During today's meeting (under agenda item #6), Enbridge will pose various DR/ETEE related questions for open discussion. Any questions left unanswered will be followed up through subgroup meeting or e-mail	• Enbridge will send out a doodle poll to arrange for a DR/ ETEE subgroup meeting with select WG members before the holidays

2. Annual Report Discussion

Item Description	Discussion Comments/Outcome	Action Items
Enbridge provided an update on their plans and progress in drafting the 2022 IRP Annual Report for WG review, finalization, and filing to the OEB.	Timing • Enbridge informs the WG that they have started writing the 2022 IRP annual report. The anticipated timing of review, revisions and finalization for filing will be similar to last year where the annual report will likely be filed in May 2023 along with the deferral account disposition application • Enbridge plans to have the annual report drafted by end of Jan 2023 so it can be shared with the WG for their initial review in the first week of Feb. Members can provide comments and suggestions at the Mar WG meeting. Annual report will then be finalized in April as the WG also drafts the annual IRPTWG report • WG members indicate that the annual IRP report will be relevant to Enbridge's current rebasing rate case and questions how the proposed timing aligns with the OEB schedule for that case. ○ WG member notes that if Enbridge files the IRP annual report in May there will be no time for discovery in the rates case. However, if the process was sped up, the report could potentially be filed in time for the technical conference (though not the IR stage). WG member suggests for Enbridge to file the	• Enbridge to consider the viability of speeding up the filling of the 2022 annual report and will report back to the WG

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	annual report by end of Feb/ early Mar so it can be integrated into the rate case process smoothly. ○ WG member proposes for Enbridge to provide the annual report to WG by Jan 10, have members provide comments within a couple of weeks, then the annual report can be finalized in Feb as the IRPTWG report is being drafted. ○ Enbridge will internally consider an expedited schedule to see if this can be accomplished	

3. IRP Pilot Filing Requirements

Item Description	Discussion Comments/Outcome	Action Items
Enbridge walks WG members through the pilot filing options considered (including the option Enbridge proposes to move forward with) while seeking comments/ feedback from members	Filing Options for IRP Pilot Considered: **1. File streamlined pilot application with OEB** *(at higher level of detail than a typical application)* • Under this approach, Enbridge plans to estimate timing and costs (e.g. use ranges for budgets) and to provide a higher level of programming details on DR/ETEE. • Enbridge believes this approach will allow them to file much quicker to get the pilots moving. Enbridge could file by the middle of Q1 2023 and potentially have it approved by OEB by summer 2023. **2. File pilots as part of rebasing application** After further consideration from when this option was proposed at the last WG meeting, Enbridge does not want to proceed with this option as they want to keep the pilot application standalone from rebasing. **3. File more detailed application with OEB (complete information on all aspects of pilot)** • Enbridge notes that this option would take several additional months which would cause a major delay in filing the pilots on a timely basis Filing Proposal: Enbridge plans to proceed with Option #1. WG questions/ concerns are summarized below:	• Enbridge will return to Dec WG meeting with a revised structure of evidence/

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	- WG member questions if option #1 combines clearance of IRP Deferral and Variance Account with the approval of pilots and budgets. Enbridge confirms that the IRP DVA would not be cleared in this proceeding. Enbridge compares this filing approach to a simplified leave to construct (LTC) application where Enbridge is seeking approval of the pilot projects by providing the board with budget, plans, objectives. In turn, Enbridge hopes the board will provide more direction. **Individual or joint filing?** Enbridge initially planned on filing 2 pilot applications – one for Parry Sound and one for Southern Lake Huron (Sarnia). However, the WG suggests filing both pilots as a single application instead of 2 applications. - OEB staff notes this will likely allow the OEB to see the totality of what Enbridge is planning to do better and it will be more efficient - Another WG member notes that by doing a joint filing of the 2 pilots, this will create learnings going forward. There is some merit in having pilots that are a little different from each other filed together to see if there are any synergies between them - WG member notes that if both pilots are on similar tracks in terms of Enbridge's ability to develop the pilot filings, there is no need to file separately. However, if one pilot can be submitted way in advance of another, there may be an argument to file separately. But once the filing of pilots becomes a more mature process, they should be filed on an individual basis going forward - Enbridge appreciates the WG's feedback and plans on building/ modifying their pilot filing plans with suitable ideas proposed by the WG. Enbridge plans on providing the WG with a draft of the pilot application for feedback in Jan 2023 **Timing of pilot work execution vs. filing of pilot application and getting approval:**	template/ TOC - members can provide their feedback at Dec meeting then Enbridge will draft the pilot evidence to provide pilot application filling details to the WG for formal review and feedback in Jan 2023 Enbridge to consider filing a letter with the OEB in Dec to indicate that the pilot application timing has

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	As noted at previous meetings, the WG is concerned about the delay if Enbridge were to start working on pilots only after the pilot application was filed and approved by the board. WG members caution that if an application is filed in Mar 2023, Enbridge will likely receive approval in summer 2023 making it difficult for Enbridge to get the pilots running as fast as they need them to. ○ Enbridge confirms they already started working on both pilots which are well underway – Enbridge started installing ERTs in Parry Sound to get baseline data for Winter 2022. Enbridge also got meter routes re-established for smart meters in Southern Lake Huron. ○ WG member suggests Enbridge propose in its pilot application that if the OEB modifies or does not approve the pilot as proposed, Enbridge could still seek recovery for prudently incurred costs prior to that date given the urgency of pilot actions. ○ OEB staff suggests for Enbridge to file a one-page letter in Dec indicating Enbridge's plans to file the pilot application in early 2023 instead of the Dec 2022 deadline referenced in the IRP decision. WG member also suggests for Enbridge to indicate on the public record that although the pilot initiation deadline will be missed, Enbridge is actively engaged in pilot preparation work by providing examples of what they are doing / have accomplished (e.g. getting baseline data) so it does not look like Enbridge is doing nothing but simply missing a deadline.	moved from Dec 2022 to early 2023.

4. Pilot Update

Item Description	Discussion Comments/Outcome	Action Items
Enbridge provided an update on the various tracks of work that are currently in flight by Enbridge with the intention of seeking	Track #1: Refine Facility Scope & Project Need Enbridge notes that with AMP being finalized, they are updating estimates for the system needs to be met by the pilots, including demand reductions required and new circumstances like pressure reduction from TC	• Enbridge to review the questions circulated by WG members RE: TCE and

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WG feedback to define the detailed scope, budget, and timelines of the 2 pilots which will ultimately feed into the pilot application. A summary of Enbridge's work track progress and WG comments are noted on the right.	Energy (TCE). These updates could require an update to the scope and cost of the baseline facility project
	• Enbridge clarifies the core demand forecast process (i.e. underlying assumptions about GDP and population growth) is not being refreshed but rather, localized refinements are being made to the model for things like demand growth and downstream constraints from a day-to-day perspective for the pilot areas
	• Specific to **Parry Sound**, Enbridge notes there are still ongoing discussion between Enbridge and TCE to understand the potential in getting delivery at a specified pressure level at a price, but TCE is not obligated to provide this pressure. Enbridge anticipates that this matter will not be resolved until sometime next year. Enbridge will keep WG updated.
	  ○ WG member questions the breadth and depth of Enbridge's TCE update since questions were e-mailed to Enbridge several weeks ago but were left unanswered (e.g. what was the pressure before vs. now? Has Enbridge considered transient effects/ analysis vs. steady state analysis to verify that a pressure issue exists?)
	  ○ WG member requests for Enbridge to provide a complete update (answering questions they have facts/ answers to) at Dec meeting
	  ○ Enbridge clarifies they will provide updates as they get answers from TCE. Enbridge does not have any more details they can share with the WG at this time due to confidentiality issues
	  ○ Enbridge notes they are working with system engineers who help design Enbridge's system to see how the decrease in pressure supplied by TCE will affect the need and scope of the Parry Sound project. Enbridge needs more time to work through the numbers.
	• Some WG members are concerned over
		to provide the data and answers they may have by Dec WG meeting

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	the value and longevity of the Parry Sound pilot given the unknowns with TCE and asks Enbridge for an update on the backup Bayfield pilot option. ○ Enbridge confirms they intend to proceed with Parry Sound pilot since they do not know if they will get a response or full service from TCE. Enbridge will continue with pilot plans for CNG (to address immediate needs) and geotargeted programming (to reduce peak hour demands and not have to build pipe down the road). Enbridge clarifies the Parry Sound pilot is needed given the pressure reduction from TCE and to also address the anticipated growth in the future. ○ WG member advises for Enbridge to make sure that the baseline data collected for Parry Sound is set up in a way that it will still be useable should the TCE pressure issue be resolved down the line Track #2: IRPA – CNG Plan (Parry Sound) Enbridge describes this as the bridging solution to address the reduced pressure from TCE until ETEE programming is having an impact. Enbridge will engage CNG and operations team to design and develop a plan, land requirements for injection point, budgets, and timelines. No further comments from WG. Track #3: IRPA – ETEE Program Design (both pilots) & Track #4: IRPA – DR Program Design (Southern Lake Huron) • Enbridge notes they are currently building out program design details for ETEE and DR. ○ Enbridge plans to leverage WG discussions over any key design elements specific to DR ○ Enbridge plans to engage Posterity for high level ETEE feasibility analysis to help quantify peak hour savings potential for both ETEE and DR. ○ Enbridge has connected with other	

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	jurisdictions and thermostat providers to discuss DR programs to gain and integrate learnings into Enbridge's programs design
	• WG members followed up on whether Enbridge can offer higher incentives in the geotargeted areas on top of leveraging federal incentives or system wide programs (e.g. federal government/Enbridge offers $4K for system wide programs but Enbridge offers an additional $2K in a geotargeted area as an added incentive)
	    o WG member notes the importance of this since residential contribution to peak is most substantial
	    o Enbridge believes there is potential to leverage federal funding and intend to do this if possible. Enbridge believes the joint approach adds some complexity and additional requirements (e.g., a before/ after whole home audit, and it must be an owner-occupied primary residence) but should still be feasible considering the attribution agreement
	        ▪ WG members want further details on how Enbridge will implement geotargeted incentives in the context of federal program
	        ▪ Enbridge does not know the exact timing of when the administrative details will be available but will work with the DR/ETEE subgroup and bring findings to the full WG with an opportunity to comment before it gets filed.
	• Enbridge notes another item of discussion is how federal incentives will get accounted for in the DCF+ test
	
	Track #5: Stakeholdering
	Enbridge looks to complete their stakeholdering mapping and plan. This includes meeting with municipalities, local LDCs and IESO in order to provide an overview of the pilots happening in their respective areas and looking at municipal energy plans to better understand future growth and needs. Enbridge wants to ensure that IRP	

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<td>pilot stakeholdering aligns with their broader regional IRP stakeholdering work. Enbridge also plans on updating their IRP web page to provide an overview to the community and for customer engagement.

Enbridge hopes to schedule a meeting with municipalities before end of 2022. However, WG member cautions that some individuals are just getting sworn in, and holidays are coming so Enbridge may want to set some dates in Jan 2023 to get better attendance
Enbridge clarifies their plan is to have the municipal meetings with local LDCs and IESO together given their experience in Ottawa where there were differing views on future plans.

Enbridge clarifies the purpose of the meeting is to provide an overview of the pilot and to better understand each party's own plans to see how it all fits together. Enbridge intends for politicians, municipal staff and those involved in the community energy plans/ future planning to attend.
WG member suggests clearly stating the purpose, points of contact and timing in Enbridge's meeting invitation to increase the likelihood of all parties attending. The invitation will have to go to the clerk, mayor, etc. WG member (Amber) offers to review the draft invitation and to help Enbridge through this process. Enbridge may connect Amber with Enbridge stakeholdering staff to draft and send out the meeting invitations.

WG member suggests changing the term to "community/ municipal energy plans" as both terms are in use by municipalities

Track #6: Baseline Data Collection
Enbridge provided an update on the work they have started as follows:
<u>Southern Lake Huron</u> – ERTs installed but Enbridge is coordinating with local districts and operation team to activate them in order to start collecting hourly reads for baseline data this winter. Enbridge hopes to have the ERTs turned on and collecting data in Dec 2022.</td>
<td>Enbridge to get DR/ETEE subgroup meeting set up to discuss</td>
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	• Enbridge acknowledges that some ERTs require modification of existing meter routes, battery replacement, and to have someone go out and collect the information to ensure data can be captured without overriding every month since the ERTs are reading on a more frequent cycle
	• Enbridge clarifies the ERTs are widely deployed in all homes in Sarnia core and lakeshore region
	<u>Parry Sound</u> – Enbridge is looking to procure ERTs and would like WG input on the timing, scope, and sample size required since there are supply chain issues with semiconductors. Enbridge anticipates for this topic to be further discussed at DR/ETEE subgroup meeting and during agenda item #6 at today's meeting. Below are some key tips and facts raised:
	• Enbridge confirms there are 400 ERTs secured for Parry Sound but there are 2000 meters (i.e. 2000 potential participants). Enbridge cannot guarantee all 400 will be put on by Dec but Enbridge would like to get as many on as possible.
	• WG member suggests having some ERTs reserved for program participants and others can be population sample
	    o For energy efficiency programs, it is not critical to have ERTs deployed on all participants since load reductions across all hours can be calculated from building science principles. It is more important to deploy the ERTs on a random basis across participants and non-participants to understand what the baseline load profile looks like to estimate what peak demand conditions would be and what load reductions can be achieved through different efficiency measures.
	    o However, for DR programs, the ERTs need to be on a participant in order to understand what the savings are on a participant.
	• WG member notes that Enbridge can be strategic in where to install meters to increase the likelihood of it being installed on future program participants (e.g. target
		baseline data, deployment of ERTs, and DR/ETEE program design in more detail

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	owner occupied vintage homes) • WG member notes the importance in knowing how homogenous the population is, what data Enbridge is trying to capture, and to execute basic statistics/ calculations to determine how many ERTs to deploy and where. • WG member note the importance of having ERTs at gate station since it is the ultimate aggregation of all the units downstream. Enbridge can supplement this with sample data from individual houses then extrapolate. • WG member notes that when creating a sample design, Enbridge can look at the population and stratify to be really efficient (e.g. identify different groups and assess likelihood of participation: high income vs. low income, and high vs. low usage). Enbridge should leverage load research group to optimize sample design and where to put ERTs. • WG member cautions that the people who participate in efficiency programs are not always representative of the larger population • WG members note that for efficiency measures, it is common to establish a baseline and calculate savings. However, for demand response, it is usually measured via ERTs (pre and post comparison) • WG member notes the key is to first decide what Enbridge is trying to understand (e.g. baseline load profile, peak impact of specific ETEE measures) which will then determine what deployment will look like. Enbridge can then leverage the resources and information they have (e.g. income, square footage, building vintage, winter heating usage – understand subsets) to deploy meters accordingly ○ WG member notes that building vintage is one of the most important indicators since homes that are built since fiscal 2000 are less likely to upgrade their envelope. Knowing this, Enbridge can eliminate a big portion of the population if their	

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	focus is on weatherization and envelope upgrades • WG member notes that for some topic learnings from metering data (e.g. peak demand impact of specific measures), Enbridge can potentially leverage combined data samples from multiple pilots by adjusting/ controlling for factors like weather corrections. ○ WG member cautions that both pilot locations are on the water, and HDD alone may not be sufficient • Another possible type of metering technology noted by Enbridge is https://www.copperlabs.com/ Track #7: Monitoring, Evaluation & Audit Plan Enbridge advises that their engineering staff is working with third party and internal groups to determine how to process hourly data and to ultimately create an evaluation and audit plan to quantify the effectiveness of programs.	

5. Evidence Discussion – Budget & DCF+

Item Description	Discussion Comments/Outcome	Action Items
Enbridge seeks WG input on the economic analysis to be included in the IRP application (e.g., proceed with the DCF+ as it was in the IRP decision; try to incorporate some of the enhancements to the DCF+ test that the IRPWG has come up with to date; not include an economic analysis at all)	• A WG member suggests executing the DCF+ test based on what the WG may reach consensus on in the next month for enhancements (even if there are aspects that may change) as opposed to executing the DCF+ test approved in the IRP decision • A WG member notes that an economic test should be filed but the pilot does not have to pass a DCF+ test since the intent is to learn from the pilot. Therefore, the details of the test methodology may not be as important since Enbridge does not need to ask the OEB to approve the cost effectiveness test for the pilots to move forward. ○ WG member suggests executing various cost effectiveness tests (based on IRP DCF+ subgroup discussions) to get a better idea of what results would be produced in different scenarios and the extent of variability based on differing inputs. This can be used as a learning	• Enbridge to bring forth their proposed thoughts on pilot budgets at Dec 20 WG meeting • Enbridge to update the DCF+ example spreadsheet with any additional assumptions ASAP

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	opportunity. ○ WG member suggests for Enbridge to flag unique costs that have been included for the purpose of learning and evaluation for the pilots vs. the benefits/costs Enbridge would expect in future non-pilot IRP plans. ▪ WG member suggests presenting results of the test including those unique costs but also illustrating results if they were excluded. Enbridge agrees with this. • WG member suggests for Enbridge to use a version of the DCF+ spreadsheet example Enbridge is already working on with updated assumptions as a starting point for filing of the economic test. ○ Enbridge notes they will provide an updated spreadsheet soon Pilot budget to be revisited at Dec 20 WG meeting with Enbridge's proposed thoughts.	

6. Demand Response (DR) & ETEE Open Discussion

Item Description	Discussion Comments/Outcome	Action Items
Enbridge plans on creating a doodle poll to arrange a subgroup of WG members for DR/ ETEE discussion but would like to kick off the discussion at today's meeting with some questions	Enbridge initially has questions related to the # of ERTs to be installed based on the sample size and scope of the pilots **Southern Lake Huron** - looks at the lakeshore area with ~5,000 residential customers where 95% of forecast peak hour load is residential and the remainder is commercial. However, Enbridge is interested in targeting a broader area even if it does not impact peak where reinforcement is necessary. Enbridge notes their objective is to reduce the peak hour for a very specific portion of the area, but to also understand more broadly how to geotarget a DR program and what its impacts will be • Some WG members question that 95% of the forecast peak hour is residential which implies that the DR program would only be residential/ small business customers. WG members thought Southern Lake Huron was chosen because it was more diverse and had a base of commercial customers.	• Enbridge to verify with the design team on statistics of the customer make up of Southern Lake Huron area

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	Enbridge to follow up with design team on these statistics.
	• Some WG members are not too concerned that the focus of the DR program would be on residential customers unless a non-trivial part of the load is from medium/larger size businesses that would require a tailored interruptible/ offer which is then worth exploring. Given the timing of this pilot, this can be worked in at a later phase since geotargeting is a multi-year deployment. Enbridge does not have to execute all initiatives at once but can sequence it out in phases based on readiness. WG members note it is also worth addressing all 3 customer groups since there is something to be learned about efficiency from treating all classes.
	• WG member suggests for Enbridge to focus on the smaller region in Southern Lake Huron unless it is going to constrain what can be accomplished with the pilot learnings
	• WG member acknowledges that Enbridge can implement ETEE and DR in the same region but when implemented to the same participants, Enbridge needs to differentiate the impact caused by each program.
	  ○ Enbridge and WG members note that layering may make it more difficult to differentiate the impact of each program, but it is a solvable analytical issue especially since DR has a call event. Moreover, when doing localized marketing, it can be hard to communicate who gets to participate in one program but not the other.
	  ○ WG members see a benefit in layering to understand the DR impacts on customers who have gone through weatherization – would subsequent DR impact be reduced and does this differ between different types of homes
	  ○ Enbridge notes that EE participation may affect customers' willingness to participate/remain in DR programs (e.g. if participant is weatherized,	

	they may be willing to tolerate temperature setback for a longer period of time) Enbridge wants to get into design parameters by leveraging some of the jurisdictional work they have done – Enbridge needs to decide what they are going to propose to customers by balancing comfort vs. what Enbridge is going to pay them to be in the program to drive uptake. • WG member suggests that if the participant base is large enough, Enbridge can design a program where $X would let you set temp back 2 degrees, $X set back 4 degrees, and $X allows a participant to preheat. This allows Enbridge to test different kinds of control strategies to not only measure the difference in demand on peak hour but what the customer acceptance level is and how sustainable that is Enbridge wants to know whether they should target people who have smart thermostat vs. the incremental cost of installing one since the 2 scenarios will have a substantial impact from a budget perspective. • WG member suggest doing a bit of both – Enbridge can see how many and how easy it is to get participants who already have smart thermostats, but they should also create incentives for smart thermostat installations which Enbridge can potentially leverage from existing system wide efficiency programs (e.g. custom marketing with additional bonus offers for DR that Enbridge can layer on) as opposed to buying the thermostat for the participant	

7. Wrap Up / Next steps

Item Description	Discussion Comments/Outcome	Action Items
	Enbridge appreciates all the feedback received from the WG today to get the conversation started. Various agenda items to be further discussed at DR/ETEE subgroup meeting(s) to be set up by Enbridge. Progress made by the subgroup to be reported back to the full WG at upcoming meetings.	

List of Action Items

Action Item	Assignment/ Owner	Due Date
Post meeting #14 notes	OEB staff	As soon as possible
Circulate summary of meeting #16 outcomes	OEB staff	Prior to next meeting
Send out calendar invites for 2023 WG meetings (DCF+ and full WG)	OEB staff	As soon as possible
Report back to WG members on: • Key IRP related materials in AMP/rebasing application (Enbridge) • Further guidance on cost eligibility for WG review of AMP/rebasing application from IRP perspective (OEB staff)	Enbridge OEB staff	As soon as possible
Verify with counsel and report back to WG if OEB staff e-mail on pilot filing options can be shared with the working group	OEB staff	As soon as possible
Send out doodle poll to arrange for a DR/ETEE subgroup meeting with select WG members before the holidays	Enbridge	After today's meeting
Consider viability of speeding up the filling of the 2022 annual report and report back to the WG	Enbridge	Dec WG meeting
Revise structure of evidence/ template/ TOC for pilot application for member feedback Draft pilot evidence and provide detailed pilot application details to the WG for formal review and feedback by Jan 2023	Enbridge	Dec WG Meeting Jan WG meeting
Consider filing a letter with the OEB in December to indicate that the pilot application timing has moved from Dec 2022 to early 2023	Enbridge	As soon as possible
Review questions circulated by WG members RE: TCE and provide corresponding facts and answers Enbridge has answers to	Enbridge	Dec WG meeting
Update DCF+ example spreadsheet with added assumptions	Enbridge	As soon as possible

Discussion on proposed pilot budgets	Enbridge	Dec WG meeting
Verify with design team on the customer makeup of Southern Lake Huron area	Enbridge	Dec WG meeting
Establish agenda for December meeting (meeting #18)	OEB staff (with input from Enbridge Gas)	Prior to Dec WG meeting

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Meeting Notes

Integrated Resource Planning Technical Working Group (EB-2021-0246)

Working Group Meeting #18

Meeting Date: December 20, 2022 Time: 2:00 p.m. - 4:00 p.m.
Location: MS Teams

Attendees

IRPTWG Members	Role
Michael Parkes	OEB staff representative (Working Group chair)
Stephanie Cheng	OEB staff representative
Chris Ripley	Enbridge Gas representative
Whitney Wong	Enbridge Gas representative
Dwayne Quinn, DR Quinn & Associates Ltd.	Non-utility member
Jay Shepherd, Shepherd Rubenstein Professional Corporation	Non-utility member
Cameron Leitch, EnWave Energy Corporation	Non-utility member
John Dikeos, ICF Consulting Canada Inc.	Non-utility member
Tamara Kuiken, DNV	Non-utility member
Steven Norrie, Independent Electricity System Operator	Observer
Kenneth Poon, EPCOR Natural Gas LP	Observer
Amber Crawford, Association of Municipalities of Ontario	Non-utility member

Additional Attendees	Role
Cara-Lynne Wade	Enbridge Gas guest
Geoff Chung	Enbridge Gas guest
Craig Fernandes	Enbridge Gas guest

Regrets

IRPTWG Members	Role
Chris Neme, Energy Futures Group	Non-utility member

Purpose

These notes summarize the information discussed during the working group (WG) meeting on each of the key points presented in the published materials.

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Meeting Agenda

1. Preliminary matters
2. IRP Annual Report – Review Schedule (10 minutes)
3. Filing of Letter to OEB (5 minutes)
4. IRP Pilots Update (45 minutes)
    - Southern Lake Huron customer breakdown
    - Parry Sound Update
    - Preliminary review of budget and assumptions
5. Evidence Update (10 minutes)
6. Other Technologies Discussion (15 minutes)
7. DR discussion (30 minutes)

1. Preliminary Matters

Item Description	Discussion Comments/Outcome	Action Items
Meeting #16 Notes OEB staff asked if there were any comments on draft meeting #16 notes	There were no comments on meeting #16 notes. Therefore, the notes are accepted by working group members.	• OEB staff to post meeting #16 notes on IRP webpage once Enbridge identifies whether there are any confidentiality concerns
Cost Awards (July – Dec 2022)	OEB staff will initiate the cost claims process in early Jan 2023 to cover WG activities from July to Dec 2022.	• OEB staff to send out cost awards activities for July to Dec 2022

2. IRP Annual Report – Review Schedule

Item Description	Discussion Comments/Outcome	Action Items
Enbridge provided an update on the IRP annual report schedule/ timelines	• As suggested by some WG members, Enbridge considered expediting the IRP annual report process to have it drafted by Jan 2023. However, given Enbridge's priorities over the next few months, this was not plausible. • Consistent with prior year, Enbridge plans to file the IRP annual report in May 2023 with the DVA proceeding. • Enbridge will provide a draft of the IRP annual report 2 weeks in advance of the Feb & Mar WG meetings to provide members with adequate time to review and provide comments on the drafts.	• Enbridge to draft IRP annual report and provide this to WG members 2 weeks before the Feb and Mar WG meetings for review

3. Filing of Letter to OEB

Item Description	Discussion Comments/Outcome	Action Items

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Enbridge intends to file a letter to the OEB before the end of fiscal 2022 to provide an update on their progress in filing the pilot applications as required by the IRP decision	• As suggested by WG members, Enbridge has drafted a letter to the OEB to be filed later this week. The letter clarifies that the 2 pilots will not be deployed by end of 2022 but will be filed in early 2023 after reviewing the evidence with the IRPWG • Enbridge notes that the letter is currently with regulatory, and they do not plan on having it reviewed by WG members prior to filing to the board • OEB staff to provide Enbridge with an EB# for the pilot proceeding where this letter will also be filed under • Enbridge plans to file both pilots under a single application and EB#. If necessary, a secondary EB# can be requested should the pilots require separate filing	• Enbridge to file a letter to the OEB with an update on the filing of 2 pilot applications. • OEB staff to provide Enbridge with an EB# for the pilot proceeding

4. IRP Pilots Update

Item Description	Discussion Comments/Outcome	Action Items

Southern Lake Huron (formerly Sarnia) Pilot
 	
Enbridge provides an update on customer makeup in this region, the technology that is currently in place, and work plans for 2023
	• As requested by WG members, Enbridge clarified the customer breakdown and loads within the Southern Lake Huron region
	  ○ Reinforcement projects are mainly in the Lakeshore area which is predominantly residential; by including the broader Sarnia core, there is a bigger mix of commercial and industrial loads
	  ○ Enbridge notes that this customer makeup provides an opportunity to narrow the scope of the pilot, consider different combinations of where to target ETEE vs. DR and to potentially tap into Sarnia core for C&I learnings
	  ○ WG member notes that depending on the intended customer base, this will have implications on the program, types of measures to implement, customers to target and the delivery approach
	  ○ WG members strongly encourage for Enbridge to do some work on the larger customer base to learn more about C&I. Since ERTs are already installed, there is a lower cost	

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	opportunity to get learnings on 1) whether Enbridge can geotarget energy efficiency and to do it quickly and efficiently, 2) whether Enbridge can use DR to reduce peak, 3) whether Enbridge can accurately measure the impact to extrapolate to other projects for better prediction of peak hour profile rate impact • Enbridge confirms there is 100% coverage of AMR technology/ ERTs in Southern Lake Huron. Enbridge has enabled the ERTs to start collecting hourly data and is currently securing personnel to increase frequency in meter reading to capture the data. However, there are a handful of meters that are defective and need to be replaced. This is scheduled to take place in 2023. o WG member requests for Enbridge to provide the report/ agreement to deploy this AMR technology in order to get clarity on why this was executed in the past and to get a better grasp on incremental costs. o WG member wants confirmation on whether the technology is AMR vs. AMI since the differentiation is important for deployment and cost considerations. WG member notes they have yet to see an instance of positive net benefit from AMI for a gas utility. o Another WG member clarifies that they want the original business case and any follow up analysis done by Enbridge RE: benefit cost analysis to deploy this AMR technology as it will be useful information to the WG going forward o Enbridge agrees to the above WG member requests and confirms they will revisit EBO 499 to verify what the conclusions were, to get the report to the board on the pilot, and to investigate why the technology was installed by legacy Union Gas. • Enbridge plans to return to Jan 2023 WG meeting with a technical assessment of Enbridge's plans and draft evidence which	• Enbridge to obtain original business case, any follow up benefit cost analysis, and other reports/ information on why AMR technology was deployed by legacy union gas to be shared with WG members • Enbridge to schedule DR/ETEE subgroup meeting for program design • Enbridge to return to Jan WG meeting with technical assessment with draft evidence to be reviewed by WG members

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	they will work through with the WG in Feb to be finalized and filed to the board come March. To do this, Enbridge plans to schedule a DR/ETEE subgroup meeting in early Jan to assist with program design.	

Parry Sound Pilot
 	
Enbridge provides an update on the measures they have taken to uncover changes to load curves, growth in the area, and the impacts it may have on the pilot along with any next steps Enbridge will take
	• In executing their standard practice to revisit models on an annual basis, Enbridge found that the load curves have changed (e.g. higher gas consumption and peak hour has increased over time as demand has grown in the area). Enbridge is working with its engineering team to verify this.
	• Enbridge met with the municipality who anticipates growth in the area since they are selling it as an "economically viable place to live" and have received several building permits as compared to the past decade. Enbridge plans to meet with the municipality again in Jan 2023 to gain further insight on their demand forecast – specifically where the growth will take place (North or South?)
	    ○ WG member questions if there is a constraint in the distribution system given the anticipated growth outside of the original area of constraint with TCE lowering its pressure to Enbridge
	    ○ Enbridge is not certain but are currently doing a station review where some changes could be made to get more pressure/ more flow through the station to help as an alternative. Enbridge to further investigate and report back to WG on findings in Jan
	    ○ Enbridge asked for an update from TCE on the pressure coming out of TCE's station to Enbridge's Parry Sound line and was advised they will get back to them in 2023 but likely not in Jan or Feb.
	• Enbridge plans to return to Jan WG meeting with a defined scope of the project with all potential alternatives considered (e.g. what station changes will do, effects of implementing a geotargeted program, and further discussion on pressure with TCE although it will not be definite). Enbridge is
		• Enbridge to meet with municipality staff to gain further insight on where growth is anticipated to take place
		• Enbridge to return to Jan WG meeting with defined scope of project that considers all potential alternatives (e.g. station changes, change in pressures from TCE and geotargeted programs) including consideration of an unsteady state model.

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<table>
<tr><td></td><td>also developing unsteady state model given the latest information RE: demand growth. Enbridge's plan is to explain the new need based on the latest information and to meet with Parry Sound officials again to solidify understanding of demand growth. This will put Enbridge in a place to file the pilot in Mar 2023 and have programs by summer 2023 to defer pipe.
• Enbridge is currently coordinating with the district to get ERTs installed in 2023. As suggested by WG members, prioritization of ERTs is based on variables like vintage and tenant energy usage to help Enbridge apply that stratification to customers (via ranking and weighted scoring system) to target certain regions.
  o Enbridge verifies they have secured 400 ERTs with AMI technology
  o WG member reckons that although it would be ideal to get the entire winter season tracked for energy efficiency, the priority should be to capture some of the coldest days this winter season. As such, it is encouraged for Enbridge to get the meters installed by mid to end of Jan 2023 when we typically get most of the cold weather events.
  o Enbridge notes some meters have been installed and they are working with the district to get more installed.</td><td></td></tr>
<tr><td>Preliminary review of budget & assumptions

This section highlights some of the topics that are relevant for both pilots (ERTs, ETEE/DR program design/ stakeholder)

Enbridge then walks WG members through the preliminary budget and assumptions. WG member questions/ comments have been summarized on right.</td><td>ERTs
• For both pilots, Enbridge's engineering team is looking into the data collection and analysis process with internal groups and considering potential 3rd parties to help supply this type of work

ETEE & DR Program Design
• Enbridge DSM crew is still working on program design details and the marketing strategy. Enbridge currently has some high-level budgets and potential savings on various assumptions.
• Enbridge has engaged other jurisdictions and stakeholders to understand delivery and applicability of DR.
  o Enbridge notes they had preliminary</td><td></td></tr>
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	discussions with contacts at the school board to get their initial thoughts on the plausibility and how DR could be run in a school. Enbridge anticipates for this discussion to continue into 2023 **Stakeholdering** Parry Sound: Enbridge contacted municipal staff, Hydro One, IESO and local LDCs to provide an overview of the pilot. Enbridge expects this to be the start of a series of meetings to engage with local municipalities and exploring potential synergies with IESO and local LDCs. • Hydro One confirms there are some energy conservation programs in the area that are part of a previous pilot. Enbridge to meet with Hydro One to understand what those pilots are and their plans for the future. Similar discussion will take place with local LDC Lakeland Power. Enbridge to update WG on outcomes of these discussions • WG members raised the question of gas heat pumps vs. electric heat pumps and suggests for Enbridge to get a better understanding of the capability of the LDC's electric system. ○ Enbridge confirms that the city revealed electricity supply problems so they will meet again in Jan 2023 with city officials, Hydro One, Lakeland and IESO to understand the implications and their plans going forward • WG member notes that some electrical conservation programs will drive up gas demand. That is something for Enbridge to keep in mind when discussing the nature of the existing conservation programs. Southern Lake Huron: Enbridge plans to schedule similar stakeholdering meetings as Parry Sound come Jan 2023. IRP Webpage: Enbridge to update webpage with an overview/ some content on the 2 pilots **Preliminary budget (Parry Sound)**	• Enbridge to update WG on follow up discussion with Hydro One and local LDCs on any impacts of electricity supply issues/ electricity conservation programs on pilots • Enbridge to update webpage with an overview/ some content on the 2 pilots

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	Enbridge walked WG members through each cost item per the preliminary budget provided in the pre-meeting materials. WG member questions/ comments summarized below: *Supply Side – CNG* • Enbridge reiterates that line items and numbers are preliminary – Enbridge plans to come back in Jan with a plan on how to implement things over the course of the pilot (e.g. CNG truck line currently shows $145K consistently, but Enbridge needs to determine if they will get TCE pressure, and/or if they will do station modification upgrade, and/or CNG)) • WG member suggests distinguishing between capital and operating costs, especially since there are 2 deferral accounts distinguishing between the two • WG member notes that if CNG alternative is required, Enbridge could locate system constraint and inject the CNG directly to the feeder main vs. the station. • WG members note that the project timeline shows 5 years. Enbridge confirms that DSM would likely remain in place beyond the 5-years to address needs and therefore, would factor into Enbridge's DCF+ analysis but not into the pilot budget *Demand side – ETEE* • Enbridge notes this will be similar to DSM program set up where there are incentive costs, program costs including marketing, potential portfolio overheads, etc. • Enbridge clarifies the incentive costs have been derived by segregating customers into customer groups (residential/ commercial/ industrial) then basing the estimates on work done for DSM plan and putting an adjustment to those incentives. This is a work in progress *Pilot specific costs* • Enbridge notes this will include things like increased meter readings, potential costs to work with 3rd parties, executing surveys during pilot life cycle to get feedback from customers, and valuation costs for data and	• Enbridge to update budget distinguishing between capital vs operating cost • Enbridge to segregate out in-house costs associated with valuation costs that are currently captured under programming and portfolio overhead costs • Enbridge to reconsider and update when marketing and valuation costs start to be incurred • Enbridge to update budget with more specific category of costs where possible

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	market research. • WG member comments that valuation costs for data and market research are very low for a pilot. Enbridge clarifies that it does not include in-house costs that are currently captured under programming and portfolio overhead costs. WG members suggest separating this out to see the true cost and value of evaluation. • WG members also suggest showing costs earlier (e.g. marketing and valuation costs should be incurred earlier than 2024). Enbridge agrees to make this adjustment. • WG member suggests being more specific in category of costs where possible like pilot specific costs *Assumptions* • Enbridge shows a modest and aggressive approach to illustrate the kind of peak hour demand savings Enbridge would expect to see and how these correlates to the budget. • Enbridge plans to provide a range of costs for each specific alternative • WG member raises the issue of "bang for the buck" as peak demand savings are so small for ETEE alternatives rendering it not cost effective. Enbridge acknowledges this and confirms that paying for TCE pressure is the preferred option if possible. Enbridge to return to Jan WG meeting with all the alternatives costed out to meet the peak demand required. • WG member suggests for Enbridge to consider prioritizing the type of analysis they will be doing and to consider % demand savings (e.g. should they target industrial customers? Could get more bang for buck, but could also end up spending lots of time and money and not even secure one participant)	

5. Evidence Update

Item Description	Discussion Comments/Outcome	Action Items
Enbridge walks WG members through the format and content of the evidence Enbridge	• Enbridge intends to file a single application for both pilots. It will resemble an LTC application with nuances around IRP at a high level. This will include a description of	• Enbridge to send email to Chris N. for his perspective on

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<td>intends to present to the board for the pilot application. A summary of WG member comments and suggestions are documented on right.</td>
<td>the pilots where the objective and needs will be a key component. There will be a technical overview of facility solution vs. alternatives noting the type of savings or peak hour reductions that can be obtained. An economic analysis will be conducted for which Enbridge would like WG input on.

OEB staff suggests carrying out some form of DCF+ test for the economic analysis; it does not have to fully reflect any and/or all enhancements discussed by the DCF+ subgroup to date, but Enbridge needs to describe its inputs and assumptions in a comprehensible way for the board to understand where numbers are coming from.
WG member suggests for Enbridge to execute multiple tests including the old and evolved DCF+, the TRC test and any others. The purpose is to provide as much information to the board since it does not matter whether it passes the test or not.

Enbridge questions whether this would be a waste of time and effort since it does not matter whether the pilot passes the economic test
WG member clarifies that Enbridge can give as much information as possible from the get-go to show that this test does not matter for the pilots and is an issue to be debated elsewhere, or Enbridge can provide the same information during interrogatories. The work still must be done.

Enbridge fears any enhancements to the DCF+ test presented from the IRP decision will result in a delay in processing the pilot application. WG members suggest for Enbridge to frame in its application that they are explicitly not seeking approval of any such tweaks to the DCF+ test.
</td>
<td>what economic analysis to execute for pilot application</td>
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	○ WG members note that the pilot application would be good testing grounds for an updated DCF+ analysis. However, this is dependent on how far along Enbridge is in finalizing their overall approach to the analysis and it they are comfortable doing so. • Application will include an overview of the ETEE and DR programs. There will not be complete details in order for Enbridge to file by early 2023. However, there will be a budget range for the pilot programs. • Application will include a summary of stakeholdering discussion outcomes	

6. Other Technologies Discussion

Item Description	Discussion Comments/Outcome	Action Items
Enbridge walked WG members through 3 technologies they are currently investigating for both pilot projects to cover any gas shortfalls.	• Enbridge is currently investigating 3 newer technologies noted below as potential means to cover any gas shortfalls (e.g. 300 cubic meter/hr in Parry Sound) instead of building pipe. Enbridge has a meeting in Jan 2023 to understand where technologies stand from a production perspective. Enbridge plans to include some of these technologies in the evidence package to be filed in Mar 2023. • WG member notes that these technologies were rejected by the board for DSM. Enbridge acknowledges this but notes that the technologies were approved as part of IRP decision to reduce peak demand. As such, Enbridge is further exploring these options. WG member cautions that most ratepayer groups will be opposed to replacing 40-year-old gas assets with more gas assets Gas Heat Pumps • Very high efficiency rate and proven to reduce peak hour. However, WG member notes the importance in considering the region and how cold it gets to evaluate whether this is practical. • Enbridge has not thought through how this technology would be brought to Parry Sound. Will return in Jan with a plan	• Enbridge to return in Jan with technical Enbridge staff to further speak to the technologies and Enbridge's plans for pilot programs.

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	○ WG member suggests that it will likely be an incentive to encourage participation since direct install is not cost effective. This will provide Enbridge with learnings on uptake/ marketing. However, WG member notes that Enbridge needs to ensure they have enough pumps installed for technical learnings (may need to consider direct install) Hybrid Heating • WG member notes this option is slightly more challenging and does not give any savings during peak demand periods. Enbridge notes there is new development where there can be an impact on peak savings on the gas side. Enbridge plans to further explore this option for pilot projects. • WG member notes the importance of considering what region you are looking at and how cold it gets since hybrid heating systems are designed to switch over at a certain temperature where you completely turn off the heat pump. Enbridge can size it to withstand colder days, but WG member notes this would result in higher costs and the question of why a furnace is even necessary. Thermal Storage • WG member notes these systems are relatively common in certain jurisdictions where thermal bricks are heated with electric resistance and the thermal energy is discharged throughout the day. WG member notes that this was nonexistent on gas side a few years ago, but not sure if that has changed. Enbridge will return in Jan WG meeting with technical Enbridge staff to talk through these technologies and its applicability to the pilots.	

7. DR Discussion

Item Description	Discussion Comments/Outcome	Action Items

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Enbridge plans to defer the DR discussion to the subgroup meeting in Jan 2023 since Chris N. was unable to attend the WG meeting. However, WG members provided various comments and insights as summarized on right.	• Enbridge clarifies their intent to implement DR for residential and C&I
	  ○ WG member shares that bring your own thermostat programs have done well but behavioral based programs have not for residential. For C&I, the efficient DR programs are fuel switching.
	  ○ WG member notes that the challenge for C&I when it comes to fuel switching is determining who is capable of doing it (e.g. commercial office towers do not want tenants to be cold for X days in the year while reducing demand and rarely have mechanisms to do so; whereas places like hospitals could be a good candidate since there are CSA standard needs to have redundant heating capacity and backup)
	  ○ WG member notes DR opportunity for smart water heaters- although challenging there is technology and sophisticated controls to assist (e.g. opting out of DR event to avoid cold showers).
	• WG member notes the importance of defining the duration of the “peak” – if it is short enough, a lot of customers can do it (e.g. there is natural storage of heat in well insulated buildings and schools are also capable if it needs to be shut off for an hour between 7pm-7am).
	• WG member notes the importance of understanding what people are using gas for during peaks and the duration of that peak (e.g. is it non-space heating? Water heating). A WG member reckons that peaks are usually 1-2 hours, not 6 hours
	• WG member cautions that when evaluating impact, Enbridge needs to ensure it is not creating another peak or moving the peak.
	• WG member suggests figuring out how to deploy assets in a stepwise fashion to match the peak of demand, so Enbridge is making the biggest overall reduction in that peak versus burning off all your energy not at peak times.
	• WG member suggests spreading out peaks
		• DR discussion to be continued at next WG meeting

	by looking to see if Enbridge can motivate customers to heat their building earlier in the mornings like 4-5am instead of 7am. • WG member notes the importance of staggering DR events, so it is not as noticeable. There are technologies and control approaches now to tackle this issue. • WG member notes there is a commercial DR opportunity by enhancing what already exists through interruptible rates. Enbridge can try to draw in more customers who are risk adverse but have the capability to shift their load and be rewarded for participation vs. having interruptible rates and penalizing customers if they do not participate in DR events. Some jurisdictions have made it a requirement for enhanced interruptible rate programs to have some sort of renewable non fossil fuel fired back up.	

List of Action Items

Action Item	Assignment/ Owner	Due Date
Post meeting #16 notes	OEB staff	As soon as possible
Circulate summary of meeting #18 outcomes	OEB staff	Prior to next meeting
Initiate cost claims process by sending out cost award activities from July to Dec 2022	OEB staff	As soon as possible
Draft IRP annual report for WG review prior to discussion at WG meetings	Enbridge	2 weeks prior to Feb & Mar 2023 WG meetings
Provide EB# for Enbridge's pilot proceeding	OEB staff	As soon as possible ***done EB-2022-0335*
File a letter to the OEB with an update on the timing and progress of filing the 2 pilot applications.	Enbridge	Before end of 2022 *** filed on the public record on Dec 22/22*
Retrieve and share with WG the original business case/ any follow up benefit cost analysis/ any other reports and information on why AMR technology was deployed by Legacy Union Gas in Southern Lake Huron	Enbridge	Jan WG meeting
Schedule DR/ETEE subgroup meeting to discuss program design	Enbridge	As soon as possible

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Develop technical assessment with draft evidence for pilots to be reviewed by WG members	Enbridge	Jan WG meeting onwards
Meet with Parry Sound municipality to gain further insight on where growth is anticipated	Enbridge	As soon as possible
Develop defined scope of Parry Sound project considering all potential alternatives (e.g. station changes, change in pressure from TCE and geotargeted programs) including consideration of unsteady state model to be shared with WG	Enbridge	Jan WG meeting
Update WG on follow up discussions with Hydro One and local LDCs on any impacts of electricity supply issues/ electricity conservation programs on pilots	Enbridge	As soon as possible
Update webpage with an overview/ some content on the 2 pilots	Enbridge	As soon as possible
Updates to preliminary pilot budget: • Distinguish between capital vs. operating costs • Segregate in-house costs related to valuation costs from the programming and portfolio overhead cost category • Re-evaluate which fiscal marketing and valuation costs should be captured • Use more specific category of costs where possible	Enbridge	Jan WG meeting
Send email to Chris N. requesting for his perspective on what economic analysis to execute for pilot application	Enbridge	As soon as possible
Return to Jan WG meeting with technical Enbridge staff to further discuss other technologies and Enbridge's plans for pilot programs	Enbridge	Jan WG meeting
Establish agenda for January meeting (meeting #20)	OEB staff (with input from Enbridge Gas)	Prior to Jan WG meeting

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Meeting Notes

Integrated Resource Planning Technical Working Group (EB-2021-0246)

Working Group Meeting #20

Meeting Date: January 24, 2023 Time: 2:00 p.m. - 4:30 p.m.
Location: MS Teams

Attendees

IRPTWG Members	Role
Michael Parkes	OEB staff representative (Working Group chair)
Stephanie Cheng	OEB staff representative
Whitney Wong	Enbridge Gas representative
Amber Crawford, Association of Municipalities of Ontario	Non-utility member
Dwayne Quinn, DR Quinn & Associates Ltd.	Non-utility member
Jay Shepherd, Shepherd Rubenstein Professional Corporation	Non-utility member
Chris Neme, Energy Futures Group	Non-utility member
John Dikeos, ICF Consulting Canada Inc.	Non-utility member
Tamara Kuiken, DNV	Non-utility member
Steven Norrie, Independent Electricity System Operator	Observer
Kenneth Poon, EPCOR Natural Gas LP	Observer

Additional Attendees	Role
Cara-Lynne Wade	Enbridge Gas guest
Geoff Chung	Enbridge Gas guest
Craig Fernandes	Enbridge Gas guest
Helen Tong	Enbridge Gas guest

Regrets

IRPTWG Members	Role
Chris Ripley	Enbridge Gas representative
Cameron Leitch, EnWave Energy Corporation	Non-utility member

Purpose

These notes summarize the information discussed during the working group (WG) meeting on each of the key points presented in the published materials.

ONTARIO ENERGY BOARD | COMMISSION DE L'ÉNERGIE DE L'ONTARIO

Meeting Agenda

1. Preliminary matters
2. Follow up on AMI / AMR (5 minutes)
3. AMP Appendix B Update (20 minutes)
4. Pilots Update (90 minutes)
    - General update
    - Review application
    - Review ETEE & DR details
    - Discussion on key questions

1. Preliminary Matters

Item Description	Discussion Comments/Outcome	Action Items
Meeting #18 Notes OEB staff asked if there were any comments on draft meeting #18 notes	There were no comments on meeting #18 notes. Therefore, the notes are accepted by working group members.	• OEB staff to post meeting #18 notes on IRP webpage once Enbridge identifies whether there are any confidentiality concerns
Cost Awards Update (July – Dec 2022)	• OEB staff advises WG members that the NOH for Phase 2 of cost awards has been issued • Cost claims need to be filed electronically by Feb 9/23. There is no need to provide credentials for cost eligibility since this has been settled by the board during phase 1 of cost awards • WG members should reach out to OEB staff (Mike or Stephanie) with any questions or concerns they may have regarding cost claims	• Cost Claims filed by WG members by Feb 9/23
Parry Sound Update	Enbridge plans to connect with one of the WG members tomorrow RE: Parry Sound updates. Results of discussion will be reported back to the WG.	• Parry Sound updates at the next WG meeting

2. Follow up on AMI / AMR

Item Description	Discussion Comments/Outcome	Action Items

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AMI / AMR Update
 	
As requested at the last WG meeting, Enbridge provided details on the EBO 499 settlement agreement, and any reports or analysis carried out by Enbridge in relation to the AMI/AMR technology project that took place in Sarnia
	<u>Background</u>: Enbridge confirms that a pilot project involving the installation of ERTs took place in Sarnia to verify the economic assumptions of AMR internal to Union. However, results of the pilot did not result in a justified cost of setting up AMR infrastructure system. As a result, no report was filed to the OEB documenting Enbridge's findings.
	
	• WG member notes that although a report was not filed with the OEB at that time, there was likely a benefit cost analysis conducted over the last 20 years since the pilot was deployed and this information should be shared with the WG as requested
	• WG member clarifies that the working group is interested in knowing the cost of installation of devices since the information is available through Enbridge's previous pilot and the analysis conducted. This is especially relevant since Enbridge is asking for additional resources in the current IRP pilot, so the WG does not have to start from scratch when it comes to consideration of cost, scope, and scale of AMR technology
	  ○ Enbridge is concerned with the relevancy of the information from analysis conducted back in 2004
	  ○ Enbridge wants clarification on how much of the benefit cost information the WG needs for the purposes of IRP pilots in knowing how many ERTs to install to get learnings instead of a full roll out of AMI to the region
	• WG member notes a major gap in information asymmetry between Enbridge and the working group. As such, WG member proposes for Enbridge to bring forth the analysis results as requested, then the working group can decide what is usable
		• Enbridge to review whether it can provide any more information on existing AMR analysis results to the working group

3. **AMP / Appendix B Update**

Item Description	Discussion Comments/Outcome	Action Items

ONTARIO ENERGY BOARD | COMMISSION DE L'ÉNERGIE DE L'ONTARIO

AMP / Appendix B Update
 	
Enbridge walks WG members through the IRP assessment process results (to date) since this exercise is still ongoing.
 	
***Refer to pre-meeting materials for process map/chart*
	<u>Background</u>: Enbridge notes that this process started with 3,087 projects. During the initial screening, all non-gas carrying assets were screened out resulting in 2,284 projects. During binary screening, criteria as set out in the OEB decision was used to further reduce the list to 892 projects to be screened for technical feasibility. Enbridge notes this step is currently in progress. To date, of the 892 projects not automatically screened out, 362 projects have been ruled out for IRPAs in the technical evaluation using Enbridge derived criteria to flag projects where IRPA is not a feasible alternative; 203 projects completed the technical evaluation assessing for feasibility, likelihood of IRPA to eliminate/ defer/ reduce project scope; and 327 projects are left to be assessed. At the end of technical screening, projects not technically evaluated out will be given an IRP value rank of high/med/low which will be used by Enbridge to prioritize the economic evaluation.
	
	Binary Screening Criteria
	• WG member questioned why a "pipeline replacement and relocation project" would be binary screened out if it is not a emergent safety issue
	  ○ Enbridge notes that projects falling within the $2M LTC threshold is not required to have an IRPA evaluation (as set out per the OEB decision)
	
	Technical Evaluation – Screening Criteria
	• WG member questioned why certain categories of projects were determined to be infeasible for IRP in the technical evaluation
	• Enbridge explains:
	  ○ <u>Compression station and storage pools</u> relate to core deliverability of Enbridge's business so these need to be maintained to help protect ratepayer and customers
	  ○ <u>Hydrogen</u> relates to Enbridge's strategy and energy transition, so they are like pilots on their own
	  ○ <u>Customer connections</u> are where gas connections are requested by
		• Future WG discussion on integrating IRP into AMP (~1-2 months time)
		• Updated version of Appendix B and supporting materials to be provided to the WG when completed in advance of AMP discussion (anticipated by end of Feb 2023), including justification of project ranking, and technical papers/ justification that there is no viable alternative for each of the technical screening criteria for projects that were screened out at the technical evaluation stage

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	customers (potentially after considering other energy sources, including any relationship with Enbridge's energy transition activities and strategy) thereby making IRPA N/A
	• WG notes that Enbridge's justification is often "strategy/ energy transition" related and requests for further reasoning as to why IRPA is irrelevant and why pipe is required from a strategic perspective for customer connections
	  ○ Enbridge clarifies that for new customer connections in certain communities who request for gas, Enbridge's internal connections team works with the builders and the community to understand the need and looks to implement a diverse energy grid option
	  ○ WG member notes that builders are not made aware of alternatives to natural gas by Enbridge
	  ○ Enbridge clarifies that not all new customer connections are pipe only. This is considered on a project-by-project basis and in these scenarios, they are sophisticated builders. Enbridge also describes these as blanket projects for new connections, where they are not replacing or expanding existing pipe but rather laying new pipe to reach customers that are otherwise not connected
	• WG seeks clarification on the status of the 530 projects in technical evaluation stage
	  ○ Enbridge clarifies 203 completed means projects have been ranked high/med/low on a preliminary basis, not that they passed. 327 to be assessed means the projects still need to be evaluated and ranked
	  ○ Of the 203 completed assessments, Enbridge approximates just under 5% were ranked high technicial feasibility for IRPAs. However, Enbridge cautions that this should not be used to infer the results of	

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	the 327 to be assessed since Enbridge is learning and adjusting their rankings as they go, including for projects previously assessed
	• WG member seeks clarification on the difference between "customer specific build" under binary screening vs. "customer connections" under technical evaluation
	  ○ Enbridge clarifies that for customer specific build, specific projects are screened out if they are prepared to pay contribution in aid of construction. Whereas customer connection is a blanket category where connections would need to meet EBO 188 requirements (economic feasibility on a portfolio basis with less strict requirements) but do not have to pay full upfront costs
	• WG member seeks further justification as to why compression stations and storage pools is a relevant technical screening criteria making IRPA infeasible. Enbridge explains that:
	  ○ <u>Compression stations</u> – required for 2 core functionalities: transmission and compressing stored gas
	  ○ <u>Storage pools & wells</u> – required for replacement, not to build new pools for additional storage capacity. This ensures Enbridge can maintain deliverability of reliable sources of natural gas at affordable rates to customers.
	    ▪ WG member questions if Enbridge can replace with a lower volume of storage, by using DSM or energy efficiency. Enbridge to investigate this further
	• WG member requests that for each of the categories of projects technically evaluated out (e.g., storage pools and wells), Enbridge develop justification that there are no technically viable alternatives that reduce infrastructure build
	
	General – Appendix B	

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	• WG member follows up on their request for an updated Appendix B (status of IRP screening for system needs). Enbridge notes it is not fully documented, reviewed, or ready to be shared with the WG. Enbridge estimates for Appendix B to be ready in 3 weeks time in anticipation of it being an IR to the rebasing application
	• Enbridge notes that Appendix B will include criteria/ justification as to why projects were ranked high/med/low. Projects that have been screened out will also have technical papers outlining the intent of project, why the project cannot be deferred or avoided using IRPA, along with Enbridge approvals
	
	General – Expectations of the WG
	• WG member seeks clarification on the expectations RE: working group providing feedback on Enbridge's IRP assessment process. WG member is concerned with endorsing Enbridge's IRP assessment process and/or results (i.e. why projects were screened out or ranked as is) since the WG has not been privy to seeing everything Enbridge has access to
	    o Enbridge explains that the IRP assessment process flowchart was presented in response to a prior WG member request for an updated AMP. Enbridge understands WG member's concern and is not looking for WG endorsement of what was presented today
	    o OEB staff recognizes that timing issues mean that some of this content will likely be considered in both the rebasing application and by the IRP WG.
	    o OEB staff would like the WG to have adequate time to review Appendix B and to comment on how Enbridge is integrating IRP into its AMP since some of the work by Enbridge goes beyond the original IRP decision, and the rebasing application may not focus on these IRP aspects and not all WG members are part of the rebasing application. OEB staff	

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	notes that the WG's perspective can be reflected in the WG's annual IRP report ○ Enbridge clarifies that the technical papers are being documented, reviewed and in the approval stage for projects screened out for IRPA. The papers will be shared with the WG once completed and ready. Enbridge notes this will likely be at the end of Feb 2023.	

4. **Pilots Update**

Item Description	Discussion Comments/Outcome	Action Items
General update	Overview: Enbridge provided an update on the Parry Sound and Southern Lake Huron Pilots with respect to progress of supply side IRPA (where applicable), demand side (ETEE & DR), continual stakeholdering, baseline data collection (ERTs) and engineering data analysis. Refer to slide for details. Several WG members commented on the situation and communications with TCE: • WG members emphasized the fact that municipalities are relying on Enbridge and TCE to get the data and information on whether the pressure can be supplied by TCE to determine a suitable plan on action.	• WG member to discuss with Enbridge rep (Chris R.) on next steps on course of action with TCE
Application & Evidence Enbridge provided an update on several topics. Refer to slide for details and summary of discussion on right	Budget/ Cost Test Methodology (DCF+) • Enbridge plans to execute the board approved DCF+ test as the cost test methodology but incorporating pieces the DCF+ subgroup may have some alignment on. Details to be further discussed at the next DCF+ subgroup meeting in Feb 2023 where there will be a first cut of the DCF+ working paper documenting WG member position(s) including the matter of additivity. However, Enbridge will make it clear that the pilot application is not where the DCF+ test will be litigated. Updated Timelines • Enbridge confirms that the target pilot application filing date is now April 2023 instead of the end of Q1 2023 • Enbridge explains that the delay is a result	

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	of the need to spend the next 2 WG meetings on ETEE & DR discussions, sharing draft evidence, while also factoring in the time Enbridge will need to address IRs from the ongoing rebasing application	

IRPA ETEE & DR	Scope of Programming
	Terms of pilot to be finalized. However, Enbridge plans on executing for 3 heating seasons with potential for extension, starting late 2023-2026
	<u>Parry Sound</u>
	• Focus on ETEE programming for residential and C&I customers
	<u>Southern Lake Huron</u>
	• Lakeshore area will focus on ETEE programming for residential customers
	• Entire Southern Lake Huron (including Sarnia Core & Lakeshore) will focus on:
	    ○ ETEE programming for small/ medium commercial customers
	    ○ DR programming for residential customers
	<u>General Comments/ Requests from WG:</u>
	• WG member requests for Enbridge to share (in written format), the methodology used in determining the current design peak load figures for Parry Sound
	• WG member also requests for Enbridge to confirm whether real peak load of hospital data is used vs. a calculated value (via the DSM energy audit)
	    ○ WG member notes this is important since hospitals (consuming significant percentage of total annual load) could potentially be a key participant in ETEE pilot
	    ○ Enbridge confirms hospital is not a contract customer and is therefore in scope for the pilots
	    ○ WG member suggests for Enbridge to be innovative by asking what incentives it will take for hospitals to participate in other alternatives like using their backup fuel source. Enbridge acknowledges the opportunity and notes that this is being considered by other internal groups at Enbridge.
	    ○ WG encourages Enbridge to
		• Enbridge to connect with Distribution Optimization Engineering team and return to next WG meeting with the methodology used in determining the current design load figures for Parry Sound, including hospital

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	consider other such customized opportunities for large customers in the context of the pilot if possible (i.e. not restricting pilot to generic ETEE solution) ETEE (enhanced targeted energy efficiency) ***refer to slides for details* **Residential programming** • Leverage DSM HER+ offer (NRCAN greener homes partnership) by enhancing the program with other additional incentives above the standard offering for targeted measures o Consideration of space heating heat pumps – WG member questions whether this will be electrical or gas heat pumps. Enbridge is seeking WG feedback on this matter as documented under the key questions section below. **Small-Medium Commercial programming** • Leverage DSM direct install (DI) offer and enhance by providing 100% of cost for all space heating end use measures. Enbridge plans to engage with specific municipality, business organizations and contractors in the selected community • WG members note potential limitations to DI in terms of limited applicability of technologies to many customers, that may prevent Enbridge from seeing anticipated results. • WG member suggests for Enbridge to potentially explore expanding offerings for business customers, by incenting measures that are typically offered only to residential customers, as suggested per the DSM decision • WG member also suggests looking at other measures like air sealing where one can get big return for investment; as well as hot water efficiency measures although one may not get as much 'bang for the buck' but it may still be cost effective • WG member notes that much of the ETEE programs build on existing DSM programs; therefore, it is suggested for the application	

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	to clearly lay out 1) what the DSM program includes, 2) what Enbridge is adding (e.g. more money, measures, etc.), and 3) the difference since the board will want to know what is IRP vs. DSM • WG member cautions that pilots have more freedom, but the DSM decision has tighter restrictions on what Enbridge is allowed to incent. This may result in resistance if Enbridge tries to bring back measures that are restricted under DSM • WG member reminds Enbridge they should start thinking about how they will track DSM savings vs. IRP pilot program savings – will it be separated or recorded together? Enbridge is seeking WG comments. Refer to key questions section below where the matter is discussed and documented. **Large C&I Programming** • Leverage existing DSM custom offers by providing additional incentives through internal energy advisor or third-party consultant Demand Response **Residential Programming** • Enbridge describes this to be a new to market DR program offering that targets gas space heated customers with eligible smart bring-your-own thermostat. Initial incentive provided upon enrolment followed by an annual incentive at the end of each heating season for eligible participants. • WG member questions whether Enbridge can control the technology for bring-your-own thermostat. Enbridge confirms they can by restricting the offering to thermostats with DERMS technology. WG member caution Enbridge on how to advertise this program to avoid complaints from customers RE: eligibility • WG member suggests for Enbridge to potentially consider water heating DRs with sophisticated controllers where one will get the DR impact without really impacting customer comfort. Enbridge notes they will investigate this.	

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Discussion on key questions for Pilots Enbridge had some key questions related to ETEE and DR they are seeking WG feedback on as summarized on right	HER+ with enhanced heat pump incentive under IRP (Residential ETEE) • Enbridge verifies that per discussion with NRCAN, the enhanced heat pump incentive can be stacked with the NRCAN greener homes program. However, NRCAN needs to agree and be kept in the loop since there is a $600M contract between Enbridge and NRCAN • WG member seeks clarification on the kind of heat pumps being considered. Enbridge clarifies they want to target the most cost-effective peak reduction heat pumps. For now, this would be cold climate heat pump. If this changes, Enbridge will bring forth new ideas to the WG for comments and consideration. Attribution and allocation of savings and funding (DSM vs. IRP) • Enbridge notes that the IRP decision does not suggest funding by Enbridge for full-on electrification measures whereas the recent DSM decision suggests they should. As such, Enbridge plans to note in its pilot application that the DSM decision supersedes the IRP decision and as such, Enbridge plans to move forward with incenting electrification measures offered under HER+. WG members agree with this approach. • Generally, the WG does not have strong or consensus view on whether and how to attribute and allocate savings between DSM and IRP so long as it is made clear and Enbridge lands on a proposed approach prior to the pilot implementation. ○ WG member suggests for Enbridge to talk to DSM contract evaluator before implementing IRP measures. This will help Enbridge to avoid a worse case scenario where a pilot is implemented, and Enbridge realizes they need to split savings between DSM and IRP which will be difficult to do after the fact • WG member notes key differences between DSM and IRP where DSM looks at reducing m^3 whereas IRP is interested in reducing	

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	m^3 at peak hour. • WG notes that for allocation with the feds, dollars matter where if Enbridge provides 50% of the dollars, they will get 50% of the savings. Therefore, if Enbridge spends more, Enbridge's share of the claimed savings will be higher even if total savings are unchanged • Some WG members suggest that in the short run, Enbridge could simply offer only the "enhanced" ETEE measures in the pilot territory and therefore attribute all budget and pilot savings to IRP, but this might need to be revisited once IRP activity reaches a certain threshold level • Some WG members note that if Enbridge is spending DSM money, part of the savings should be attributed to DSM. Therefore, allocation should be based on spending • By stacking incentives, Enbridge is in a situation where there is federal, DSM, and IRP money involved. This creates potential attribution issues o WG member notes that attribution with Feds is 50/50. But IRP peak hour reduction is not a goal of the federal program so 100% of the peak reduction could be attributed to IRP. However, some WG members argue that it does matter because it shows the cost effectiveness of the IRPA • WG member clarifies that the question is how can Enbridge calculate the incremental impact of IRP dollars? WG member notes there are methodologies out there and this can be discussed at a future WG meeting • To simplify things, a WG member suggests for attribution between DSM and IRP to be based on dollars spent for the purposes of the pilot.. Allocation of DSM resourcing • Enbridge proposes for re-allocation of internal resourcing (say from DSM vs. IRP) to only be recorded once it hits a certain threshold like an FTE (in the aggregate). Otherwise, it may not be worth the increased administrative burden	

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	- Enbridge is concerned by the cost and how time consuming it will be to reconcile between programs - WG members suggest allocating to get the cost as close as possible because in the long run, Enbridge needs to understand the level of cost and resourcing required and how much money was saved so it can be tracked on the effectiveness of IRP - WG member suggests creating a SharePoint site for Enbridge employees to track how much time they spent on IRP and on these pilot projects because its hard to collect this data retroactively. Enbridge can choose to ignore the data if they do not want or need to use it Pilot budget contingencies related to uncertainty on delivery across years of pilot (i.e. unused budget in one year can be used in next year(s)) - WG member notes that pilots should have multi-year budget. Enbridge confirms that the pilots will have a 3-year budget where it does not matter whether the money is spent in the first, second or third year - Enbridge notes that contingencies relate to things like learnings throughout the course of the pilot rendering changes to the plan (e.g. adding something new) - Enbridge is interested in seeking WG feedback on how big of a contingency is reasonable? What is the process for utilizing it? What are the controls around it? - WG member notes contingencies will be captured in a variance account so this will be tested upon the clearance of various accounts. As such, there is no objection from WG on having contingency for pilots General Questions/ Comments - WG member questions whether free ridership has been considered. From an IRP perspective, Enbridge notes that it does not have an impact since it is a gross measurement. WG member notes that there may not be a need to do a net-to-gross assessment, but assumptions around	

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	energy efficiency or change in demand from increased equipment efficiency, in the absence of an IRP program, need to be included in the forecast used to identify system needs	

List of Action Items

Action Item	Assignment/ Owner	Due Date
Post meeting #18 notes	OEB staff	As soon as possible
Circulate summary of meeting #20 outcomes	OEB staff	Prior to next meeting
File cost claims electronically for phase 2 of cost awards	WG members	By Feb 9/23
Meet with WG member RE: Parry Sound and discuss next steps on situation with TCE. Results of discussion to be reported back to the working group at the next meeting	Enbridge WG member (DQ)	Prior to next meeting
Review whether it can provide any more information on existing AMR analysis results to the working group	Enbridge	Prior to next meeting
Schedule Future WG discussion on integrating IRP into AMP; Provide Updated version of Appendix B and supporting materials to the WG when completed in advance of AMP discussion (anticipated by end of Feb 2023), including justification of project ranking, and technical papers/ justification that there is no viable alternative for each of the technical screening criteria for projects that were screened out at the technical evaluation stage	Enbridge, w. OEB staff	Discussion anticipated in 1-2 months time, materials including updated version of Appendix B to be provided when completed (anticipated end of Feb 2023)
Connect with DOE team and return to next WG meeting with the methodology used in determining the current design load figures for Parry Sound, including hospital	Enbridge	Prior to next meeting
Draft IRP annual report for WG review prior to discussion at WG meetings ***carried forward from meeting notes #18*	Enbridge	2 weeks prior to Feb & Mar 2023 WG meetings

Develop technical assessment with draft evidence for pilots to be reviewed by WG members ***carried forward from meeting notes #18*	Enbridge	Jan WG meeting onwards
Establish agenda for February meeting (meeting #22)	OEB staff (with input from Enbridge Gas)	Prior to Feb 21 WG meeting

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Meeting Notes

Integrated Resource Planning Technical Working Group (EB-2021-0246)

Working Group Meeting #22

Meeting Date: February 21, 2023 Time: 2:00 p.m. - 4:00 p.m.
Location: MS Teams

Attendees

IRPTWG Members	Role
Michael Parkes	OEB staff representative (Working Group chair)
Stephanie Cheng	OEB staff representative
Chris Ripley	Enbridge Gas representative
Whitney Wong	Enbridge Gas representative
Amber Crawford, Association of Municipalities of Ontario	Non-utility member
Cameron Leitch, EnWave Energy Corporation	Non-utility member
Jay Shepherd, Shepherd Rubenstein Professional Corporation	Non-utility member
Chris Neme, Energy Futures Group	Non-utility member
John Dikeos, ICF Consulting Canada Inc.	Non-utility member
Tamara Kuiken, DNV	Non-utility member
Kenneth Poon, EPCOR Natural Gas LP	Observer
Steven Norrie, Independent Electricity System Operator	Observer

Additional Attendees	Role
Cara-Lynne Wade	Enbridge Gas guest
Geoff Chung	Enbridge Gas guest
Craig Fernandes	Enbridge Gas guest
Kurtis Lubbers	Enbridge Gas guest

Regrets

IRPTWG Members	Role
Dwayne Quinn, DR Quinn & Associates Ltd.	Non-utility member

Purpose

These notes summarize the information discussed during the working group (WG) meeting on each of the key points presented in the published materials.

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Meeting Agenda

1. Preliminary matters (10 mins)
2. Review Previous Meeting Items (10 mins)
3. Pilots Update – General Update, ETEE Discussion and Evaluation Discussion (75 mins)
4. Wrap Up (5 mins)

1. Preliminary Matters

Item Description	Discussion Comments/Outcome	Action Items
Meeting #20 Notes OEB staff asked if there were any comments on draft meeting #20 notes	There were no comments on meeting #20 notes apart from the misnumbering of the meeting reference number. Therefore, the notes are accepted by working group members.	• OEB staff to update meeting number then to post meeting #20 notes on IRP webpage ***meeting # corrected*

2. Review Previous Meeting Items

Item Description	Discussion Comments/Outcome	Action Items
Parry Sound Update	• Refer to email thread between Enbridge and WG member (Dwayne) for updates on progress of discussions with TCE and the Parry Sound station updates which has been shared with WG members • Enbridge will continue to work with TCE to try to get the required pressure; work through model updates with internal engineering group; and will continue to work offline with WG member (Dwayne)	

Previous AMI Pilot & additional AMI information request	• WG member requested for additional information on Enbridge's AMI pilot from 1998 under EBO 499
	  ○ Enbridge confirms they do not have any files that were not filed to the board since Enbridge has a 10-year record retention policy. No report was
	  ○ Enbridge confirms they do not have any other existing AMI/AMR analysis or results they can share with the working group and do not believe this is relevant to the Parry Sound and/ or Sarnia pilots since they both deal with ERTs meters
	• WG member also requested information on reference to AMI pilot in Enbridge rebasing application. Enbridge clarifies that this is small and more of a proof of concept than a pilot,	

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	and is unrelated to either of the two IRP pilots. Enbridge will share additional info with the WG (*follow-up e-mail sent by Chris R on Feb 22*).	

3. Pilots Update

Item Description	Discussion Comments/Outcome	Action Items
General Update Enbridge provides a detailed work stream update for the Parry Sound and Southern Lake Huron pilots. Refer to the slide deck for more details.	**Parry Sound** **Supply Side IRPA**: Enbridge is finalizing the scope and cost to optimize the combination of supply side IRPAs • TCE – Enbridge is still seeking confirmation on whether TCE can provide pressure increase requested. TCE has not provided an update. • CNG – Enbridge is reviewing/ preparing the site to ensure it can support CNG injection • Station modification – Enbridge is reviewing scope and cost to reduce pressure differential • Unsteady state model – As part of the Parry Sound analysis, WG member requested for an unsteady state model (USM) which Enbridge is developing to provide more accuracy in terms of system modeling on this network. Enbridge notes the USM will take some time to develop but will update the WG once the model is set up. ○ WG member seeks clarity on what USM is. Enbridge clarifies that USM will forecast/ model a system hydraulically over a 24-hour period. In a steady state model, the worst peak conditions are modelled at 7/8 AM whereas, USM uses potential line pack on a higher-pressure larger diameter system. USM essentially makes meeting the requirement less binary with more 'wiggle room' (for example: in a large system with high pressure where demands are not the same as inputs or usage, it allows for line pack) **Demand Side ETEE:** Enbridge continues to develop the program design and budgets. See ETEE discussion below for details. **Stakeholdering:** Enbridge confirms that a 2nd meeting has been planned for later this week with the municipality, IESO, Hydro One and LDCs. Enbridge also confirms that their IRP webpage will	

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	be updated by end of the month and live shortly. • WG member seeks clarity on the agenda of the stakeholdering meetings. Enbridge notes that the 1st meeting with Parry Sound took place late Dec 2022. Enbridge gave an overview of the pilot explaining what they are looking to do and what IRP is. Enbridge left the municipality with a series of questions RE: growth forecasts, future planning in the area, and what is coming onto the system to see if it aligns with Enbridge's forecasts. Answers to these questions will be addressed at the 2nd meeting along with any feedback/ issues the municipality may have RE: the pilot and any comments/ thoughts as to how they could help support/ roll out the pilots on the ETEE front • WG member proposes 2 items that would be worthwhile for Enbridge to get feedback on at these meetings: 1) Enbridge's load forecast and how it aligns with what municipalities and the local electricity distributor are forecasting, 2) ways in which electricity distributor may be able to support/ leverage their activities to reduce Enbridge's cost of delivery of programs (e.g., co-funding and/or integrated delivery/promotion of programs) ○ Enbridge confirms that both agenda items would be part of the discussion with IESO, Hydro One and LDCs to see what kind of initiatives they have in the area to help identify any overlap for collaboration and whether timelines align. Enbridge also wants to understand if there are any electric constraints on the system that may feed into the mix of programming Enbridge would target **Baseline Data Collection (ERTs):** Enbridge is still preparing for all ERTs to be installed. This is expected to happen throughout the year. • Enbridge notes they have some ERTs installed across the franchise but are not turned on for hourly metering. ERTs were primarily installed in areas where meter reading is a challenge so they cannot enable hourly reading. • WG member questions if Enbridge has hourly metering on any residential customers	

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	anywhere else in their service territory. Enbridge confirms they only have the ones from Ingleside pilot community which were an input in assessing load shapes **Southern Lake Huron** **Demand Side (ETEE & DR):** Enbridge continues to develop program designs and budgets. • Enbridge connected with several DERMS (Distributed Energy Management System) providers and OEMs of products to better understand how they support the delivery of DR programs, how programs are run, and what resources and requirements are needed to launch a program. • Enbridge connected with IESO who is in the process of launching their own DR program. Enbridge plans to circle back with IESO later in the year to better understand timelines in terms of potential collaboration since IESO is still in the RFP process to select a vendor **Stakeholdering:** • Enbridge had a 2nd meeting with Plympton-Wyoming to confirm the load forecast, better understand potential alternatives and whether they would be supportive and willing to collaborate with Enbridge (e.g. supporting marketing efforts of alternatives). Enbridge plans to circle back once Enbridge has more details around program design and budget. • Enbridge has a 2nd session planned this week with the rest of the municipal representatives, IESO, Hydro One and Blue Water Power • Enbridge's IRP webpage is anticipated to be launched at the end of Feb 2023 *(note: now live at https://www.enbridgegas.com/sustainability/regional-planning-engagement with links to pages on proposed pilots)* **Baseline Data Collection (ERTs):** All ERTS have been enabled. Enbridge has been collecting baseline data since Dec 2022.	

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ETEE Discussion
 	
Refer to slide 7 to facilitate the WG discussion on uptake %s.
	Programming Uptake
	Objective: Enbridge is seeking feedback from the WG on an appropriate target or forecast uptake % in pilot participation as they continue to develop budgets and program designs of ETEE programming.
	• Enbridge wants to understand how to better forecast uptake/ participation with increase in incentives. Enbridge does not want to over forecast participation then falls short. Enbridge wants to be as accurate as possible knowing there is uncertainty.
	• Enbridge is interested in understanding uptake in other jurisdictions for more comprehensive types of programming like building envelope and direct install offers where there are higher incentives and supportive programming.
	
	Enbridge's Illustrative Example
	• Enbridge shares its uptake levels experienced in the pilot areas for broad based DSM programming which ranges around 0.2-0.7% (annualized average over the past 9 years – data obtained from Enbridge's tracking system). For illustrative purposes, Enbridge applied an incremental amount based on escalating residential target and increased budget landing at 0.3-1% uptake. Enbridge clarifies this is not an accurate estimate, but an illustrative example of how to approach the analysis. Enbridge has yet to determine what a reasonable multiplier is.
	• WG members had clarification questions which Enbridge addressed as follows:
	  o Annual uptake % refers to annual participation not the average annual estimated energy savings
	  o Annual uptake % is for whole building residential, whole home retrofits, CI (prescriptive or any custom projects and low-income work on homes) excluding smart thermostat offer. WG member acknowledges that levels of participation in these programs would vary, thus the relatively wide participation range,
	• WG member proposes the following revisions to the analysis:
	  o 0.2-0.7% annual uptake should be
		Enbridge to take account of member suggestions re: forecasting energy savings, attribution, and impact analysis in refining pilot evidence and pilot implementation

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	broken down by type of program to better understand the average and whether there were any trends over the years (for example: was it climbing over time? declining? or scattered so Enbridge used an average as a starting point?) ○ Add a row after broad based DSM but before the incremental budget scenario analysis to show how much better Enbridge thinks it will be under the new plan by leveraging the federal program. Then add another row indicating how much more Enbridge can achieve with further incentives ○ Enbridge should not view the annual uptake % as a static number. For a multi-year pilot, there will likely be a ramp up in the first year when the initiatives hit the market, then it will gain momentum by the second and third year where it may begin to hit steady state thereafter. ○ WG member cautions that estimating a 50% increase from an extremely low uptake level of 0.2-0.7% in existing DSM programs, given an enhanced incentive, marketing, and a federal program that can be leveraged, is too conservative *<u>Pilot Examples for Referencing Purposes:</u>* WG members flagged several pilot examples for Enbridge to consider in terms of participation, referencing: • Energuide Program in Ontario: WG recalls the province got ~ 3% participation by 2011 on home retrofits like attic and wall insulation. From 2007 to 2010 approx. 56% was building envelope measures which infers that by 2011, potentially 95,000 homes were getting envelope measures which makes up ~2% of the housing stock. WG member notes this could be a useful reference for Enbridge to consider how things can ramp up in the residential retrofit market; especially for on the ground experience in Enbridge's own service territory and learning how things worked with significant incentive dollars on the table and	• WG member (Chris N.) to provide Enbridge with additional

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	having Enbridge, provincial and federal government all pushing in the same direction. • Northwest Natural in Oregon may also be a good reference point (which Enbridge refers to later in the discussion). However, WG member recalls that the funding was largely related to marketing rather than increasing incentives. *Impact of Marketing Efforts & References:* WG member notes the ETEE discussion has focused primarily on incentives and C&I examples where the amount of room to increase incentives is minimal. Instead, WG member is interested in discussing the effects of changing the marketing strategy, noting that this could be quite effective in a smaller community (framed as a problem the community can help contribute to solving), and encourages Enbridge to focus on this. • Another WG member notes this cannot be done in isolation but rather as a package that bundles aggressive marketing, community engagement for higher financial incentives, new delivery mechanisms, etc. In doing so, it can be quite effective and can dramatically increase participation. Examples include: • Efficiency Vermont's geotargeted project from 2007-2009 to defer an electric distribution substation by means of non-wires solutions. WG member notes that they alerted the community ahead of time, had intensive account management for med and large size C&I customers, offered free small business DI and hired an implementation contractor to go door to door to every small business in the area. As a result, participation rate was very high since everything was being done for free and came to you. An evaluation found that participation increased by a factor of 2 to 4 relative to system wide programs. However, WG member notes this cannot be executed the exact same way for residential sector but can for small businesses • Examples of an innovative community-based solution on the residential side includes an entity in Chicago that ran a pilot to enrol residential customers for a DR program where they went to a community and said they would donate $100K to any community project if you can get participation up to X by a certain date.	examples of effective ETEE programming with community marketing/outreach

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	• Enbridge requests for additional examples to be shared by WG members so Enbridge can see what other jurisdictions have done and does not have to reinvent the wheel. WG member (Chris N.) agrees to find a couple more examples.
	
	Consideration of NWA learnings
	WG member notes that a lot more non-wires than non-pipe work has been done, and questions if Enbridge has investigated non-wires and whether those learnings are transferrable to gas.
	• WG member notes for learnings on how to ramp up participation and how much you can ramp up for certain types of end-uses, markets and programs, the learnings are highly transferrable with the caveat that it has to be for similar/ comparable types of initiatives (e.g. electric vs. gas building envelope measures). But for impacts on peak, that is different.
	• WG member notes how utilities communicate to customers are lessons that are applicable regardless of whether it is gas or electric (e.g. how to address questions like why are people outside the area getting more than me)
	
	Other Comments from WG:
	• WG member notes direct install (DI) can make things happen faster if the utility covers the entire cost.
	    o WG member notes it is easy to get high participation for small business DI with a smart targeted strategy but getting the same numbers for residential uptake on whole building retrofits through a DI initiative is more difficult. Hence why breaking down the 0.2-0.7% uptake between programs or market categories would be helpful
	    o WG recalls a recommissioning pilot in Niagara Falls where they found that if the utility covers the entire cost, they were more likely to go ahead. Even a 10% spending requirement for customers reduced participation significantly.
	• WG member reminds Enbridge that it takes time for pilots to optimize the process and for participation to pick up. WG member has seen	

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	several good pilots cut short just as participation was picking up.
	• WG members note that if a utility is creative enough and bundles all these different marketing and incentive elements together, they can significantly increase participation. The degree of the increase will vary from market to market and measure to measure while factoring in differences in barriers.
	    ○ WG member emphasizes that this is a big part of what Enbridge should try to learn from the pilots – how to optimize marketing and incentives to achieve the participation desired.
	    ○ WG member suggests for Enbridge to work backwards by doing an analysis of what kind of peak demand impact Enbridge is trying to achieve and what does that require in terms of participation, and what will it cost. Enbridge can set a participation cap.
	    ○ Enbridge confirms that is the approach they are taking – They are looking at what peak hour reduction is required and what mix of programs will help to achieve that. From there, Enbridge will consider their target participation rate while considering budgeting.
	• WG member suggests using a logic model for process evaluation. The logic model lays out Enbridge's assumptions and what they expect to get out of it. For example: Enbridge first understands the barriers to implementation in localized area then considers how they plan to overcome the barriers via marketing, door to door delivery service, etc. Then Enbridge can estimate the uptake and modify program design to improve.
	
	NW Natural ETEE Pilot
	Enbridge shares its findings from the NW Natural ETEE Pilot in Oregon per review of information on the public record and via jurisdictional scans: The pilot started in 2019 with targeted marketing then it was ramped up with increased incentives in phase 2 and 3. The pilot was projected to wrap up at the end of 2022, but it was impacted by COVID and NW has not provided an update or filed any results since April 2022.	

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	• WG member believes that Oregon Energy Trust is running the program on behalf of NW Natural and suggests from Enbridge to talk to the trust. Another WG member also suggests for Enbridge to reach out to NW Natural to inquire about their program and learnings. Enbridge agrees to reach out to both parties. • Enbridge notes they have talked to quite a few other utilities, and non-pipes alternatives are still relatively new. Enbridge feels they are way ahead of some other jurisdictions. • Enbridge notes the residential side of the NW Natural pilot incented on gas fireplace, gas furnace, thermostats, windows and insulation. However, of these measures, Enbridge is only looking at windows and insulation within their jurisdiction and it is unclear as to whether there is higher uptake for those measures. On the commercial side, NW results show there was some additional uptake from additional incentives in phase 2 (mostly from food service, HVAC and weatherization measures). However, the additional uptake is smaller in comparison with the greater incentives. o WG member cautions that the results are likely impacted by the pandemic since measures require the utility to go into consumer homes. This makes it more challenging to draw conclusions from the data • WG member notes that taking results from any particular program will only have limited value in understanding the level of uptake Enbridge might achieve since the level of participation is a function of various things like awareness, education, suppliers, economic situation, barriers, etc. • WG member suggests that Enbridge's technical potential study may be a better source by looking at different incentive level scenarios and understanding Enbridge's corresponding participation and where they are willing to go to estimate how many more participants Enbridge can get. However, WG member cautions it will be difficult to come up with an accurate estimate. o Enbridge concurs and reiterates that they want to put in the best estimate of what uptake Enbridge can get. The	

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	pilot will have a 3-year budget. Enbridge's predicament is that if they go with a mid range estimate for participation and get higher uptake, Enbridge will pull the dollars forward. However, Enbridge does not want to have an unrealistic uptake number as this will increase the size of the budget. The results of the pilots will ultimately inform Enbridge of future forecasting, so it is in Enbridge's interest to be as accurate as possible. *Attribution of Results* Enbridge is interested in understanding how to attribute what energy savings to what program (i.e. X% goes to IRP and X% to DSM) • WG member notes by executing the pilots, Enbridge can determine what results they got by spending IRP money on all these measures then comparing results to similar towns where Enbridge did not do the same. For example: In Parry sound, there is federal, DSM and IRP money being spent. Then you have another town down the road that is only spending DSM and federal money. By comparing the results between the two towns, Enbridge can see what the impacts were of spending the extra IRP money and/or changing the marketing approach, etc. Another WG member agreed, noting that the incremental impact is unlikely to be strictly related to changes in incentive levels, as community awareness and differential marketing associated with pilots will have an impact. • A WG member recognizes that an obvious way to attribute is by percentage of money (e.g. X% of investment gets X% of energy savings). However, WG members note that allocating based on how much money is spent would not produce the right results as spending it is not symmetrical to savings. • A WG member notes that most jurisdictions they worked in simply split attribution by spending percentages, but complications may arise in Ontario from this approach (e.g. impacts on DSM shareholder incentives)	

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Data Analysis & Evaluation Discussion *Refer to the meeting slides to facilitate discussion points and findings documented on right*	Overview: For illustrative purposes, Enbridge graphed a 3D hourly profile of a single residential customer of what their demand would be based on the day and temperature which has been averaged out for the entire year (slide 12). For predictive purposes, Enbridge typically removes holidays, but it has not been done here. Enbridge explains that the tool is extrapolating to design day condition (by temperature). Per the graph, it can be interpolated that the customer has the highest peak on Wednesday mornings at 7am. Enbridge proposes to compare baseline results to post IRP implementation results at design conditions to quantify the overall peak hourly and peak daily changes as shown in slide 13 • WG member questions the value of single-customer analysis, noting that the point of broad-based programs is that the combination of customers acts in predictable ways. • WG member affirms that Enbridge needs data from individual customers to aggregate them as a group (e.g. all customers for a service territory/ area you are treating, all customers who participate in a certain type of measure, all customers who didn't get any measures, etc.). Enbridge cannot read anything useful into a single customer since there are all kinds of things that can 'muddy the water' for an individual customer but on average, those things should wash out. • WG member notes that once Enbridge groups all customers together, they can compare them to a comparison group with the same kind of exogenous change as your sample group so Enbridge can take that out and whatever the delta is left. • Enbridge indicates that it is interested in looking at individual customer data before combining into groups to see if additional insights into load profiles can be gained, but agrees that aggregation will be important. **Comments on Forecasting Model** • WG member acknowledges that temperature is the strongest correlation factor to natural gas consumption, but the correlation can be improved by considering wind speed, solar radiation and conducting further analysis on the number of days it has been consistently	

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	cold. • WG member questions whether there will be a difference in Enbridge's forecasting approach for residential and commercial customers. And specific to commercial, would Enbridge have a control group to compare against, given their heterogeneity 　○ Enbridge acknowledges that commercial customers are unique therefore, selecting a control group would be challenging. Enbridge notes there are major influence areas where they could get a better control group with more restaurants, arenas, daycares etc. However, Enbridge has not given this a ton of consideration. 　○ WG member notes that for residential, the aggregation and comparison strategy make sense, but the commercial piece may require additional considerations. Enbridge acknowledges this. • WG member notes there is a time lag between when minimum temperatures are experienced and when peak demand shows up on buildings because of the thermal mass of the building, which may impact results. • WG member notes that impact analysis for peak demand is much more difficult than for overall energy savings as things like temperature of the days before is a major contributing factor making the comparison more difficult. • WG member noted that modeling load and load impact on design day will be less accurate than modeling load impact on other days, simply because there will be fewer (and perhaps no) data points, i.e., you will be extrapolating beyond boundaries of existing dataset. • WG member notes that a customer can be in different group at different times in terms of comparisons for exogenous or non exogenous change (for example: a customer becomes a participant part way through the year) 　○ WG member suggests for Enbridge to collect as much information about a customer's energy use as possible for both electricity and gas (e.g. IESO	

	participation, NRCAN program). Enridge should also be aware of other programs happening in the same area to understand what kind of changes they may be making to their system at the same time. All this information can potentially help Enbridge to explain any anomalies or whether it is a mistake. ○ WG member suggests for Enbridge to conduct customer surveys to better understand if there are any significant occupancy pattern shifts. ○ Enbridge notes they are pushing for surveys but may run into challenges regarding the amount of information people are willing to provide. Enbridge will work with their internal IRP and DSM teams to determine the critical information they can get from surveys.	

4. Wrap Up

Item Description	Discussion Comments/Outcome	Action Items
OEB staff discussed next steps for the working group	• Updated draft of the DCF+ working paper will be circulated next week and there will be 1 more DCF+ subgroup meeting on Mar 7/23 to close off work on that report *(nb: March 7 meeting cancelled but draft 2 of Working Paper subsequently circulated for discussion at March 21 meeting)* • As the work on DCF+ and pilots comes to an end, it is time to set the working group agenda for next year over the next couple of months. ○ OEB staff suggests revisiting the broader discussion of integration of IRP into the asset management plan ○ Review of Enbridge's IRP annual report ○ Discussion on priorities for the working group for the coming year • Enbridge advises that draft evidence for the pilots will be sent out March 2023. Enbridge will be seeking WG comments between now and April/ May 2023. • Enbridge notes that the Pilot application will probably be filed in May 2023	• If WG members have any additional thoughts on the topics discussed at today's meeting, please pass onto the WG via email

List of Action Items

Action Item	Assignment/ Owner	Due Date

These notes are for the Working Group purposes only and do not represent the view of the OEB

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Post meeting #20 notes	OEB staff	As soon as possible
Circulate summary of meeting #22 outcomes	OEB staff	Prior to next meeting
Take account of member suggestions re: forecasting energy savings, attribution, and impact analysis in refining pilot evidence and pilot implementation	Enbridge	As appropriate
Provide additional examples of effective ETEE programming with community marketing/outreach	WG members (Chris N.)	Prior to next meeting
Share any additional thoughts on topics discussed at today's meeting with the WG via email	WG members	Prior to next meeting
Schedule Future WG discussion on integrating IRP into AMP; Provide Updated version of Appendix B and supporting materials to the WG when completed in advance of AMP discussion, including justification of project ranking, and technical papers/ justification that there is no viable alternative for each of the technical screening criteria for projects that were screened out at the technical evaluation stage ***carried forward from meeting notes #20*	Enbridge, w. OEB staff	Discussion anticipated at future WG meeting, materials including updated version of Appendix B to be provided when completed
Draft IRP annual report for WG review prior to discussion at WG meetings ***carried forward from meeting notes #18*	Enbridge	prior to Mar 2023 WG meeting
Develop draft evidence for pilots to be reviewed by WG members ***carried forward from meeting notes #18*	Enbridge	Future WG meetings, as needed
Establish agenda for March WG meeting	OEB staff (with input from Enbridge Gas)	Prior to Mar 21 WG meeting

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Meeting Notes

Integrated Resource Planning Technical Working Group (EB-2021-0246)

Working Group Meeting #23

Meeting Date: March 21, 2023 Time: 2:00 p.m. - 4:00 p.m.
Location: MS Teams

Attendees

IRPTWG Members	Role
Michael Parkes	OEB staff representative (Working Group chair)
Stephanie Cheng	OEB staff representative
Whitney Wong	Enbridge Gas representative
Amber Crawford, Association of Municipalities of Ontario	Non-utility member
Cameron Leitch, EnWave Energy Corporation	Non-utility member
Jay Shepherd, Shepherd Rubenstein Professional Corporation	Non-utility member
Chris Neme, Energy Futures Group	Non-utility member
John Dikeos, ICF Consulting Canada Inc.	Non-utility member
Tamara Kuiken, DNV	Non-utility member
Dwayne Quinn, DR Quinn & Associates Ltd.	Non-utility member
Kenneth Poon, EPCOR Natural Gas LP	Observer
Steven Norrie, Independent Electricity System Operator	Observer

Additional Attendees	Role
Margarita Suarez	Enbridge staff
Sue Mills	Enbridge staff
Rich Szymanski	Enbridge staff
Emily Pavli	Enbridge staff

Regrets

IRPTWG Members	Role
Chris Ripley	Enbridge Gas representative
Cara-Lynne Wade	Enbridge staff

Purpose

These notes summarize the information discussed during the working group (WG) meeting on

These notes are for the Working Group purposes only and do not represent the view of the OEB

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each of the key points presented in the published materials.

Meeting Agenda

1. Preliminary matters
2. DCF+ Discussion (1 hour)
3. IRP Pilots Update – General & Application Update (15 mins)
4. Annual Report Discussion (40 mins)
5. Wrap up

1. Preliminary Matters

Item Description	Discussion Comments/Outcome	Action Items
Meeting #21 & 22 Notes OEB staff asked if there were any comments on draft meeting #21 and 22 notes	There were no comments on meeting notes #21 or 22. Therefore, the notes are accepted by working group members.	• OEB staff to post meeting #21 & 22 notes on EwU IRP webpage ***completed***
IRP Webpage - Transition to Engage with Us Platform OEB staff provided WG members a quick walk through of the new public facing IRP webpage on the Engage with Us (EwU) platform https://engagewithus.oeb.ca/irp	• The old IRP webpage will no longer be used or updated by OEB staff. A link to the new EwU IRP webpage is provided on the old site and content from the old IRP webpage has been transferred over to the EwU IRP webpage • A "Working Group Members Only" webpage is in the works. This site will allow for better collaboration/ sharing of documents concurrently between WG members. Once the site is in production, WG members will be prompted by email from EwU to register. Once registered, this will grant them access to the exclusive members only webpage	• Any references made to OEB's IRP webpage should be linked to the new EwU webpage (e.g. Enbridge's IRP annual report)

2. DCF+ Discussion

Item Description	Discussion Comments/Outcome	Action Items
DCF+ Working Paper OEB staff walked members through major revisions and outstanding items from draft #2 of the	Objective: OEB staff hopes to finalize the content of the DCF+ working paper shortly to move onto final formatting and publishing. Summary of WG comments/ discussion: Report summary • No new content in this section. Intended to be	• **Enbridge** to address sidebar comments where it is unclear as to whether

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DCF+ working paper where OEB staff tried to address and respond to all WG comments received verbally and/ or in writing since the last subgroup meeting. Refer to summary of discussion points, additional revisions and take aways documented on right. Actual revisions will be documented in the DCF+ working paper by OEB staff.	a summary of the most important points within the report with connecting threads of how the topics all tie in together Approach to Report • Wording updated to "presented" on behalf of WG members instead of "endorsed by" to recognize that consensus has not been reached on all issues and that not all WG members actively participated in the DCF+ subgroup discussions. All WG members are OK with this modification Approach to consensus • Clarified language by clearly distinguishing between instances where there was full WG agreement (including Enbridge), WG agreement excluding Enbridge, and other instances requiring additional details like Enbridge has an alternative view or Enbridge is still developing a position on the issue Issue by Issue Approach • Wording updated from "default" to "initial" DCF+ approach with a disclaimer that this is the starting point of how the test may diverge from what is shown here. It should not be assumed that the WG agrees or the OEB approved, or Enbridge has implemented this initial approach in this exact manner. WG members did not object to this modification Relation to FEI • OEB staff made changes throughout the working paper to address linkages with FEI (i.e. noting what OEB will do on the electricity side and specific parts of the framework OEB intends to develop in response to FEI report). Enbridge should take this into consideration when developing the DCF+ test guide Outstanding response to comments Staff notes that most comments have been resolved (barring any WG concerns with how comments were addressed in staff edits), and that unresolved comments in draft #2 of the DCF+ working paper are mostly for Enbridge (many comments are to confirm whether or not Enbridge is taking a position on specific issues) • Enbridge notes that due to timing constraints with the rebasing application, not everyone at Enbridge who participated in the initial review of the working paper has gone in to review this	Enbridge has taken a position on the issue or not and to provide their final comments within the next 2 weeks • **WG members** to provide any other written comments within these 2 weeks • **Enbridge** to confirm whether historical data exists on forecast vs. actuals to get a sense of Enbridge's forecast risk (potentially provide as response to comment in DCF+ report) • **OEB staff** to update the DCF+ working paper, addressing comments made at meeting, Enbridge's final comments and any additional written comments provided by

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secondary draft and/or address the comments directed at Enbridge

Enbridge plans to verbally respond to comments at today's meeting where Enbridge is confident that a decision has been made
Enbridge notes they are generally content with the DCF+ working paper but needs to get into the details to ensure it is exactly reflective of what Enbridge intends. As such, Enbridge notes there may be additional edits once they have completed their review
OEB staff notes there will be one more round for WG members to provide any comments in response to Enbridge's proposed edits (if any)

Key perspectives/phases in DCF+ test
Phase 1: Relative Rate Impact

Major change to reflect that phase 1 will strictly capture monetized relative rate impacts and does not include quality of service

Phase 2: Enbridge Gas Customers

Enbridge confirms agreement that phase 2 includes existing and new customers whose connection to the gas system is enabled by the IRPA or facility project; however, Enbridge is still examining how exiting customers will be treated

WG members emphasize the importance of including people who go off gas – one WG member notes it is the most important benefit since the decrement of load would be captured in phase 1 so the benefit needs to be captured in phase 2
WG member encourages Enbridge to consider treatment of a real example as to how exiting customers would be treated (e.g. heat pump funding if it was brought forward as an IRP application)

Additivity of Phases

Updated to reflect WG's agreement that lost or incremental utility revenues should have opposite impacts at phase 1 and 2; and that on bill delivery costs is a phase 2 impact

Taxes

Enbridge clarifies the term "substantially" was used to explain that tax impacts in phase 1 may not match the tax benefit in phase 3

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	• WG member suggests for Enbridge to remove the term and a footnote be added stating that there may be a slight mismatch that can go in either direction for taxes for these reasons
	  ○ Enbridge does not have concerns with the proposed approach and will update the working paper more appropriately
	Discount Rate
	• Enbridge clarifies that the reference to use WACC in phase 1 and societal discount rate in phases 2&3, is to show that EBO 134 was the basis to Enbridge's approach. However, Enbridge recognizes that using different discount rates is not ideal and continues to internally discuss how to address varying discount rates when summing phases together
	• WG member proposes for Enbridge to remove the statement that resulting NPVs will be comparable since that is opinion and is not representative of the views of OEB staff or some other WG members
	Lost/ Incremental Revenues
	• All WG members are OK with the update that there could be lost or incremental revenues due to changes in customer numbers and/or customer consumption
	
	Interpreting and Assigning Value to Results of Different Perspectives/ Phases of DCF+ test
	WG members had several concerns over some of the key factors the OEB could consider when determining whether to approve a project that did not score the highest in phase 1 as noted below:
	• *"Breadth of distribution of incremental customers and incremental societal benefits"*
	  ○ WG member questions the importance of this factor since participants of an IRPA will always be a tiny fraction of Enbridge's total customer base (e.g. if an IRPA can get 1K participants vs. another IRPA can get 200, is the 1K vs 200 out of 4M Enbridge customers a relevant consideration when looking to address a single system need on a case-by-case basis?)
	  ○ Another WG member notes that Enbridge may consider bundling multiple system needs into an IRP plan making this consideration more	

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	relevant. Qualifiers to this factor have been added in the working paper but OEB staff will consider it further
	• WG member notes that consideration of the relative value of a solution in terms of positioning for energy transition is not explicitly stated as a factor but is important to consider
	  ○ Another WG member adds that it should be clear as to whether the consideration is in reference to how it fits within the energy transition from a regulatory risk perspective (e.g. stranded assets) or whether it drives down GHG to fight climate change
	  ○ Both WG members agree it is the former since the latter would be monetized to a significant extent in the DCF+ calculation in the interest of the ratepayer than a policy imperative
	  ○ OEB staff will consider this further and requests for any written comments WG members may have on how it differs or how it overlaps with discussion of risk in the working paper
	• *"Level of Confidence in calculated value of costs and benefits"*
	  ○ WG member is concerned with using the example of a multiplier to estimate magnitude of job benefits not because of uncertainty (error band around the estimate), but because 1) should not be monetized and 2) if monetized, the results are inaccurate and biased because of the methodology
	  ○ OEB staff acknowledges the WG member's concern and will cut the example since it does not adequately illustrate the point to be made
	
	Other Comments
	• Enbridge confirms that they do not want to take a position on one section of the DCF+ report that intended to interpret the OEB's intent of certain findings on the DCF+ test in the IRP decision
	• Enbridge confirms they are still looking into the consideration of cross subsidization concerns and Enbridge's position on this matter	

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	Greenhouse Gas Emissions
	Major changes were made to reflect that the WG did not have consensus on whether societal cost of carbon was needed or valuable
	
	Carbon Pricing & Energy Prices Beyond 2030
	• Enbridge confirms their approach to economic valuation of carbon is to base it on current and known assumptions. This is reflective of what IESO is doing. However, Enbridge notes this differs from DSM (adjusted per audit report)
	• WG member accepts this rationale for carbon, but requests for Enbridge to confirm whether energy costs would be inflated like in DSM
	    ○ WG member notes it is problematic if commodity charges and/or costs are assumed to stay constant in nominal dollars over time. Good practice of economic analysis requires projection of commodity costs not just based on inflation, but a forecast of what future gas prices are going to be irrespective of whether this is reflected in DSM
	    ○ Enbridge will confirm internally then report back to the WG at which point WG members can bring forth further concerns (if any)
	
	Gas Supply Costs
	Enbridge agrees with both items flagged by comments in this section of the working paper
	
	Risk
	• Enbridge will get back to the WG regarding the outstanding comment in this section
	• Enbridge confirms that Enbridge's growth time horizon is considered on a case-by-case basis
	• OEB staff requests for an update on whether historical data exists on forecast vs. actuals to get a sense of how large Enbridge's forecast risk is. Enbridge thought this was addressed but will get back to OEB staff shortly.
	
	Non-Energy Benefits
	Updates reflect the fact that the WG did not come to a determination on whether phase 2 will be strictly monetized.
	
	Next Steps:	

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	• Enbridge will provide their final written comments on the second draft of the working paper to OEB staff within the next 2 weeks • WG members can also provide written comments to OEB staff during this period, but it is generally assumed that relevant comments have been provided already • OEB staff will then incorporate the comments noted verbally in today's meeting, along with any other written comments from WG members and Enbridge's final written comments into another draft of the DCF+ working paper which will be circulated to the WG • WG members will have one more chance to comment on this revised draft at the next WG meeting.	

3. IRP Pilots Update

Item Description	Discussion Comments/Outcome	Action Items

Parry Sound Pilot
 	
Enbridge staff provided an update on the progression of the pilots. A summary of the key discussion points has been summarized on right. Refer to Enbridge's slide deck for details.
	Supply Side
	• Enbridge confirms they heard back from TCE who will provide the additional pressure as requested by Enbridge for the next 2 winters. Enbridge is waiting for written confirmation and the costs of this temporary agreement
	• WG member questions whether the increase in pressure changes the scope of the pilot
	    o Enbridge confirms this will change the model since the pressure pushes the timing of when the project is needed (e.g. when CNG and modification of the station work needs to take place) with some minor impacts on growth or how the system forecast is for the next few years
	    o WG member notes that modification to the station is more permanent and will render a longer time horizon than the temporary TCE pressure
	• Enbridge confirms that the engineering team completed the development of the unsteady state model (USM) but is reassessing the facility project based on the new model while considering other changes with the additional TCE pressure
	    o WG member questions whether results of the simulation will be part of the
		• Enbridge to confirm and report back to WG by next meeting on whether measurement and flow capabilities exist at the Parry Sound Station

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	evidence supplied to the board. Enbridge confirms it would be reflected in the facility need on the system that the pilot is being compared against.
	
	Demand Side
	• Enbridge continues to develop the ETEE program design and budget, considering feedback received from the last WG meeting on different approaches to increase uptake beyond incentives (e.g. marketing, community engagement)
	
	Stakeholdering
	• Enbridge completed the 2nd stakeholdering meeting with the municipality, IESO, Hydro One and LDC; and Enbridge's IRP webpage is live with an overview of the 2 pilots
	• Enbridge is looking to map out a timeline for a public and community engagement and to get a letter of support from Council. Enbridge anticipates getting the letter in the next few months (after filling of the pilot application)
	  ○ WG member questions whether letter of support from Council is required for Enbridge to move ahead with the pilots
	  ○ OEB staff indicates its perspective that a letter of support is not mandatory from the perspective of the IRP framework, but indication of municipal support would certainly be looked on favourably
	  ○ Another WG member notes that from a regulatory perspective, the letter of support is a nice to have since the municipality only has authority on its road allowances, but the pilot work is happening on Enbridge property (i.e. station) and work upstream with TCE.
	  ○ Enbridge notes that Council has been engaged over the past few months and seems supportive as they are working closely with Enbridge
	
	Baseline Data Collection / ERTs
	• Enbridge secured 400 ERTs last year but is experiencing supply chain issues as they look to procure more ERTs to help with subsequent measurement and verification of the pilots
	• WG member questions how many ERTs have	

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<td>been deployed and whether pressure and flow measurement has been placed and activated on the station for last winter
Enbridge confirms that only a handful of ERTs were mobilized last winter since the pilot ramped up in Dec during the holiday season
Enbridge to verify and report back to the WG on whether pressure and flow measurement capability is built into the Parry Sound distribution system
WG member notes that ERTs may help with the continued rollout of ETEE, but to verify USM and to understand the scope of risk, it is crucial for Enbridge to have measurement capability on the station that tells you the entire flow of the system</td>
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<td>Southern Lake Huron Pilot

Enbridge staff provided an update on the progression of the pilots. A summary of the key discussion points has been summarized on right. Refer to Enbridge's slide deck for details.</td>
<td>Demand Side
Enbridge continues to develop the design of ETEE and DR program. Touchpoint set up with IESO in early April to reconnect on their DR program for potential collaboration
Stakeholdering
Enbridge plans to have a community engagement event in Plympton, Wyoming. Venue has been secured, finalizing timing
Enbridge intends on getting a letter of support from Council
Baseline Data Collection / ERTs
Enbridge notes that ongoing data has been coming in from existing ERTs, but Enbridge staff has yet to review the results. However, data analysis and evaluation are ongoing as part of Enbridge's pilot evidence development</td>
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<td>IRP Pilot Application Timelines</td>
<td><u>April WG meeting</u> – Enbridge plans to summarize key items and provide budget overview

<u>May</u> – Enbridge plans to finalize and circulate the draft evidence by May 2 for WG review. Enbridge proposes to have an extra WG meeting on May 9 to discuss the final evidence package before the pilot application is finalized and submitted to OEB at the end of May
WG member notes that the pilot application will be filed before the oral hearing to Enbridge's rebasing application, but the ADR is scheduled for May 11.</td>
<td>OEB staff to send out a meeting invite for the extra WG meeting on May 9 from 2-4pm (completed)
Enbridge to confirm with legal on whether IRP pilot evidence</td>
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	• WG member questions whether they can discuss the pilot evidence as part of the ADR since whether Enbridge is doing enough on IRP may play a part in trying to negotiate a deal for rebasing. Enbridge to discuss with their legal counsel and will get back to the WG • WG members agree with having an additional WG meeting on May 9 except for 1 member who cannot attend but can provide comments in writing • OEB staff encourages Enbridge to bring any major pieces they want WG input on to the April meeting since Enbridge will have limited time to make substantive changes to the evidence based on feedback provided at the May WG meeting	can be discussed at the rebasing ADR

4. Annual Report Discussion

Item Description	Discussion Comments/Outcome	Action Items
Enbridge's draft 2022 IRP annual report Enbridge staff walked WG members through the key sections of their draft 2022 IRP annual report. Summary of WG comments noted on right.	IRP Integration • Enbridge clarifies that this section speaks to how Enbridge has integrated IRP into their business model (e.g. # of people hired, how existing Enbridge staff was embedded into departments like DSM, finance and regulatory). Enbridge looks to clear some of the salaries through the IRP deferral account Selection of Pilots • WG member questions how much information the public will get RE: why the 2 pilots were chosen • Enbridge notes that the rationale for why the pilots were chosen can be found in the meeting notes where Enbridge discussed the rationale behind each of the criteria, scoring of each town based on the criteria, and a breakdown of reasoning. Enbridge notes that some of these details can also be found in the meeting slide decks • WG member suggests putting a link to the Engage with Us (EwU) IRP webpage where all the meeting notes and slide decks containing this information can be referenced. Enbridge agrees. Non-Pilot IRP Update • Enbridge clarifies that this section is intended to identify LTCs where IRP (demand and/or supply side) was considered but no non-pilot IRP plan was filed. For 2022, Kingston Reinforcement	• Enbridge to update/ include link to EwU IRP webpage • WG members to provide any additional written comments on first draft • Enbridge to update annual report per WG suggestions and circulate revised draft • Enbridge to consider date by which annual IRP report can be finalized and filed and whether it is feasible to do

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	project falls into this category where Enbridge implemented a franchise bidding reverse open season, and one customer reduced their existing contract capacity and CNG was implemented to ensure the system was functional
	• WG member suggests for Enbridge to indicate LTCs where Enbridge considered IRPAs but ended up going with the facility solution. Member notes this was also flagged in last year's annual report
	  ○ WG member suggests for Enbridge to provide an overarching picture of what happened in 2022 (e.g. x projects were put before the board – x-1 considered IRPA but were ruled out for these category of reasons and 1 Kingston project was deferred for the following reason). This will give a complete picture of everything that happened, how IRP fits in and when IRPAs were screened in/out
	  ○ Another WG member suggests for the set up of Enbridge's update to be as follows: here are a list of projects that Enbridge planned to do in 2023/ 2024 where IRP was considered; and for each project, this IRPA was considered and here is why Enbridge rejected it. WG member feels that the board and public needs to better understand the process and rationale since we are still in the early stages of IRP
	  ○ WG members acknowledge that there was not a formal comprehensive framework in 2022 that has now been developed for Enbridge to review its AMP for system needs. However, Enbridge should still walk readers through how IRPA was considered on a case-by-case basis in 2022
	  ○ Enbridge agrees to update this section of the annual report taking into consideration the points raised by WG members
	• OEB staff notes a potential issue with Enbridge's intent to seek recovery of CNG alternative costs related to the Kingston project since it may not fit into the purpose of the IRP deferral accounts which are intended for project costs arising from an approved IRP plan.
	  ○ Another WG member questions whether the Kingston project is deferred; and if so, it is a regulatory question of where to seek
		so in advance of settlement conference, OEB staff to do likewise with WG report

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	cost recovery as an IRP cost or as investment in the overall project Integrated Resource Planning Alternatives Update Enbridge notes that this section is intended to update appendix B of the AMP. DCF+ Review • WG member suggests for this section to include more than a summary of what Guidehouse proposed since the WG had numerous meetings and discussion on revisions to the test including the formation of a DCF+ subgroup • Enbridge can also reference the WG's IRP annual report (which will capture the DCF+ work done) and can make note of the forthcoming DCF+ report from board staff Appendix B: Integrated Resource Planning Alternatives Enbridge clarifies this will include a short description of the IRPAs Enbridge would consider in the future that are not specific to the pilots Next Steps: • WG members can provide any additional written comments on Enbridge's initial draft by March 28 • Enbridge will incorporate the WG's comments/ suggestions at today's meeting into a secondary draft of Enbridge's IRP annual report by April 12. • WG members will have the opportunity to comment on Enbridge's revised draft of the annual report at the Apr 18 WG meeting • OEB staff confirms that drafts of the annual report will not be put on the IRP website. Therefore, WG members should not share contents of the draft annual report outside the working group until it is finalized and filed. • Enbridge indicates its intent was that the annual IRP report would be filed with the DVA application where the date of filing has not been determined by Enbridge • WG member hopes to have this annual report public by the time of the rebasing settlement conference (May 11 onwards), and certainly before any hearing in June. Enbridge will have to discuss internally and report back on an anticipated date of when the annual report will be filed. OEB staff will also take this away for	

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	consideration. • WG member is concerned that Enbridge did not share the workings of the Kingston reinforcement project with the working group as Enbridge was actively considering an IRPA. But rather, WG members are getting the public information after the fact. WG member believes Enbridge should bring forward any LTCs where Enbridge is actively considering a non pilot IRP so the WG can provide input. Enbridge has noted this and will further discuss internally with Enbridge staff	

5. **Wrap Up**

Item Description	Discussion Comments/Outcome	Action Items
2023 WG activities	• OEB staff proposes to have a discussion on the priorities of the working group for the next year at the April or May WG meeting • OEB staff recommends for WG members to consider what was noted in the IRP Planning for 2023 section of Enbridge's draft annual report, but to also identify any gaps in what Enbridge should be doing and/or what the WG could play a role in	OEB staff will draft an e-mail with a summary of immediate action items and dates for the various products discussed at today's WG meeting

List of Action Items

Action Item	Assignment/ Owner	Due Date
Post meeting #21 & 22 notes	OEB staff	As soon as possible ***completed***
Circulate summary of meeting #23 outcomes	OEB staff	Prior to next meeting
References to OEB's IRP webpage should be linked to the new EwU IRP webpage (e.g. annual report)	Enbridge	As required
Address the outstanding sidebar comments of the DCF+ working paper where it is unclear as to whether Enbridge has taken a position on the issue or not and to provide any final written comments on outstanding issues	Enbridge	Within 2 weeks
Provide any other written comments on the draft DCF+ working paper	WG members	Within 2 weeks
Update the DCF+ working paper, addressing comments made at meeting, Enbridge's final	OEB staff	Prior to next meeting

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comments and any additional written comments provided by WG members		
Confirm whether historical data exists on forecast vs. actuals to get a sense of how large Enbridge's forecast risk is (potentially provide as response to comment in DCF+ report)	Enbridge	Prior to next meeting
Set up additional WG meeting on May 9 from 2-4pm to discuss pilot evidence package	OEB staff	As soon as possible ***completed***
Confirm with legal on whether IRP pilot evidence can be discussed at the rebasing ADR	Enbridge	Prior to next meeting
Develop draft evidence for pilots to be reviewed by WG members ***carried forward from meeting notes #18*	Enbridge	May 2, 2023
Provide any other written comments on Enbridge's draft 2022 IRP annual report	WG members	March 28, 2023
Update Enbridge's draft IRP annual report taking into consideration suggestions from today's meeting along with any other written comments provided by members	Enbridge	April 12, 2023
Consider date by which annual IRP report and WG report can be finalized and filed and whether it is feasible to do so in advance of settlement conference	Enbridge and OEB staff	Prior to next meeting
Discuss priorities of the working group for 2023	WG members	April or May WG meetings
Draft an e-mail with a summary of action items and dates for the various products discussed at today's WG meeting	OEB staff	As soon as possible (Completed)
Schedule Future WG discussion on integrating IRP into AMP; Provide Updated version of Assessment of IRP alternatives and supporting materials to the WG when completed in advance of AMP discussion, including justification of project ranking, and technical papers/ justification that there is no viable alternative for each of the technical screening criteria for	Enbridge, w. OEB staff	Discussion anticipated at future WG meeting, materials including updated version of Assessment of IRP alternatives to be provided when completed

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projects that were screened out at the technical evaluation stage ***carried forward from meeting notes #20 (not explicitly discussed at meeting #23)*		
Establish agenda for April WG meeting	OEB staff (with input from Enbridge Gas)	Prior to April 18 WG meeting

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Meeting Notes

Integrated Resource Planning Technical Working Group (EB-2021-0246)

Working Group Meeting #24

Meeting Date: April 18, 2023 Time: 2:00 p.m. - 4:00 p.m.
Location: MS Teams

Attendees

IRPTWG Members	Role
Michael Parkes	OEB staff representative (Working Group chair)
Stephanie Cheng	OEB staff representative
Chris Ripley	Enbridge Gas representative
Whitney Wong	Enbridge Gas representative
Amber Crawford, Association of Municipalities of Ontario	Non-utility member
Cameron Leitch, EnWave Energy Corporation	Non-utility member
Jay Shepherd, Shepherd Rubenstein Professional Corporation	Non-utility member
Chris Neme, Energy Futures Group	Non-utility member
John Dikeos, ICF Consulting Canada Inc.	Non-utility member
Tamara Kuiken, DNV	Non-utility member
Dwayne Quinn, DR Quinn & Associates Ltd.	Non-utility member
Steven Norrie, Independent Electricity System Operator	Observer

Additional Attendees	Role
Christopher Humphries	OEB staff
Geoff Chung	Enbridge staff
Cara-Lynne Wade	Enbridge staff
Craig Fernandes	Enbridge staff

Regrets

IRPTWG Members	Role
Kenneth Poon, EPCOR Natural Gas LP	Observer

Purpose

These notes summarize the information discussed during the working group (WG) meeting on each of the key points presented in the published materials.

Meeting Agenda[1]

1. Preliminary matters
2. IRP Pilots Update (1 hour)
3. DCF+ Discussion (20 mins)
4. Annual Report Discussion (20 mins)
5. Planning for 2023 (20 mins)

1. Preliminary Matters

Item Description	Discussion Comments/Outcome	Action Items
Meeting #23 Notes OEB staff asked if there were any comments on draft meeting #23 notes	There were no comments on meeting notes #23. Therefore, the notes are accepted by working group members.	OEB staff to post meeting #23 notes on EwU IRP webpage

2. IRP Pilots Update

Item Description	Discussion Comments/Outcome	Action Items

Parry Sound Pilot
 	
Enbridge provided an update on the Parry Sound pilot including timelines, scope of facility and proposed IRPAs and budgets to date.
 	
Enbridge notes these are draft numbers, and scope is subject to change. Refer to meeting slides for details.
 	
WG comments have been summarized on right.
	• Enbridge clarifies “ETEE-New Technology” refers to incentive costs for direct install measures that are not currently incented
	• WG member notes total ETEE cost is approx. \$10K/customer to get 159 m^3/hr of peak hour savings which is quite high
	    ○ Enbridge confirms that for simplicity, for the pilot, all incentive costs under ETEE are funded by the pilot program and not DSM; accordingly, savings are not counted as part of the DSM program. Enbridge confirms attribution will be dealt with more generally in the first non-pilot IRP plan
	    ○ WG member suggests that the overall DSM budget should be reduced, if all ETEE funding in the IRP pilot areas is coming from the IRP budget. However, Enbridge notes that if the DSM budget is not spent in other areas as needed, the money goes back to ratepayers. Another WG member noted that lowering the overall DSM budget would make it challenging for Enbridge to reach DSM targets
	• WG member acknowledges that pilots do not have to be cost effective but is concerned that
		• Enbridge to inform WG members with their findings on CNG and downstream storage (e.g., the use of a reservoir attached to a compressor)

[1] Discussion on the pilots ran over the one hour time estimate, and was permitted due to the time-sensitive nature of determinations on the pilots. Discussion of items 3-5 was therefore shortened.

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	ratepayers will not see the economics of spending approx. $6M to reduce cost by $4M and to defer facility projects by 3 years (although recognizing there is also some time value of money for deferring capital spend). WG member stresses the importance of producing some form of BCA supplemented by a critical qualitative component describing expected learnings to justify the benefits and rationale for pilot.
	  ○ Enbridge recognizes this and clarifies that the draft pilot evidence will lay out the objectives, targets, and anticipated learnings to be shared with the WG in May 2023 for feedback.
	• WG member notes that Enbridge's budget for measurement & evaluation is high at almost 28% of budget, and recommends cutting it down by at least half, recognizing that the measurement & evaluation budget for a pilot is typically higher (maybe 12%) than a more well-established program (5-7%)
	• Enbridge confirms the $1.8M in measurement & evaluation costs includes installation of metering devices on all customers and contractor support on data analysis. Enbridge clarifies that they want to spend the money upfront to ensure they have enough baseline data on load profiles for the pilots
	  ○ WG member notes that Enbridge does not need metering on all customers to understand load profiles. So, the cost is not 100% attributable to Parry Sound pilot but to ongoing efforts by Enbridge to gain system wide learnings that can be extracted to future non-pilot IRP plans. WG member adds that some costs can perhaps be excluded from the DCF+ test for a specific project, if it is done to achieve broader framework goals
	  ○ Another WG member flags that Enbridge is proposing proceeding with deploying metering devices on all customers when the WG discussed strategically deploying ERTs using a sampling methodology, and that 100% coverage may not be a wise use of funds, given that the housing stock is	

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	of relatively uniform age.
	• WG member notes the importance of reforecasting as the project is in flight, assessing whether demand forecasts come to fruition in the community, as this could defer facility investment further with more DSM efforts or even completely eliminate the need for the facility project given changes in growth trends etc.
	• Enbridge indicates the difficulty in allocating the promotion & delivery budget between ETEE-enhanced DSM and ETEE-new technologies since one enhances an existing program and the other is a new measure not offered today but both are targeting the same customers and have the same resources supporting the customer (and one may be a feeder to the other); for now promotion & delivery budget is largely allocated to enhanced DSM
	• Enbridge anticipates completing the draft of the pilot evidence and sharing it with the WG in May. Filing of the application will likely be in June since there are a few items Enbridge would still like to get WG feedback on including heat pumps. See *"ETEE pilot program"* section of the notes below for details.
	• WG member questions the feasibility to consider CNG as a medium or longer-term solution than a bridging solution
	    ○ Enbridge confirms they are considering this (especially in remote areas) but flags a potential "breaking point" as continued growth will require more trailers and at some point the impact becomes untenable
	    ○ WG member notes there is an option to have downstream storage (a reservoir attached to a reasonably sized compressor), so the tank fills itself during nonpeak times, reducing/avoiding trucking volumes. Enbridge investigating this and will email WG members their findings	

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<td>Southern Lake Huron Pilot

Enbridge provided an update on SLH pilot (timelines, scope of facility and proposed IRPAs and budgets to date). Enbridge flagged a potential reduction in scope as costs are higher than expected and seeks WG feedback.
Refer to meeting slides for details. WG comments have been summarized on right.</td>
<td>Enbridge proposes cutting the C&I offerings in the Sarnia Core due to budget and inability to impact the system need; however, several WG members note ETEE-Sarnia Core is an important component of the SLH pilot for systemwide C&I learnings (since the ETEE-major influence area that can directly impact system need had very limited C&I customers) and recommends for Enbridge to keep this in scope if they were to proceed with this pilot.
WG member suggests for Enbridge to structure this C&I Sarnia Core component as a potential add-on to the pilot so the Board can decide whether to approve it out or not, without impacting the rest of the pilot
Another WG member suggests potentially not metering everyone since the M&V budget is cut in half under Enbridge's reduced scope budget breakdown (While Enbridge had originally thought that metering to provide hourly data was already in place for all customers, it subsequently determined that this may not true for larger customers who have different metering equipment)
Enbridge confirms that the difference in peak hour saving per participant is driven by the customer mix issue between Parry Sound and Sarnia (Parry Sound is less heavily residential)</td>
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<td>ETEE Pilot Program

Enbridge seeks WG feedback on whether to include air source heat pumps as an incentive to one of Parry Sound's ETEE pilot program offerings considering budgetary constraints and stipulations from the IRP decision to avoid electric measures.</td>
<td>Enbridge plans to tag onto the NRCan HER+ program by capping the offering at approx. 20 heat pumps with a $5K incremental incentive charge in Parry Sound pilot since Enbridge is looking to get learnings across a different number of incentive items while balancing budget constraints, and doesn't want spending on heat pumps to dominate pilot.
Enbridge sees a benefit in deploying an integrated energy offering like heat pumps to a small pilot area to allow Enbridge to continue coordinating with IESO, Hydro one and LDCs to better understand the impacts the offering has on the electric side of the system, and how to improve integrated planning, which have may allow Enbridge to carry out a more accurate DCF+ analysis and have broader systemwide learnings</td>
<td>Enbridge to confirm with Lakeland Power that heat pump offering will not affect their annual electricity peak and cause electricity distribution system needs</td>
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	• Some WG members note it is a good idea to test deployment of air source heat pumps but suggests for the bonus offering to be limited to qualified cold climate centrally ducted systems that will displace gas heating system (furnace) so it is not a hybrid heating system since that will not provide any peak demand benefits. • WG member notes it is a good idea to cap the heat pump offering to not diminish other offerings since heat pumps are trending and insulation measures are a tougher sell. • WG member speculates that adding heat pumps to Parry Sound will likely add to winter electricity peak and suggests for Enbridge to offer in Sarnia instead. Enbridge clarifies the heat pump offering was proposed for Parry Sound only since there is no constraint on their electricity grid, it will yield a bigger dollar impact and Enbridge has less budget in Sarnia. Enbridge will seek to confirm with Lakeland Power that heat pumps will not affect their annual peak such that it causes distribution system needs and to state this in their pilot application. • Enbridge notes that the IRP decision said no electric measures but as discussed with the WG in previous meetings, the DSM decision takes a different approach. As such, Enbridge plans to include the heat pumps as a separate line item making it easy to carve out without delays should the Board reject this offering. OEB staff is supportive of potentially including heat pumps from a pilot perspective for learnings, but this does not imply that the eligibility of electric heat pumps would extend to the full IRP framework. Enbridge acknowledges this. • WG member questions why some offerings are direct install and other are not. Enbridge clarifies that direct install offerings under advanced technologies are intended to provide more customer support for newer tech. Another WG member cautions there will be significant opposition to gas-fired advanced technologies, as noted at previous meetings	

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IRP Pilot Application - Key Items
 	
Refer to this section of the meeting slides for a summary of the key items that will be captured in the IRP application.
 	
WG comments summarized on right
	• WG member emphasizes the importance, and Enbridge acknowledges, the need to consider the impact of IRP on the system need and any load forecast adjustments that have emerged over the course of the pilot including potential benefits of continuing the IRP programming.
	• WG member encourages for Enbridge to call out in its application that some costs are for long term learnings than purely designed to address one location's system needs and that those costs would not be included as part of the cost effectiveness assessment.
	• WG member recommends for Enbridge to provide monthly real time data on its website via a dashboard that highlights to the board and its stakeholders, how much budget was spent, participant #s, what is the load relative to forecast etc. This allows learnings to be realized (and transferred to other projects) right away and to show that Enbridge is being proactive despite the pilot delays
	• Enbridge proposes to only include stage 1 DCF+ analysis in its pilot evidence to give an idea of what costs are compared to facilities since the DCF+ test has not been finalized and the BCA test is not to be adjudicated in this application.
	  ○ WG members note that this may hinder Enbridge's application since it will not capture stage 2 customer energy savings and recommends a simplified version of stage 2 (e.g. commodity cost savings) to be included if possible.
	  ○ Enbridge is concerned that this will lead to many IRs from intervenors on the BCA test. WG member suggests for Enbridge to explicitly state in its application that this cost effectiveness test is not meant to be representative of the DCF+ test as this will be litigated in the first non-pilot IRP plan. Once the DCF+ is finalized, Enbridge notes it will carry out the test for the pilots to see the difference in results
	  ○ WG member encourages for Enbridge to file the DCF+ test for approval as soon as possible to avoid further delays. Enbridge notes that it is striving to file its first non-pilot IRP plan (with	

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	the DCF+ test) as soon as it can as it is a high priority internally • Enbridge clarifies that the application evidence will include how pilot costs will be allocated to rate classes under Enbridge's proposal and compare to how costs of a traditional facilities project would be allocated	

3. DCF+ Discussion

Item Description	Discussion Comments/Outcome	Action Items
DCF+ Working Paper	• No comments yet from WG on the updated DCF+ working paper (draft #3) which incorporated comments from the last WG meeting and edits clarifying Enbridge's position • OEB staff asks for WG members to provide any outstanding concerns (in writing) over the next week so staff can finalize and circulate a final version for WG approval and filing	• WG to provide any written comments on draft #3 of DCF+ WP in the next week

4. Annual Report Discussion

Item Description	Discussion Comments/Outcome	Action Items
Enbridge's draft 2022 IRP annual report	• WG member questions whether the criteria used by Enbridge to assess the technical feasibility of whether to proceed with an IRP has been shared with the WG. Enbridge notes the IRP decision did not include a technical evaluation framework to be used and so this has been developed by Enbridge as they continue to work through the AMP. Enbridge notes that a draft version of the criteria was put together and shared in response to an undertaking of the rebasing application. Enbridge intends to include technical feasibility evaluation process as one of the WG's 2023 priorities • Enbridge requests for WG members to provide written comments on Enbridge's draft 2022 IRP annual report by Apr 30/23. Any outstanding issues can be addressed at the May 9/23 meeting • Enbridge plans to file their annual report along with the DVA application on May 30/23. OEB staff expects to draft the WG's annual report in parallel with Enbridge. • OEB staff proposes for Enbridge and the WG's 2022 annual report to be made public by the ADR on May 29/23. If the DVA application is not ready by then, the 2 annual reports can be posted on the OEB's IRP webpage. The DVA application	• Enbridge to provide the document(s) explaining the technical feasibility criteria in evaluating potential IRPs to WG • Members to provide any written comments on draft Enbridge annual report by Apr 30/23 • Enbridge to investigate why member did not get invitation to regional engagement

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	including the annual report can then be filed on May 30/23 as planned. No objections noted. • WG member notes they signed up for Enbridge's regional engagement process but was not notified of the session. WG member feels that stakeholder engagement should be discussed among the WG. Enbridge confirms the session was recorded and is public information.	session and to provide WG with a summary of the session at the next WG meeting
WG's draft 2022 IRP annual report	OEB staff encourages WG members to review OEB staff's Planning Discussion slide deck before the next WG meeting to provide any comments on the proposed priorities for 2023 and the format/ approach to drafting the WG's 2022 annual report	

5. **Planning for 2023**

Item Description	Discussion Comments/Outcome	Action Items
2023 WG activities	OEB staff notes there is a proposed modified question for individual member comments in the 2022 annual WG report which seeks member's thoughts on what the WG's 2023 priorities should be, but that the goal is to discuss 2023 priorities as a group first. Due to timing constraints at today's meeting, 2023 priorities will be discussed at the next WG meeting	OEB staff to fix Sharepoint site & send out new links to both annual reports in next couple of days

List of Action Items

Action Item	Assignment / Owner	Due Date	Status Update (to be completed at time materials are distributed to the WG for next WG Meeting)
Post meeting #23 notes	OEB staff	As soon as possible	Completed
Circulate draft notes for meeting #24	OEB staff	Prior to next meeting	Completed
Inform WG members with their findings on CNG and downstream storage (e.g., the use of a reservoir attached to a compressor)	Enbridge	As soon as possible	
Confirm with Lakeland Power that heat pump offering in Parry Sound pilot will not affect their annual electricity peak and cause electricity	Enbridge	Next Week	

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distribution system needs			
Provide any written comments on draft #3 of DCF+ working paper	WG members	Next Week	Completed (comments from Enbridge and one WG member)
Update the DCF+ working paper, addressing comments made at meeting, Enbridge's final comments and any additional written comments provided by WG members	OEB staff	Prior to next meeting	Completed -for discussion at meeting #25
Provide document(s) explaining the technical feasibility criteria in evaluating potential IRPs to WG	Enbridge	As soon as possible	
Provide any written comments on Enbridge's draft annual report	WG members	Apr 30/23	Completed
Investigate why WG member did not get an invitation to the regional engagement session and provide WG with a summary of the session	Enbridge	Prior to next meeting	Partially completed – Enbridge identified and corrected error with notification session
Fix Sharepoint site and send out new link to WG members	OEB staff	As soon as possible	Completed
Confirm whether historical data exists on forecast vs. actuals to get a sense of how large Enbridge's forecast risk is (potentially provide as response to comment in DCF+ report) **carried forward from meeting #23, not discussed at meeting #24	Enbridge	Prior to next meeting	Completed – Enbridge's edits to DCF+ report indicate that it does not track this information
Confirm with legal on whether IRP pilot evidence can be	Enbridge	Prior to next meeting	

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discussed at the rebasing ADR **carried forward from meeting #23, not discussed at meeting #24			
Develop draft evidence for pilots to be reviewed by WG members ***carried forward from meeting notes #18*	Enbridge	May 2, 2023	Delayed until May 23 meeting
Discuss priorities of the working group for 2023	WG members	May WG meetings	For discussion at meeting #25
Schedule Future WG discussion on integrating IRP into AMP; Provide Updated version of Assessment of IRP alternatives and supporting materials to the WG when completed in advance of AMP discussion, including justification of project ranking, and technical papers/ justification that there is no viable alternative for each of the technical screening criteria for projects that were screened out at the technical evaluation stage; provide the document(s) explaining the technical feasibility criteria in evaluating potential IRPs to WG ***carried forward from meeting #20, last point added based on discussion at meeting #24)*	Enbridge, w. OEB staff	Discussion anticipated at future WG meeting, materials including updated version of Assessment of IRP alternatives to be provided when completed	
Establish agenda for May WG meeting	OEB staff (with input from Enbridge Gas)	Prior to May 9 WG meeting	Completed

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Meeting Notes

Integrated Resource Planning Technical Working Group
(EB-2021-0246)

Working Group Meeting #26

Meeting Date: May 23, 2023 Time: 2:00 p.m. - 4:00 p.m.
Location: MS Teams

Attendees

IRPTWG Members	Role
Michael Parkes	OEB staff representative (Working Group chair)
Stephanie Cheng	OEB staff representative
Chris Ripley	Enbridge Gas representative
Whitney Wong	Enbridge Gas representative
Chris Neme, Energy Futures Group	Non-utility member
Amber Crawford, Association of Municipalities of Ontario	Non-utility member
Cameron Leitch, EnWave Energy Corporation	Non-utility member
Jay Shepherd, Shepherd Rubenstein Professional Corporation	Non-utility member
John Dikeos, ICF Consulting Canada Inc.	Non-utility member
Tamara Kuiken, DNV	Non-utility member
Dwayne Quinn, DR Quinn & Associates Ltd.	Non-utility member
Kenneth Poon, EPCOR Natural Gas LP	Observer
Phillip Chisulo (alternate for Steven Norrie), Independent Electricity System Operator	Observer

Additional Attendees	Role
Kurtis Lubbers	Enbridge staff
Cara-Lynne Wade	Enbridge staff
Catherine McCowan	Enbridge staff
Helen Tong	Enbridge staff

Regrets

IRPTWG Members	Role
Steven Norrie, Independent Electricity System Operator	Observer

Purpose

These notes summarize the information discussed during the working group (WG) meeting on

These notes are for the Working Group purposes only and do not represent the view of the OEB

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each of the key points presented in the published materials.

Meeting Agenda

1. Preliminary matters / Update on IRP Reports (5 mins)
2. CNG Discussion (15 mins)
3. Kingston Project (10 mins)
4. Stakeholder Update (10 mins)
5. Pilots Update (30 mins)
6. IRP Assessment Process (50 mins)

1. Preliminary Matters

Item Description	Discussion Comments/Outcome	Action Items
Meeting #25 Notes OEB staff asked if there were any comments on draft meeting #25 notes	• Due to a mix up in distributing meeting notes #25 as part of pre-meeting materials to the WG, members can review and provide any written comments within the next week • OEB staff to update meeting notes based on any comments provided by WG members including those submitted by Amber prior to today's WG meeting	• WG members to provide written comments within the next week • OEB staff to update meeting #25 notes then post on EwU IRP webpage once accepted by WG members • OEB staff to schedule and send out meeting invites for the next few WG meetings
Update on IRP reports OEB staff provided an update on the scheduling and timing of the working group annual report & DCF+ working paper	WG Annual Report • Per original timelines, WG members were asked to provide individual comments by last Thurs (May 18). OEB staff notes comments have been provided by some, but not all members. Some members requested slight extension to finalize comments. • Enbridge still targeting to provide their written response to WG member comments by Fri May 26, but this will depend on comments received • OEB staff to circulate a final version of the annual report once outstanding individual member comments and Enbridge's response	• Outstanding individual WG comments to be submitted as follows: -Remaining WG members: May 25 -Enbridge response: May 26 *****completed***** • OEB staff to circulate final WG annual report once all outstanding comments have been submitted

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	have been submitted. • Target is to post Enbridge and WG's annual report on EwU IRP webpage on Mon May 29 or Tues May 30 DCF+ Working Paper • OEB staff seeks confirmation from Enbridge on final language in DCF+ report on Enbridge's view on use of best estimate vs. current values as input assumptions for future years • Enbridge will report back to OEB staff and the WG by end of week • Once Enbridge's position on the matter has been submitted, OEB staff intends to finalize the DCF+ working paper and post onto EwU website next Mon or Tues along with the annual reports. However, unlike the annual reports, the DCF+ working paper will not be part of Enbridge's DVA application anticipated to be filed on May 30	***completed*** • Enbridge to confirm their position on the best estimate discussion for DCF+ paper by end of week ***completed*** • OEB staff to post DCF+ working paper and annual reports on EwU IRP webpage on Mon May 29 or Tues May 30 ***completed – posted on Tues May 30*

2. Enbridge Update

Item Description	Discussion Comments/Outcome	Action Items
CNG Discussion Enbridge presented 2 CNG options along with their justification of choice in various scenarios. WG comments/ requests summarized on right. Refer to slides for details	• Enbridge considered 2 CNG Options for low pressure points: 1) **centralized** – compressor station located on high pressure line where 2 trailers are filled up and transported when and where needed, 2) **decentralized** – trailer/ storage cylinder near low point with compressor on site to fill tubes during off peak. CNG injected as needed. • Enbridge notes the centralized option is what they largely use today, and the decentralized option is more expensive (Enbridge justifies that the cost of a compressor is $750K when injection would probably only be needed for 3 events in a season costing $3K-4K to transport the tube trailer each time making the centralized option more cost effective). However, Enbridge notes that when dealing with industrial customers or very large loads, more trailers would be needed which would likely make the decentralized approach more cost effective and practical • WG member requests for cost breakdown of	Enbridge to provide cost breakdown of compressor cost estimates and GHG emission profiles of the 2 CNG options at future WG meeting

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<table>
<tr><td></td><td>$750K compressor since they believe this is excessive. Enbridge agrees to provide.
WG member raises the question of whether Enbridge considers both options as equal with respect to reliability of service, given risk of trucks not quickly reaching destination for centralized option (although 75% of service territory is estimated to be within 3-hour drive) whereas under the decentralized option, the compressor is readily available. Enbridge indicated its preliminary view that the decentralized solution may actually be higher risk, as it may be supply-limited for a long-duration event.
WG member raises the question of whether Enbridge has considered the GHG impact of both CNG options. Enbridge confirms they are looking into this with the emissions team and this would be factored into the DCF+ calculation. Enbridge to share emission findings at future WG meeting.
Enbridge notes there are a lot of smaller projects where CNG can be used for several years to defer/ eliminate projects in the AMP. Enbridge indicates that as they continue to develop their CNG strategy, it may change from what is presented today</td><td></td></tr>
<tr><td>Kingston Project

Enbridge seeks feedback from WG members on the principle of whether IRP project costs (below a defined threshold $2M or $10M) such as the Kingston project can be recovered through IRP DVA when it is not part of an approved IRP plan.</td><td>Enbridge is concerned that OEB staff has flagged a question/concern as to whether Kingston can recover costs through the IRP deferral account since the project costs are not part of an approved IRP plan. Enbridge seeks clarity and direction from the WG on whether this means IRP plans should be filed for all IRP projects (even those that fall below the threshold).
OEB staff clarifies that its view is that the decision does not require Enbridge to file IRP plans for projects<$2M. However, the concern is with cost recovery through the deferral account, as the wording of the deferral account appears to be limited to project costs associated with approved IRP plans. OEB staff suggests that a potential strategy is to request for a change in language for the purpose of the account.
WG member notes that a key question is whether the costs are incremental or something previously budgeted for as a capital project. Cost recovery treatment in previous</td><td></td></tr>
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	(non-IRP) examples where O&M spending avoided or deferred capital spending may be relevant. • If the costs were not previously budgeted for and under the defined threshold, WG member believes filing an IRP plan for litigation and approval would be a waste of time. Instead, Enbridge should move forward with implementation and discuss prudency of spend during the deferral proceeding. Enbridge agrees with this stance. • Some WG members suggest for Enbridge to file an IRP plan for a collection of smaller IRP projects that will collectively meet the threshold. The plan would indicate details like the anticipated # of projects, types of IRPAs, sum of spend and a compelling case without providing as much justification for every single project. This would create efficiencies and eliminate the question of whether the deferral account can be used to recover costs of smaller projects. Enbridge likes this idea and will give consideration to it for the future.	
Stakeholder Update Enbridge provided details on the regional webinars that took place including attendance, feedback and other statistics that were tracked for learnings on how to proceed. WG comments summarized on right. Refer to slides for details.	• Overall, Enbridge reports that attendance, online advertisement, and link activity was lower than desired. However, Enbridge obtained feedback and plans on implementing measures to increase attendance when they host more detailed webinars to learn more about IRP in the Fall (e.g. consideration of webinar location, topics of interest, and program information applicable to their area). • Enbridge notes and WG member agrees that communications can drastically vary between cities and effective webinars are not just about attendance but the quality of conversation. • Enbridge will reach out to Amber offline for best practices in preparing for webinars in the Fall. A notable suggestion was the importance of data mining contacts to build Enbridge's database, locating the correct people (e.g. CEO, energy planners) • WG member suggests for Enbridge's webinar ads, and discussion at meetings, to include examples of IRPAs that will be available to help people save money. This will increase people's interest knowing there is something in it for them. Enbridge notes this is a good	Enbridge to coordinate with Amber on best practices in preparing for upcoming webinars in the Fall

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	idea for future webinars and will take this back to the marketing team. • Enbridge confirms the webinar recording will not be shared but transcription is underway	
Pilots Update Enbridge provides an update on the timelines of the finalization, review and filing of the pilot evidence package. Enbridge also summarizes their position and shows how some items will be laid out in the evidence package. WG comments and suggestions have been summarized on right. Refer to slides for details.	• Enbridge notes there is a slight delay (7-10 days) in finalizing the pilot evidence. Enbridge anticipates the executive review of evidence to take place mid next week and for the WG to review late next week or early the week after the next. Enbridge notes the draft evidence is approx. 70 pages and a WG member thinks it will take a week to review. Enbridge hopes to file the pilot application by mid June. • WG member suggests for Enbridge to split out the advanced technologies instead of lumping them together in the evidence package for the board to consider. • WG members question the inclusion of gas heat pumps and hybrid heating. Enbridge justifies that these technologies are presented as an option in the pilot to better understand if it can be a tool to help reach peak hour and whether there is opportunity to include these technologies as part of future IRP plans. Specific to hybrid heating- the tech Enbridge is referring to includes a control element that functions like a demand response program and can switch between energy sources based on commands, thus offering the potential of reduced gas use during peak periods. • WG member notes that only selective use of ERTs in Parry Sound, not 100% coverage, was supported by the WG. Enbridge encourages for members to review Enbridge's justification in the evidence package. • OEB staff notes that Enbridge slides indicate an intent to request shareholder incentives for IRP in a future non-pilot application, and requests that this be reviewed by the WG before being filed with the OEB. • OEB staff and WG members concur that there will not be a specific letter of support from the WG to expedite the pilot application process, but Enbridge can choose to note in its pilot application how it took into account the WG consultation and feedback provided (e.g, note modifications made to pilot design based on WG feedback, indicate which items WG has	Confirm with Enbridge DSM team on how measures were prioritized to focus on peak reduction for pilots

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	indicated concerns with)
	• OEB staff confirms there will be cost award-eligible hours allocated for WG review of the pilot evidence.
	• Enbridge confirms some follow up items from prior WG meetings:
	  ○ Lakeland has a summer peak therefore Enbridge's heat pump offering will not impact their peak
	  ○ Information on pilots in today's meeting materials can be made public and referred to at rebasing ADR
	• WG member questions whether Enbridge is prioritizing specific cost-effective measures to reduce system peak. Enbridge to clarify with DSM team on which measures and how they came to that determination. Enbridge notes it is mostly building envelopes. WG member suggests structuring incentives, so Enbridge gets the biggest bang for its buck for the prioritized measures. WG member also flags the potential for significant savings from early replacement of equipment.	

3. IRP Assessment Process

Item Description	Discussion Comments/Outcome	Action Items
Enbridge provided a quick overview and example of the IRP assessment process. Refer to pre-meeting materials for details. Discussion on this matter will continue at the next WG meeting.	Enbridge provided an overview of its current process in evaluating potential IRP projects by speaking to JT5.36: Enbridge starts with all projects identified in AMP, scopes out non-gas related projects, conducts binary screening using the 5 criteria per the board decision (results filed as appendix B to the AMP), technical evaluation includes scoping out asset classes where IRP is N/A (e.g. corrosion and fire suppression) and considers customer class, assets and volume for each project to see what upstream market based supply is feasible. • Enbridge clarifies they did not yet screen out any projects based on ETEE assumptions • Enbridge notes customer connections cannot be avoided by IRP but confirms that any associated main reinforcements would go through binary and technical evaluation process • Enbridge flagged other types of projects that cannot be avoided by IRP including maintenance of compressors, storage pools,	

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	storage wells. Enbridge's IRP Technical Review Template Enbridge provided a high-level walk through of the IRP technical review template filed for 2 projects (1 pass and 1 fail). Evaluation begins with project scope and whether project timing can be deferred and/or shortened. IRP general review consists of set questions to help determine whether there are any supply or demand side IRP alternatives. The CNG section considers whether the required in service date is >3 years, if system demand is projected to decline 5 years from the in-service date, and CNG feasibility (location and likelihood) using 2000 m^3/hr as an upper threshold, but nothing is screened out. The market-based supply side section looks to see if the system is being fed by a third-party source where contract pressures are capacities that can impact the system. Lastly, the Demand Side-ETEE section is more complex and is designed to get a more holistic view. • Enbridge clarifies the question on whether demand will decline in 5 years has been included to gauge how demand is projected to change based on energy transition and/or other known factors today that will influence demand (in other words, whether need is based on sustained or short-term demand growth to see if peak can be clipped to defer a project). Projects are not screened out based on response. • WG member notes 5 years is a narrow time frame and suggests that 10 years may be more suitable. Enbridge acknowledges that questions like this will need to be updated as learnings are gained and as decisions are made through the rebasing application RE: IRP analysis. • WG member and Enbridge agrees that talking through components in the IRP technical assessment template that get applied to everything instead of project by project with the WG is desirable and most efficient. Enbridge confirms that more time will be allocated to the next WG meeting agenda to walk through these evaluation materials. Enbridge also clarifies that the IRP assessment process presented is draft as	

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		it was part of an undertaking for rebasing. Enbridge wants to revisit the process with the WG in preparation for the next round of evaluations. Enbridge notes that projects have been ranked through the current process but not screened out to help Enbridge prioritize projects as well.	

List of Action Items

Action Item	Assignment/ Owner	Due Date	Status Update *(To be completed at time materials are distributed to the WG for next WG Meeting)*
Provide any written comments on meeting #25 notes; OEB staff to update accordingly then post on EwU IRP webpage once accepted by WG members	WG members & OEB staff	Within the next week	Completed (updated version posted)
Circulate draft notes for meeting #26	OEB staff	Prior to next meeting	Completed
WG to submit any outstanding individual comments for IRP annual report then OEB staff will circulate a final annual report	WG members & OEB staff	Individual comments due as follows: -WG members May 25 -Enbridge response May 26	Completed -final comments from WG members and Enbridge provided and incorporated
Post DCF+ working paper and annual reports on EwU IRP webpage	OEB staff	Mon May 29 or Tues May 30	Completed – reports posted May 30
Provide cost breakdown of compressor cost estimates and GHG emission profiles of the 2 CNG options considered by Enbridge	Enbridge	Future WG meeting	
Coordinate with Amber on best practices in	Enbridge in coordination with WG	Before Fall Webinars	

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preparing for upcoming regional webinars in the Fall	member, Amber		
Confirm with Enbridge DSM team on how measures were prioritized to focus on peak reduction peak for pilots	Enbridge	Prior to next meeting	
Draft a rough timeline on when 2023 priority topics will be discussed in the next 12 months **carried forward from meeting #25	OEB staff in coordinatio n with Enbridge	As soon as possible	
Consider which IRP business plan/ strategy documents can be shared with the WG **carried forward from meeting #25	Enbridge	To be discussed at future WG meetings as part of 2023 priorities	
Add additional comments on 2023 priorities (if any) in the WG's annual report **carried forward from meeting #25	WG members	May 18, 2023	Completed
Inform WG members with their findings on CNG and downstream storage (e.g., the use of a reservoir attached to a compressor), provide more details on CNG used for Kingston project and to address Dwayne's previous questions RE: CNG **carried forward from meeting #25	Enbridge	As soon as possible	Completed -discussed at meeting 26
Confirm with Lakeland Power that	Enbridge	Next Week	Completed – Enbridge confirms Lakeland is a summer peak and

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heat pump offering in Parry Sound pilot will not affect their annual electricity peak and cause electricity distribution system needs **carried forward from meeting #24, not discussed at meeting #25			therefore, the offering will not have an impact.
Investigate why WG member did not get an invitation to the regional engagement session and provide WG with a summary of the session	Enbridge	Prior to next meeting	Completed – Enbridge identified and corrected error with notification session, and provided update on sessions
Follow up items related to regional Webinars: 1) post slide deck from webinars, 2) check Enbridge policy to confirm if transcript and/or video recording can be posted, 3) share Q&A and provide more details from webinars at May 23 WG meeting	Enbridge	As soon as possible	Update provided at May 23 meeting and slide decks now posted: https://www.enbridgegas.com/sustainability/regional-planning-engagement Still awaiting meeting transcripts
Confirm with legal on whether IRP pilot evidence can be discussed at the rebasing ADR	Enbridge	Prior to next meeting	Completed - Enbridge confirmed that material provided at meeting 26 (and previous meeting) can be shared at rebasing ADR (now concluded).
Develop draft evidence for pilots to be reviewed by WG members ***carried forward from meeting notes #18*	Enbridge	May 2, 2023	Completed – draft evidence provided to members in advance of meeting 27
Discuss priorities of the working group for 2023	WG members	May WG meetings	Initial discussion completed – more discussion planned for meeting 27
Schedule Future WG discussion on integrating IRP into	Enbridge, w. OEB staff	Discussion anticipated at future WG	Initial discussion completed – more discussion planned for meeting 27

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AMP (consider whether this can be done before rebasing ADR and hearing if possible); Provide Updated version of Assessment of IRP alternatives and supporting materials to the WG when completed in advance of AMP discussion, including justification of project ranking, and technical papers/ justification that there is no viable alternative for each of the technical screening criteria for projects that were screened out at the technical evaluation stage; provide the document(s) explaining the technical feasibility criteria in evaluating potential IRPs to WG ***carried forward from meeting #20, last point added based on discussion at meeting #24)*		meeting, materials including updated version of Assessment of IRP alternatives to be provided when completed	
Schedule and send out invites for the next few WG meetings	OEB staff	As soon as possible	To discuss scheduling at meeting 27
Establish agenda for Jun 20 WG meeting	OEB staff (with input from Enbridge Gas)	Prior to Jun 20 WG meeting	Completed

ONTARIO ENERGY BOARD | COMMISSION DE L'ÉNERGIE DE L'ONTARIO

Meeting Notes

Integrated Resource Planning Technical Working Group (EB-2021-0246)

Working Group Meeting #27

Meeting Date: June 20, 2023 Time: 2:00 p.m. - 4:00 p.m.
Location: MS Teams

Attendees

IRPTWG Members	Role
Michael Parkes	OEB staff representative (Working Group chair)
Chris Ripley	Enbridge Gas representative
Whitney Wong	Enbridge Gas representative
Chris Neme, Energy Futures Group	Non-utility member
Amber Crawford, Association of Municipalities of Ontario	Non-utility member
Jay Shepherd, Shepherd Rubenstein Professional Corporation	Non-utility member
John Dikeos, ICF Consulting Canada Inc.	Non-utility member
Dwayne Quinn, DR Quinn & Associates Ltd.	Non-utility member
Kenneth Poon, EPCOR Natural Gas LP	Observer
Steven Norrie Independent Electricity System Operator	Observer

Additional Attendees	Role
Kurtis Lubbers	Enbridge staff
Cara-Lynne Wade	Enbridge staff
Helen Tong	Enbridge staff
Christopher Humphries	OEB staff

Regrets

IRPTWG Members	Role
Stephanie Cheng	OEB staff representative
Cameron Leitch, EnWave Energy Corporation	Non-utility member
Tamara Kuiken, DNV	Non-utility member

Purpose

These notes summarize the information discussed during the working group (WG) meeting on each of the key points presented in the published materials.

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Meeting Agenda

1. Preliminary Matters (10 mins)
2. Pilot Evidence – WG Comments (30 mins)
3. 2023 Priorities (40 mins)
4. IESO Non-wires Guide (Steven, IESO 10 mins)
5. IRP Assessment Process continued (30 mins) *– due to timing constraints, topic to be revisited at future WG meetings*

1. Preliminary Matters

Item Description	Discussion Comments/Outcome	Action Items
Meeting #26 Notes OEB staff asked if there were any comments on draft meeting #26 notes	• Enbridge notes they will review the notes tomorrow. No other comments from WG members on meeting notes #26.	OEB staff to post meeting #26 notes on EwU webpage once Enbridge reviews to confirm no further changes required.
WG member replacement OEB staff announces the departure of WG member Amber Crawford. Proposal to replace her membership position with another AMO staff member	• OEB staff recommends for Amber's replacement to be another member from AMO given the relevance of municipal sector to the IRP process and for continuity purposes. • No objections from WG members. Once formal approval and decision has been reached, OEB staff will communicate this to the WG	OEB staff to announce WG member replacement (to WG and publicly) once formal OEB approval and decision has been reached
Future Meetings OEB staff notes there are no meetings scheduled beyond today's WG meeting and discusses the potential for a short break in Jul and Aug 2023 with the rebasing hearing, and the upcoming scheduling for Sept 2023 onwards.	• Enbridge requests for a hiatus from WG meetings during July and Aug with the upcoming rebasing hearing occupying much of July. • Enbridge proposes for WG meetings to resume in the Fall (Sept) with a more intense schedule (possibly 2 meetings per month) depending on the results of the 2023 WG priorities discussion today • Enbridge confirms that during the hiatus, they will still be working to make progress on all items the WG plans to meet on in Sept and Oct. The break is intended to prep for upcoming meetings and to accommodate vacations • No objections from WG members	

2. Pilot Evidence – WG comments

Item Description	Discussion Comments/Outcome	Action Items

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<td>WG comments on Enbridge's draft Pilot Evidence

Written comments on Enbridge's draft pilot evidence were provided by several WG members and OEB staff prior to the WG meeting.

Discussions during today's WG meeting were driven by comments flagged by Enbridge as requiring further discussion/ clarification along with other high priority comments flagged by the WG. Enbridge plans to consider any remaining WG comments in writing.</td>
<td><u>Level of support from the WG for the pilot proposals: </u>OEB staff asked members whether it would be accurate for the draft evidence to indicate a level of support for the pilots in principle from the WG, recognizing that some aspects of the pilots did not have consensus. However, various WG members indicated that they had fundamental concerns with the pilots as described in the evidence package (e.g. extent and level of funding for emerging gas option technologies like gas heat pumps while limiting electrification options) and could not provide support. Another WG member cautioned that Enbridge is not on the same page as WG members on this issue, and as such, the pilots will likely be a contested application rendering interrogatory from WG members.

• A WG member suggested sticking with Enbridge's original language in the draft evidence, but another WG member notes that the language that development of the pilot proposals was "guided" by the WG may not be quite accurate, as the WG's role was more reactive in terms of responding and making suggestions on Enbridge's proposals.
• A WG member suggests language that notes Enbridge consulted with the WG as part of an iterative process and WG members had input, but the application is ultimately Enbridge's who made all the decisions RE: the selection and design of the 2 pilots
• Enbridge will take the feedback received from the WG and come up with a revised sentence or two to be shared with the WG in a few days

<u>DCF+ and Conclusions on Cost Effectiveness</u>
• WG member suggests for Enbridge to explicitly state and to make clearer that they did not approach the DCF+ for the pilots as an economic feasibility test but for completeness. WG notes that the pilots were not designed to be a cost-effective program but to focus on learnings not net savings. Enbridge will revisit language and make it clearer
• WG member cautions that, if only a stage 1 DCF+ calculation is conducted, Enbridge's language should not categorically state that a project is or is not cost-effective. Enbridge</td>
<td>• Enbridge to consider WG comments on the draft evidence and revise evidence as it deems appropriate, including sharing draft wording on the role or level of support of WG members for the pilots
• Enbridge to connect with OEB staff if needed to discuss desired approval date, based on pilot implementation considerations</td>
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	agrees and will modify the language. Peak Hour and Baseline Comparative Data • Some WG members would like to see peak hour demand data in the evidence – specifically, a couple years of history, what it is today and what it is forecasted to be. And where possible, broken down by sector (residential/ C&I) to see what the load reductions are for IRPAs. It would also be helpful to know the underlying assumptions that led to the peak and load forecast (e.g. new connections, building efficiencies etc.) This allows us to better understand whether the IRPA can offset the anticipated growth or at least to a point where supply side improvement is not required. • Another WG member had various comments and suggestions to demonstrate to the OEB that Enbridge has put in the work to understand the system need and the potential for IRP: 1) Connection charts show downward growth trends – identify how much is attributable to demographics vs energy transition 2) Commercial load for both projects – language infers Enbridge knows very little on the attributes of its commercial load. Suggest for Enbridge to rephrase and to show the OEB that they have done the research 3) Two big users in Parry Sound – Enbridge should communicate with these stakeholders in order to obtain more information making it a predictable load 4) Use of a graphic to illustrate the load shape, problem areas, and how Enbridge is addressing peak load by changing the load shape via DR and reducing the load. Use of Station Data Available vs. Need for AMI Data on Every Household – continued discussion between Enbridge and WG members on the need for individual household data versus using data already being captured at the gate station to measure effectiveness of IRPAs. • Enbridge believes it is valuable to have both whereas some WG members question if the cost of comprehensive household monitoring is justified for the additional data	

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	• WG member suggests articulating that a key learning from deploying ERTs everywhere is having data to help recalibrate forecasts for these areas and refining the approach to forecasting for some inputs in other areas. Scale of Gas Technologies Relative to Other Efficiency Measures – continued opposition from some WG members on the inclusion and extent of funding for gas technologies as compared to the limited incentives for other measures like attic insulation. • WG member notes that the increase in rebate dollars for efficiency measures is not large enough to have a major impact. Enbridge should start higher and lower as required. Moreover, Gas heat pumps only provide 25% peak hour reduction whereas electric heat pump gives 100% reduction (4-fold increase). Gas heat pumps are not commercially available on the market today and Enbridge is proposing to cap total spending on electric but not gas heat pumps. Enbridge indicates that capping of electric measures was considered to avoid a potential tipping point on electric system for a geotargeted area while communications continue with IESO and other electricity stakeholders. Enbridge agrees to reconsider additional incentives on efficiency measures. Nevertheless, a WG member cautions that Enbridge's approach appears to be a R&D project on gas technologies rather than an IRPA. • WG member suggests for Enbridge to put a cap on spending for gas fired technologies may increase support for the pilot • WG member suggests making it clearer in the evidence exactly what degree of flexibility Enbridge is seeking to vary aspects of the pilot in its approval (e.g. incentive levels, forecast funding for different parts of the pilot, etc.), and what guardrails would exist, to ensure that the pilot still was consistent with what the OEB approved. Member also noted that Enbridge should explicitly indicate it would have the option of increasing spend by 25% (consistent with OEB IRP decision)). WG generally agreed that some (but not unlimited) flexibility to vary aspects of the pilot was desirable.	

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	Timing of Requested Pilot Approval – OEB staff noted that a formal performance metric does not exist for IRP plans, but a ballpark expectation would be that a decision would take roughly six months from time of filing. Staff suggested that Enbridge connect with OEB staff if needed, to discuss if Enbridge wants a decision by a specific date to facilitate pilot implementation.	

3. 2023 Priorities

Item Description	Discussion Comments/Outcome	Action Items
2023 WG Priorities Enbridge reviewed WG comments on 2023 priorities in WG IRP annual report, and shares 6 topics they feel are priority discussions with the WG as they are elements that will be incorporated into Enbridge's next IRP plans, and which IRP-related items Enbridge does not intend to discuss with the WG. WG comments summarized on right. Refer to Enbridge's slide deck for details.	• Enbridge proposes to work on the 6 elements during the summer. 2 WG meetings per month will be held in Sept and Oct. A WG member requests for the 4 meetings to be held in the mornings. Enbridge is open to this proposal. • Enbridge clarifies the topic of incrementality speaks to incrementality of IRP plans relative to what is considered to be part of Enbridge's base rate. • Enbridge originally hoped to file a non-pilot IRP plan by the end of 2023 but will likely be in Q1 2024. • Some WG members disagree with some items Enbridge listed as topics that are not appropriate for WG discussions. For example, some feel Enbridge should provide the WG with an update of its strategic planning documents. Also, some members see a benefit in having the WG consider how energy transition should be considered in Enbridge's demand forecast process outside of the regulatory rebasing application. OEB staff suggests for the relevance of demand forecast to be revisited once an OEB decision has been reached for the rebasing application.	OEB staff to schedule 2 WG meetings per month in Sept and Oct Enbridge to develop rough timeline/schedul e for its IRP plans for coming year, OEB staff to work with Enbridge to convert to workplan for WG

4. IESO Non-Wires Guide

Item Description	Discussion Comments/Outcome	Action Items
Steven N., observer to the IRP WG, provided a quick overview of IESO Non-Wires Guide	• Provides screening mechanism of non wires alternatives (NWAs) to identify where to focus efforts on what types of solutions is the best possible solution. • Objective of the non-wires guide is to increase transparency for various stakeholders and to have a documented approach for consistency as discussions cycle through every 5 years.	

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	Main audience is for system planners. • IESO clarifies consideration of NWAs is not limited to transmission/ sub transmission as distribution is not out of scope (i.e. the process may meet a regional need, but best solution may come at a distribution level. IESO also leads technical studies but works closely with LDCs who give their best insights into the nature of load in their forecasts) • OEB staff encourages WG members to read through the non-wires guide for learnings given the parallels of what we are trying to get done on the gas IRP side	

List of Action Items

Action Item	**Assignment/ Owner**	**Due Date**	**Status Update** *(As of August 4, 2023)*
Review meeting #26 notes (Enbridge); then post notes on EwU IRP webpage (OEB staff)	Enbridge & OEB staff	As soon as possible	Completed (notes posted, no changes to version reviewed by members)
Circulate draft notes for meeting #27	OEB staff	Prior to next meeting	Completed
Obtain formal OEB approval/ decision and announce WG member replacement	OEB staff	As soon as possible	Completed – Dave Gordon appointed as new member (https://www.rds.oeb.ca/CMWebDrawer/Record/806530/File/document)
Consider WG comments on the draft evidence and revise evidence as appropriate, including sharing draft wording on the role or level of support of WG members for the pilots	Enbridge	As soon as possible	Completed – Pilot application revised by Enbridge (including, but not limited to, changes to wording around WG involvement, changes to level of funding for gas heat pump technologies in pilot) and filed with OEB
Connect with OEB staff if needed to discuss desired approval date, based on pilot implementation considerations	Enbridge	As needed	Completed – No additional discussion with OEB staff prior to filing, but application amended to request approval date of Dec 31, 2023

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Schedule 2 WG meetings per month in Sept and Oct in the mornings	OEB staff	As soon as possible	In progress
Develop rough timeline/schedule for Enbridge IRP plans for coming year, convert to workplan for WG **carried forward from meeting #25 with modification	Enbridge in coordination with OEB staff	September meeting	
Discuss priorities of the working group for 2023	WG members	September meeting	Initial discussions held at meetings 26 and 27. To be continued at Sept meeting in response to Enbridge timeline/schedule
Provide cost breakdown of compressor cost estimates and GHG emission profiles of the 2 CNG options considered by Enbridge	Enbridge	Future WG meeting	**carried forward from meeting #26
Coordinate with AMO on best practices in preparing for upcoming regional webinars in the Fall	Enbridge in coordination with AMO WG member	Before Fall Webinars	**carried forward from meeting #26
Confirm with Enbridge DSM team on how measures were prioritized to focus on peak reduction peak for pilots	Enbridge	Prior to next meeting	**carried forward from meeting #26
Consider which IRP business plan/ strategy documents can be shared with the WG **carried forward from meeting #25	Enbridge	As soon as possible	Completed - Enbridge indicated at meeting 27 that it does not intend to share internal strategic planning documents with WG
Follow up items related to regional Webinars: 1) post slide deck from	Enbridge	As soon as possible	Completed - Update provided at May 23 meeting and slide decks (including meeting transcripts) now posted:

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webinars, 2) check Enbridge policy to confirm if transcript and/or video recording can be posted, 3) share Q&A and provide more details from webinars at May 23 WG meeting			https://www.enbridgegas.com/sustainability/regional-planning-engagement
Schedule Future WG discussion on integrating IRP into AMP; Provide Updated version of Assessment of IRP alternatives and supporting materials to the WG when completed in advance of AMP discussion, including justification of project ranking, and technical papers/ justification that there is no viable alternative for each of the technical screening criteria for projects that were screened out at the technical evaluation stage; provide the document(s) explaining the technical feasibility criteria in evaluating potential IRPs to WG ***carried forward from meeting #20, last point added based on discussion at meeting #24)*	Enbridge, w. OEB staff	Discussion anticipated at future WG meeting, materials including updated version of Assessment of IRP alternatives to be provided when completed	Initial discussion completed – more discussion planned for future meeting
Establish agenda for Sept WG meeting	OEB staff (with input from Enbridge Gas)	Prior to Sept WG meeting	

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Whitney Wong

From:	Chris Neme <cneme@energyfuturesgroup.com>
Sent:	Monday, June 19, 2023 5:15 PM
To:	Michael Parkes; Amber Crawford; Cameron Leitch; Chris Ripley; Dikeos, John; Dwayne Quinn; Jay Shepherd; Kuiken, Tamara; Poon, Kenneth; Stephanie Cheng; Steven Norrie; Whitney Wong
Cc:	Christopher Humphries; Cara-Lynne Wade
Subject:	[External] RE: IRP WG June 20 meeting: Agenda and materials
Attachments:	_EB-2022-0335_Evidence Combined_E Exhibits (OEB staff comments)-CN.pdf; _EB-2022-0335_Evidence Combine_excluding Es (OEB staff comments)-CN.pdf

Chris R., Michael et al.:

Attached are the two docs with my questions and comments added on top of Michael's. Note that I have lots of questions about the DCF+ Stage 1 analysis that I can't really address without seeing the Excel files.

At a high level, while I think there's lots of good stuff here, I have several concerns/suggestions:

1. There should be more data on the projects, particularly forecasts of peak hour demand broken down by customer type/class, underlying assumptions for those forecasts, etc. This is needed to put the forecast impacts of the IRPAs into context.
2. My concerns about the proposed emerging technology investments in the Parry Sound project are much, much bigger than before now that I see how large the proposed incentives and participation and budget for them are. I can't believe Enbridge is proposing that gas heat pumps have 2.5 times as much participation as full electrification ASHPs/GSHPs and that hybrid heat pumps have twice the forecast participation (both without any apparent participation caps analogous to those imposed on ASHPs/GSHPs) – despite significantly less peak demand savings per measure. Moreover, the proposed spending on these measures is almost as great as for the DSM measures and about 10 times that proposed for full electrification measures – again despite much smaller peak demand reductions per measure. I have to say that this just jumps out as obviously advancing an Enbridge agenda that has nothing to do with IRPAs and is highly problematic and objectionable.
3. I have serious concerns about the proposed increases in residential DSM rebates being too small to drive significant increases in demand. The C&I rebates seem much more reasonable. Since this is the application asking for approval, it seems like it won't be possible to increase the residential rebates in the future without coming back to the Board, which eliminates the ability to be nimble in response to market feedback. Thus, I fear the Company is setting itself up for failure. It should instead start with much bigger increases in residential rebates, with the ability to scale back if it is more successful than expected, particularly in pilots designed to test, in part, what it takes to move the market. This is just way too conservative an approach.
4. The DCF+ stage 1 tests seem potentially problematic to me, but I can't tell for sure what all the issues are (or not) without seeing the Excel files from which the Appendix values were obviously derived.

Chris N.

Chris Neme
Principal
Energy Futures Group

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cneme@energyfuturesgroup.com

From: Michael Parkes <Michael.Parkes@oeb.ca>
Sent: Friday, June 16, 2023 1:13 PM
To: Amber Crawford <ACrawford@amo.on.ca>; Cameron Leitch <Cameron.Leitch@enwave.com>; Chris Neme <cneme@energyfuturesgroup.com>; Chris Ripley <CRipley@uniongas.com>; Dikeos, John <John.Dikeos@icf.com>; Dwayne Quinn <drquinn@rogers.com>; Jay Shepherd <jay@shepherdrubenstein.com>; Kuiken, Tamara <Tamara.Kuiken@dnv.com>; Michael Parkes <Michael.Parkes@oeb.ca>; Poon, Kenneth <KPoon@epcor.com>; Stephanie Cheng <Stephanie.Cheng@oeb.ca>; Steven Norrie <Steven.Norrie@ieso.ca>; Whitney Wong <Whitney.Wong@enbridge.com>
Cc: Christopher Humphries <Christopher.Humphries@oeb.ca>; Cara-Lynne.Wade@enbridge.com
Subject: IRP WG June 20 meeting: Agenda and materials

IRP Working Group members,

Please find attached agenda and materials for next Tuesday's IRP WG meeting, as well as draft meeting notes from last month's meeting.

Agenda:

- Preliminary matters (10 min, no materials)
- Pilot evidence – Working Group comments (30 min, draft evidence (2 documents – one with cost information, and one with all other sections of evidence)).
    - I've included versions of these documents that include initial staff comments. Some comments are minor in nature, and not all comments necessarily need to be discussed at the meeting.
- 2023 Priorities (40 min, slides 4-6 in Enbridge deck, final IRP WG annual report).
    - Looking to build on and continue discussion of 2023 priorities, taking account of final written comments in WG annual report on 2023 priorities, by members (p. 6-16) and reply comments by Enbridge (p. 22-23) in the WG annual report.
- IESO Non-Wires Guide (10 min, guide attached)
    - Steven from IESO to provide a brief introduction to new IESO guide to non-wires alternatives, and possible parallels/learnings for IRP assessment process.
- IRP Assessment Process, continued (30 min, slides 7-16 of Enbridge deck, plus 4 JT attachments)
    - Continued discussion of Enbridge's IRP assessment process.

-Mike

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Whitney Wong

From:	Michael Parkes <Michael.Parkes@oeb.ca>
Sent:	Tuesday, July 11, 2023 4:00 PM
To:	Chris Ripley; Jay Shepherd; 'Chris Neme'; 'Amber Crawford'; 'Cameron Leitch'; 'Dikeos, John'; Dwayne Quinn; 'Kuiken, Tamara'; 'Poon, Kenneth'; Stephanie Cheng; 'Steven Norrie'; Whitney Wong
Cc:	Christopher Humphries; Cara-Lynne Wade
Subject:	RE: [External] RE: IRP Pilots Evidence Update
Follow Up Flag:	Follow up
Flag Status:	Flagged

Thanks Chris. That language works for me.

-Mike

From: Chris Ripley <CRipley@uniongas.com>
Sent: Tuesday, July 11, 2023 9:20 AM
To: Jay Shepherd <jay@shepherdrubenstein.com>; 'Chris Neme' <cneme@energyfuturesgroup.com>; Michael Parkes <Michael.Parkes@oeb.ca>; 'Amber Crawford' <ACrawford@amo.on.ca>; 'Cameron Leitch' <Cameron.Leitch@enwave.com>; 'Dikeos, John' <John.Dikeos@icf.com>; Dwayne Quinn <drquinn@rogers.com>; 'Kuiken, Tamara' <Tamara.Kuiken@dnv.com>; 'Poon, Kenneth' <KPoon@epcor.com>; Stephanie Cheng <Stephanie.Cheng@oeb.ca>; 'Steven Norrie' <Steven.Norrie@ieso.ca>; Whitney Wong <Whitney.Wong@enbridge.com>
Cc: Christopher Humphries <Christopher.Humphries@oeb.ca>; Cara-Lynne Wade <Cara-Lynne.Wade@enbridge.com>
Subject: RE: [External] RE: IRP Pilots Evidence Update

Thank you for providing responses to the proposed wording regarding the role of the TWG on the IRP Pilots. Based on Chris' and Jay's suggested edits Enbridge proposes to use the following language in the evidence:

> "The TWG is supportive of most elements of the proposed pilots, although there are concerns that each member may speak for themselves in response to this application."

If you have any concerns or comments, please let me know by Friday, July 14.

Chris

From: Jay Shepherd <jay@shepherdrubenstein.com>
Sent: Friday, July 7, 2023 9:38 PM
To: 'Chris Neme' <cneme@energyfuturesgroup.com>; Chris Ripley <CRipley@uniongas.com>; 'Michael Parkes' <Michael.Parkes@oeb.ca>; 'Amber Crawford' <ACrawford@amo.on.ca>; 'Cameron Leitch' <Cameron.Leitch@enwave.com>; 'Dikeos, John' <John.Dikeos@icf.com>; 'Dwayne Quinn' <drquinn@rogers.com>; 'Kuiken, Tamara' <Tamara.Kuiken@dnv.com>; 'Poon, Kenneth' <KPoon@epcor.com>; 'Stephanie Cheng' <Stephanie.Cheng@oeb.ca>; 'Steven Norrie' <Steven.Norrie@ieso.ca>; Whitney Wong <Whitney.Wong@enbridge.com>

Cc: 'Christopher Humphries' <Christopher.Humphries@oeb.ca>; Cara-Lynne Wade <Cara-Lynne.Wade@enbridge.com>
Subject: [External] RE: IRP Pilots Evidence Update

I like "The TWG is supportive of most elements of the proposed pilots, although each member may speak for themselves in response to this application."

I want an opportunity to respond to the now revised application by supporting it, but with caveats and commentary.

Jay

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From: Chris Neme [mailto:cneme@energyfuturesgroup.com]
Sent: July 7, 2023 3:48 PM
To: Chris Ripley; Michael Parkes; Amber Crawford; Cameron Leitch; Dikeos, John; Dwayne Quinn; Jay Shepherd; Kuiken, Tamara; Poon, Kenneth; Stephanie Cheng; Steven Norrie; Whitney Wong
Cc: Christopher Humphries; Cara-Lynne Wade
Subject: RE: IRP Pilots Evidence Update

Chris et al.:

I have a concern about your proposed language, specifically the part that says "the TWG is broadly supportive of the proposed pilots as described in the evidence." I think the conversations we had were very helpful, and agree with the direction of all the changes you made. However, I still think that the inclusion of any gas heat pumps is problematic and wouldn't characterize that as just a detail. Thus, I'd recommend revising the language to say "…the TWG is supportive of most elements of the proposed pilots…" or "…the TWG is supportive of the pilots, though there is one significant disagreement" (it is only one for me – the inclusion of gas heat pumps – but perhaps there is another from another party) or something like that.

Chris

Chris Neme
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Cell: 802-363-6551
cneme@energyfuturesgroup.com

From: Chris Ripley <CRipley@uniongas.com>
Sent: Friday, July 7, 2023 11:13 AM
To: Michael Parkes <Michael.Parkes@oeb.ca>; Amber Crawford <ACrawford@amo.on.ca>; Cameron Leitch <Cameron.Leitch@enwave.com>; Chris Neme <cneme@energyfuturesgroup.com>; Dikeos, John <John.Dikeos@icf.com>; Dwayne Quinn <drquinn@rogers.com>; Jay Shepherd <jay@shepherdrubenstein.com>; Kuiken, Tamara <Tamara.Kuiken@dnv.com>; Poon, Kenneth <KPoon@epcor.com>; Stephanie Cheng <Stephanie.Cheng@oeb.ca>; Steven Norrie <Steven.Norrie@ieso.ca>; Whitney Wong <Whitney.Wong@enbridge.com>
Cc: Christopher Humphries <Christopher.Humphries@oeb.ca>; Cara-Lynne Wade <Cara-Lynne.Wade@enbridge.com>
Subject: IRP Pilots Evidence Update

Following the last TWG meeting, Enbridge took the comments it received and reviewed the draft evidence, making revisions where applicable. In addition, Enbridge met with Dwayne, Jay and Chris N to discuss the ETEE measures including alternative technologies and ETEE incentives as well as the number of ERTs. Based on these discussions, Enbridge has reduced the number of GHPs to a max/cap of 20 for residential and 5 for commercial. Enbridge is re-running it's analysis, including peak hour impacts and costs, and revising its evidence based on this change and to reflect a minor update to the base project. Enbridge expects to file the application with the OEB the week of July 18.

Further to our last meeting, I noted Enbridge would propose wording for the role of TWG to address the comments received. The paragraph originally read:

1. Throughout the selection process, Enbridge Gas engaged the Technical Working Group ("TWG") to discuss key items such as: objectives of the pilots, pilot project alternatives, project selection criteria and potential IRPAs to implement within the pilot projects. Consultation with the TWG is an ongoing iterative process, where the discussions and feedback have ultimately guided Enbridge Gas's selection and design of the two pilot projects. This process is described in further detail at Exhibit C, Tab 1, Schedule 2.

Enbridge has revised the wording to read:

2. Throughout the selection process, Enbridge Gas engaged the Technical Working Group ("TWG") to discuss key items such as: objectives of the pilots, pilot project alternatives, project selection criteria and potential IRPAs to implement within the pilot projects. This process is described in further detail at Exhibit C, Tab 1, Schedule 2. The TWG has reviewed the draft evidence and Enbridge Gas' understanding is that the TWG is broadly supportive of the proposed pilot projects as described in the evidence, although some details of the proposals do not have consensus support.

If there any concerns with this wording, or alternative suggestions, please let me know by July 13.

Thank you for the comments and the additional discussions. They have been very helpful.

Thank you.
Chris

Chris Ripley (him/he)
Manager, Integrated Resource Planning

Enbridge Gas Inc.

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ENBRIDGE GAS INC.

Answer to Interrogatory from
Environmental Defence (ED)

Interrogatory

Reference:

Exhibit D, Tab 1, Schedule 1

Question(s):

a) Please provide a table for each project with a detailed breakdown of the costs per measure (e.g. energy efficiency, gas heat pumps, etc.).

b) Please provide a breakdown of the costs in (a) as between those covered by Enbridge and those covered by the customer.

c) Please provide details on the thermal storage technologies, including makes, models, and costs.

Response:

a-b) Please see response at Exhibit I.ED-6.

c) The details of thermal energy storage equipment proposed for this project are listed below:

i. Manufacturer: SunAmp Limited
ii. Model: Thermino 80 i
iii. Approximate Cost (equipment only): $3,500

SunAmp is a thermal energy storage module which is composed of a phase change material (PCM), an electric heating element, and a hydronic loop. PCM provides energy storage density of 4 times greater than water. SunAmp PCM can be charged either by the electric heating element or the hydronic loop. SunAmp is charged during non-peak electricity hours and discharges stored thermal energy during peak demand hours.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Environmental Defence (ED)

Interrogatory

Reference:

Exhibit D, Tab 1, Schedule 1, Page 17

Question(s):

a) Please discuss the possibility of offering greater residential efficiency incentives.

b) Please discuss the possibility of seeking greater flexibility in residential incentive levels to allow Enbridge to scale up or down the incentives based on customer uptake.

Response:

a) As discussed in Exhibit D, Tab 1, Schedule 1, paragraph 33, the intent of the ETEE HER+ offer is to provide full cost incentive coverage for most participants for the selected measures. Please also see response at Exhibit I.OGVG-2.

b) Please see response at Exhibit I.STAFF-24.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Environmental Defence (ED)

Interrogatory

Reference:

Exhibit D, Tab 1, Schedule 1, Page 31

Question(s):

Please provide an analysis of the cost-effectiveness of each ETEE offering from the customer perspective, comparing the full cost of the measure with the NPV of the energy savings. Please provide all calculations.

Response:

Enbridge Gas declines to provide a response to this interrogatory as cost effectiveness is not relevant to the approvals sought through the current Application. As stated in Exhibit B, Tab 1, Schedule 2, the primary objectives of the Parry Sound Pilot Project are to gather transferrable learnings regarding demand-side and supply-side alternatives, rather than to address an existing system constraint using the most cost-effective alternative. Beyond the issue of relevance, the analysis requested would be excessively time-consuming and will not assist the OEB in their determination of the appropriateness of the approvals sought. Enbridge Gas will monitor program and measure uptake and will adjust incentive levels as required throughout the Pilot Project term.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Environmental Defence (ED)

Interrogatory

Reference:

Exhibit E, Tab 1, Schedule 1, Page 6

Question(s):

a) Please complete the following table for all the proposed measures:

Measure Details						
	Cost per customer – total	Cost per customer – paid by Enbridge incentives	Cost per customer – paid by the customer	Net energy cost savings per customer	Peak reduction (m3)	Annual reduction (m3)
Offering 1						
…						
Offering n						

b) Please provide all assumptions and calculations underlying table 4.

Response:

a)

Measure Details						
	Cost per customer – total*	Cost per customer – paid by Enbridge incentives*	Cost per customer – paid by the customer*	Net energy cost savings per customer	Peak reduction (m^3/hr)**	Annual reduction (m^3)**
1) ETEE Existing DSM – Residential	N/A***	$2,700	N/A	N/A	81.5	147,945

2) ETEE Existing DSM – Commercial / Industrial	N/A****	~$3,900	N/A	N/A	276.2	518,103
3) Cold Climate Air Source Heat Pump	$12,300	$10,000	$2,300	N/A	20.6	31,895
4) Ground Source Heat Pump	$30,000	$10,000	$20,000	N/A	10.3	15,948
5) Simultaneous Hybrid Heating	$19,000	$11,400	$7,600	N/A	19.1	39,869
6) Gas Heat Pump - Residential	$17,000	$10,200	$6,800	N/A	5.2	15,150
7) Gas Heat Pump - Commercial	$50,000	$30,000	$20,000	N/A	11.4	34,627
8)Thermal energy Storage	$6,500	$3,900	$2,600	N/A	10.3	2,392

‘* “Per customer” will be interpreted as “per budgeted participant”
‘** Values are inclusive of both Pilot Projects areas (Parry Sound and Southern Lake Huron)
‘***The HER+ program under DSM programming was launched in January 2023 and at the time of the submission of this application, cost estimates were not reliably available and may not be accurately portrayed here.
‘****Due to the uncertainty on the specific uptake of the different range of measures offered, total project costs were estimated based on a percentage basis and the value may not be accurately portrayed here.

Please note for the “Cost per customer – paid by the customer” field, the calculation is the “Cost per customer – total” subtracted by the “Cost per customer – paid by Enbridge Gas incentives”.

Please note, Enbridge Gas has not provided a response for “Net energy cost savings per customer”. Please see response at Exhibit I.ED-5.

b) Please see below the assumptions and calculations underlying Exhibit E, Tab 1, Schedule 1, Page 6, Table 4:

Table 4 - Comparison of Cost ($) per Estimated Peak Hour Reduction (m3/hr)

Line No.	ETEE Offering	$ per m^3 Peak reduction ($/$m^3$/hr)[6]
1	Enhanced DSM	$17,700[7]
2	Advanced Technology - Gas Heat Pump	$28,300
3	Advanced Technology - Simultaneous Hybrid Heating	$31,500
4	Advanced Technology - Thermal Energy Storage	$24,700

Enhanced DSM

- Cost ($): Costs for this calculation are shown in Exhibit E, Tab 1, Schedule 1, page 5, Table 3. Incentive costs were developed based on proposed offering incentives levels. For residential, an incentive cost per budgeted participant was estimated based on the impact of the enhanced incentives. As noted in the footnote of the Exhibit E, Tab 1, Schedule 1, page 6, Table 4, calculations for Enhanced DSM HER+ measures do not include the portion of incentive costs provided by NRCan. For commercial and industrial incentive costs, an incentive rate of $1.80/m^3$ of gas saved was applied to the estimated annual gas savings from the commercial and industrial budgeted participants. Promotion, Delivery, and Administration costs noted in Exhibit E, Tab 1, Schedule 1, page 5, Table 3 were developed based on specific program design and delivery considerations as described in Exhibit D, Tab 1, Schedule 1 and Exhibit D, Tab 1, Schedule 2.

- Peak gas reduction (m^3/hr): Please see Exhibit D, Tab 1, Schedule 1, page 32, paragraph 72 and Exhibit D, Tab 1, Schedule 2, pages 12 to 13, paragraph 28. Specific for the Enhanced DSM offering, an estimated impact of a ~10-30% (dependent on sector) annual gas reduction was applied.

Gas Heat Pump (GHP)

- Cost ($)**:** Incentive cost was driven based on 60% cost coverage (as described in Exhibit D, Tab 1, Schedule 1, page 27, paragraph 55) of the total cost, which is detailed in part a) of this response, which includes installation based on manufacturer estimate. Please note for commercial GHP, total installed cost could vary widely and based on the commercial customer data for Parry Sound region, the main target customers are small businesses, therefore low-end costs are used. Promotion, Delivery, and Administration costs noted in Exhibit E, Tab 1, Schedule 1, page 5, Table 3 were developed based on specific program design and delivery considerations as indicated in Exhibit D, Tab 1, Schedule 1.

- Peak gas reduction (m^3/hr): Please see Exhibit D, Tab 1, Schedule 1, page 32, paragraph 72 for the overall approach, however the estimation for residential GHP used the following assumptions. The base case is a blended furnace AFUE of 0.9 and water heater efficiency at 0.8 based on an 80/20 split because residential GHPs provide high efficiency heating for both space and domestic hot water load. Peak gas reduction for residential is calculated based on Vicot V20 GHP GUE curve. For commercial GHP, it is calculated based on Vicot V65 GHP GUE curve. Baseline for commercial GHP is boiler at 80% AFUE.

Simultaneous Hybrid Heating (SHH):

- Cost ($)**:** Incentive cost was driven based on 60% cost coverage (as described in Exhibit D, Tab 1, Schedule 1, page 27, paragraph 55) of the total cost, which is detailed in part a) of this response. The cost of the heat pump (ASHP) is $7,000 and the cost of gas equipment including installation, moving the ASHP coil to the return duct, and thermostat is $12,000. This assumption is based on market price based on pilots. Promotion, Delivery, and Administration costs noted in Exhibit E, Tab 1, Schedule 1, page 5, Table 3 were developed based on specific program design and delivery considerations as described in Exhibit D, Tab 1, Schedule 1.

- Peak gas reduction (m^3/hr): Please see Exhibit D, Tab 1, Schedule 1, page 32, paragraph 72 for the overall approach, however the estimation for SHH used the following assumptions. Space heating/DHW split is 80/20. The 5-ton ASHP approximately provides 16,000 Btuh space heating during the peak hour. Peak gas load is 13.9kW (HHV 38,500 kJ/m3), therefore, the ASHP can reduce peak gas load by 30-40%.

Thermal Energy Storage (TES)

- Cost ($): Incentive cost was driven based on 60% cost coverage (as described in Exhibit D, Tab 1, Schedule 1, page 27, paragraph 55) of the total cost, which is detailed in part a) of this response. The tankless water heater installed cost is $3,000, and the SunAmp TES unit installed cost is $3,500. Promotion, Delivery, and Administration costs noted in Exhibit E, Tab 1, Schedule 1, page 5, Table 3 were developed based on specific program design and delivery considerations as described in Exhibit D, Tab 1, Schedule 1.

- Peak gas reduction (m^3/hr): Please see Exhibit D, Tab 1, Schedule 1, page 32, paragraph 72 for the overall approach, however the estimation for TES used the following assumptions. Space heating/DHW split is 80/20, and Peak gas load is 1.3 m^3 (13.9 kWh). TES module is 14 kWh (approximately 48,000 Btu/h), therefore, the TES module will provide 100% of DHW during the peak gas load hour, which allows to completely shut down the gas DHW heating equipment so the peak gas load will be decreased by 20% where the TES module will provide 100% of DHW demand during the peak load hour.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Reference:

Exhibit B, Tab 1, Schedule 1, pg. 7

Preamble:

EGI evidence states: *"Enbridge Gas is currently utilizing a supply-side IRPA consisting of negotiated increased contracted pressure from TCE to avoid a system reinforcement7; however, TCE notified Enbridge Gas that the delivery pressures will be returned to their standard tariff pressure of 4,000 kPa for the Winter of 2023/24. As explained further in Exhibit D, Tab 1, Schedule 1, Enbridge Gas has requested a higher-pressure service from TCE to maintain the supply-side IRPA."*

We would like to understand more about the delivery pressure agreement and subsequent attempts to mitigate the impact of the proposed reduction.

Question(s):

Please file the 2017 agreement.

a) Please file EGI's written request for a higher pressure.

b) Please file TCE's response to EGI's request

c) Please file any further communication with regard to mitigating the reduction as much as technically and commercially feasible.

Response:

a) Enbridge Gas requested the increased pressure service through discussions with TCE and there is no written request.

b) Please see Attachment 1.

c) There are no additional communications on this matter.

TC Energy
200 Bay Street
South Tower, 24th Floor
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Tel: (437) 518-2648
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TC Energy

May 1, 2023

Enbridge Gas Inc.
50 Keil Drive North, P.O. Box 2001
Chatham, Ontario N7M 5M1

Attn: Anand Krishnan
Manager, Capacity Planning & Measurement Integrity

VIA E-MAIL: Anand.Gopalakrishnan@enbridge.com

Dear Anand,

RE: Parry Sound Meter Station – Future Pressure Assistance

This letter is in reference to the 'Delivery Pressure Agreement' between TransCanada Pipelines Limited (TCPL) and Union Gas Limited dated July 10, 2017, for the Parry Sound Meter Station (DPA). TCPL had previously provided notice of termination of this agreement, and under that notice the DPA will terminate December 1, 2023.

A pressure assistance agreement is meant to provide the pressure assistance December to March. Through discussions with Enbridge Gas, Enbridge Gas has asked for assurance that TCPL is open to providing pressure assistance for the next two winter seasons December 1, 2023 to March 31, 2024, and December 1, 2024 to March 31, 2025 (Winter 23-24, Winter 24-25) at the Parry Sound Meter Station.

This letter confirms that TCPL stands ready to use commercially reasonable efforts to deliver gas to Enbridge Gas at the Parry Sound Meter Station at a minimum delivery pressure of 4570 kilopascals for the Winters of 23-24 and 24-25. TCPL is not contractually required to provide that service at this time, as the DPA expires December 1, 2023. TCPL is open to concluding a New DPA, prior to termination of the current DPA on December 1, 2023, on terms to be negotiated to provide pressure assistance service during the Winters of 23-24, and 24-25.

We will be in touch to begin discussions on the new agreement shortly.

If you have any questions, please do not hesitate to reach out.

Sincerely,

RBlm

Rory Black
Marketing Representative, Eastern Markets
Commercial, Canadian Natural Gas Pipelines

ENBRIDGE GAS INC.

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Reference:

Exhibit B, Tab 1, Schedule 1, pg. 12 and Exhibit C, Tab 1, Schedule 1, Figure 2

Preamble:

EGI evidence states: *The Company's 2023-2032 AMP identified a growth project to address a system constraint in the SLH Area of Influence in response to forecasted increased market/customer demand:*

> *A new distribution station off of the existing 1,210 kPa system and a main extension to tie into the 420 kPa system north of Sarnia along the water is required.*[12]

We would like to understand the system constraint being addressed.

Question(s):

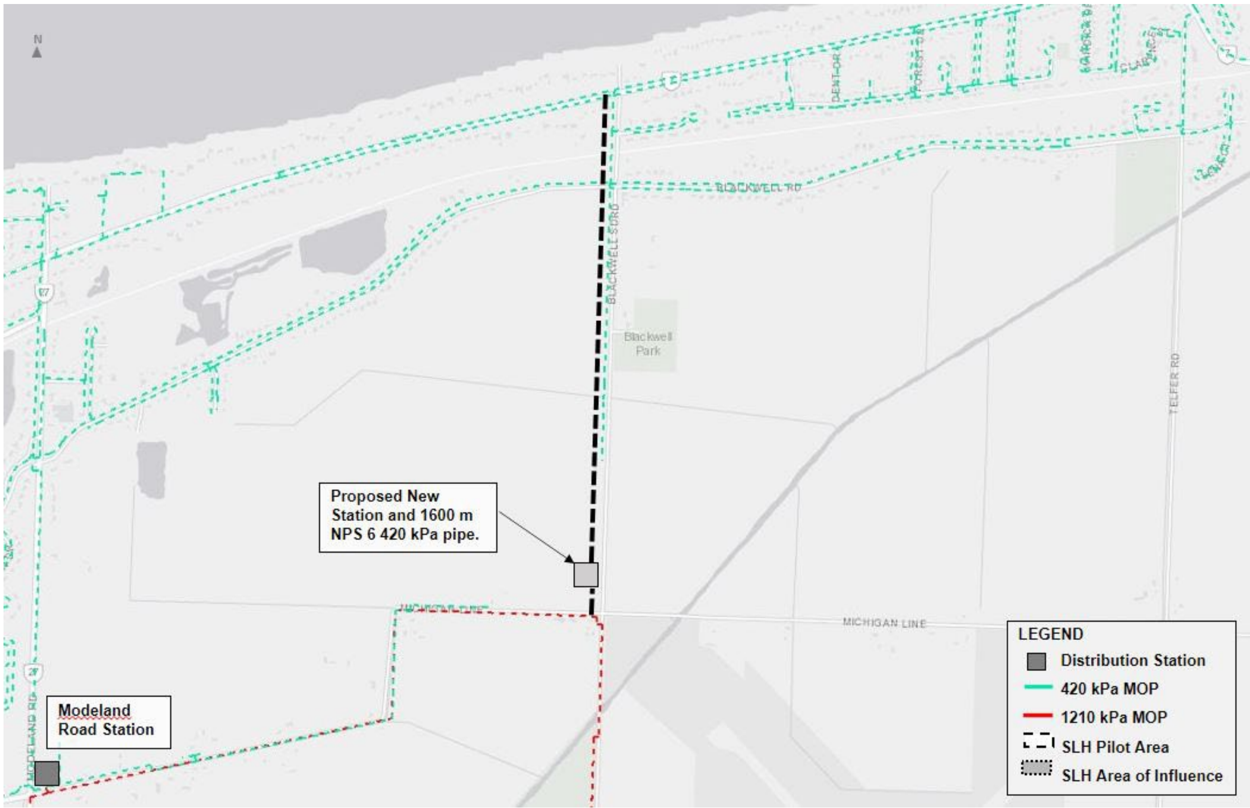
Please provide a simpler map that shows the system, the constraint and the location of proposed station including its 1,210 kPa feed and the location of proposed main.

a) Please provide the most recent system model verification for the network that feeds the area of influence and the proposed additional main.

Response:

Please see response at Exhibit I.FRPO-15 for the current system constraint location. See Figure 1 for a simpler map of the proposed station. Detailed design has not taken place and therefore station location and inlet pipe size are still to be determined.

FIGURE 1



a) The Southern Lake Huron Pilot Project area was verified using January 11, 2022, data to within 5% of the system Maximum Operating Pressure ("MOP"). Please see the verification report at Attachment 1. The pressure recording devices used for verification are often attached to customer services as these devices need to be above ground. The redactions in Attachment 1 have been done to protect customer names.

Over the proposed Pilot Project term, Enbridge Gas will aim to install additional pressure measurement devices on the Southern Lake Huron system for additional verification points, and can provide updates to the TWG as noted in response at Exhibit I.STAFF-23, part b).

Chatham & Sarnia Steady State Model Verification Report

Purpose, and Scope

The purpose of this report is to document the verification of the Chatham & Sarnia steady state model. The model is considered verified if the difference between actual and predicted pressures are within ±5% of the system MOP/MAOP pressures as displayed in Synergi.

Background

Model verification focuses on the physical pipe network and its properties as well as the geographical location of customer demands.

Analyst

Aahmed Bhatti

Verification Day

Date: Jan 11 2022

Temperature: 24.8 HDD

Weather station: Windsor

Summary and Recommendations

24 points verified for Chatham & Sarnia region with all points falling within ±5% of system MOP/MAOP. Station flows were modified (per SCADA & SAP) to verify the system, all changes are outlined in the applicable section below.

Future recommendations can be found in the *Station Flows* section below.

Details and Analysis

Comparison Points and Variances

Pressure Range (MOP or MAOP)	Total # of Points	# Points Within ±5% of MOP or MAOP	% Points Within ±5% of MOP or MAOP
243 – 552 kPa	10	10	100%
691 – 1210 kPa	5	5	100%
1211 – 1900 kPa	7	7	100%
1901 – 4960 kPa	1	1	100%
4960 kPa +	1	1	100%

Direction of Variances

A positive variance indicates the modeled pressure is greater than the field actual pressure.

A negative variance indicates the modeled pressure is less than the field actual pressure. This is the preferred scenario as the model is slightly conservative.

Pressure Range (MOP or MAOP)	Total # of Points	# Of Samples w/ Positive Variance	Average of Positive % Variance	# Of Samples w/ Negative Variance	Average of Negative % Variance
243 – 552 kPa	10	8	2%	2	-2%
691 – 1210 kPa	5	4	1%	1	-3%
1211 – 1900 kPa	7	5	2%	2	-3%
1901 – 4960 kPa	1	0	NA	1	-1%
4960 kPa +	1	0	NA	1	-1%

Station Flows

Station flows are shown with large %differences explained below:

* There is a producer downstream (Algonquin petroleum) that does not have SCADA metering.

** Many downstream systems with multiple backfeeds. Could likely influence a 1-2km3/hr. At 11am, there was a peak of ~60km3/hr.

*** Follow up with station techs to confirm McPlank station flow accuracy because of annubar meter.

Station #	Description	SCADA Flows ($10^3 sm^3/h$)	Model Flows ($10^3 sm^3/h$)	%Difference
08F-601	Dover Center	8.9	8.3	-6.7%
09G-501	Tupperville Trans	3.0	3.5	14.3%*
09H-407	Kent Bridge @ Baseline	2.0	2.0	0.0%
07G-201	Baldoon Trans	58.4	61.7	5.3%**
07G-601	Chatham North	30.5	30.5	0.0%
07G-602	Bloomfield Gate	0	0	NA
07J-301	Ridgetown North	6.5	6.3	-3.1%
12G-201	Petrolia Trans	3.5	3.2	-8.6%
13F-503	Churchill Road	18.1	18.1	0.0%
13F-323	McPlank	40.5	32.4	-20.0%***
NA	Dawn Yard	16.0	15.8	-1.3%

Points Requiring Further Investigation

Below are verification points that are greater than ±5% of system MOP/MAOP as displayed in Synergi and require further review. Included are comments and recommendations to work towards resolving the variance.

Verification Point	Node	Actual Pressure (kPa)	Modeled Pressure (kPa)	Variance (kPa)	% Variance	Comments and Recommendations
NA	NA	NA	NA	NA	NA	NA

Points Requiring Corrective Action

Below are verification points that initially had pressure variances greater than ±5% of system MOP/MAOP as displayed in Synergi. The corrective actions taken to bring these points within ±5% of system MOP/MAOP as displayed in Synergi are detailed.

Verification Point	Node	Actual Pressure (kPa)	System MOP or MAOP (kPa)	Initial Variance %	Final Variance %	Corrective Actions Taken
[redacted]	113172285_536126852	327	420	11%	1%	Upstream station pressure adjusted based on SCADA corresponding to verification day (Baseline Station 09F-501, Dover Centre Station HP cut 08F-601 1A, Chatham N Station IP cut 07G-601 2A).

Verification Point	Node	Actual Pressure (kPa)	System MOP or MAOP (kPa)	Initial Variance %	Final Variance %	Corrective Actions Taken
[redacted]	114782396_531771723	1100	1900	-11%	0%	Upstream station pressure adjusted based on SCADA corresponding to verification day (Baldoon Trans Stn 07G-201, Chatham N Station 07G-601 1A, Merritt Ave Station 07G-623R)
[redacted]	**113161348_540495740**	267	420	20%	5%	Upstream station pressure adjusted based on SAP corresponding to verification day (Vidal St Station 13F-220R 2A, McGregor Dist Stn 13F-304R, Modeland Road Stn 14F-601R)
[redacted]	115375403_536022976	1168	1380	7%	1%	Upstream station pressure adjusted based on SCADA corresponding to verification day (Baldoon Trans Stn 07G-201, Chatham N Station 07G-601 1A, Port Alma Stn 05G-501 LEA).
[redacted]	115221421_534209202	319	420	9%	2%	Upstream station pressure adjusted based on SCADA corresponding to verification day (Baldoon Trans Stn 07G-201, Chatham N Station 07G-601 1A, Merritt Ave Station 07G-623R)
[redacted]	114928028_534146169	316	420	9%	-1%	Upstream station pressure adjusted based on SCADA corresponding to verification day (Baldoon Trans Stn 07G-201, Chatham N Station 07G-601 1A & 07G-601 2A)

Verification Point	Node	Actual Pressure (kPa)	System MOP or MAOP (kPa)	Initial Variance %	Final Variance %	Corrective Actions Taken
[redacted]	116480563_533418844	321	420	10%	4%	Upstream station pressure adjusted based on SCADA corresponding to verification day (Blenheim N Station 06J-103 and Harwich Twp Station 06J-202 1B)
[redacted]	115295399_539754979	688	860	6%	5%	Upstream station pressure adjusted based on SCADA corresponding to verification day (Petrolia Trans 12G-201)
[redacted]	114686324_533932694	2371	3450	24%	-1%	Upstream station pressure adjusted based on SCADA corresponding to verification day (Baldoon Trans 07G-201)
[redacted]	114872892_533886153	327	420	11%	1%	Upstream station pressure adjusted based on SCADA corresponding to verification day (Chatham N Station 07G-601 1A, Baldoon Trans 07G-201, and Merritt Ave 07G-623R)
[redacted]	114789445_533958481	333	420	10%	2%	Upstream station pressure adjusted based on SCADA corresponding to verification day (Chatham N Station 07G-601 1A, Baldoon Trans 07G-201, and Merritt Ave 07G-623R)
[redacted]	113900377_535108049	336	420	7%	1%	Upstream station pressure adjusted based on SCADA corresponding to verification day (Dover Centre 08F-601 1A & 08F-601 2A)
[redacted]	115084649_534104212	315	420	9%	2%	Upstream station pressure adjusted based on SCADA corresponding to verification day (Chatham N Station 07G-601 1A, Baldoon Trans 07G-201, and Merritt Ave 07G-623R)

Verification Point	Node	Actual Pressure (kPa)	System MOP or MAOP (kPa)	Initial Variance %	Final Variance %	Corrective Actions Taken
[redacted]	122168300_538631951	701	860	11%	-3%	Upstream station pressure adjusted based on SCADA corresponding to verification day (Paynes Mills Trans 11O-102)
[redacted]	113506251_534245559	342	420	6%	-2%	Upstream station pressure adjusted based on SCADA corresponding to verification day (Bechard Stn 07F-302)

References

Distribution Optimization Engineering Steady State Model Verification Procedure

Document Control and Maintenance

For document control and maintenance purposes, the following table captures important information related to this document.

Category	Value
Owned by:	Distribution Optimization Engineering Department
Review interval:	Annual

Revision History

Date	Summary of Changes	Prepared by:	Approved by:
2022-12	Initial Version	Aahmed Bhatti Distribution Optimization Engineering	Adam Leitenberger Senior Engineer

ENBRIDGE GAS INC.

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Reference:

Exhibit B, Tab 1, Schedule 1, Figures and Exhibit C, Tab 1, Schedule 1

Preamble:

To evaluate the proposed project and alternatives, one would need enhanced information regarding the forecasted flows and other parameters that the define the need that is being addressed in this application for Parry Sound.

Question(s):

Please file the most recent system verification study for:

a) The HP system from Emsdale to Parry Sound Town Border Station
b) The HP system from the Parry Sound Town Border Station to the District Regulating Stations.
c) The IP system that includes the low point that causes the system constraint.

Response:

a) The 4,960 kPa system from Emsdale to Parry Sound TBS was verified using February 3, 2023, data. Pressures were within 5% of Maximum Operating Pressure ("MOP") over a 24-hour period. This was verified in an unsteady state model. Please see Attachment 1.

b) The 1,725 kPa system downstream of Parry Sound TBS has no current measurement sites to verify compared to the outlet pressure of Parry Sound TBS.

c) The 420 kPa systems have no current measurement sites to verify.

   During the Pilot Projects, Enbridge Gas plans to install pressure measurement devices on the system to provide additional verification points and can provide updates to the Technical Working Group ("TWG") as noted in response at Exhibit I.STAFF-23, part b).

Parry Sound USM Model Verification Report

Purpose, and Scope

The purpose of this report is to document the verification of the Parry Sound USM model. The model is considered verified if the difference between actual and predicted pressures are within 5% of the system MOP pressures.

Background

Model verification focuses on the physical pipe network and its properties as well as the location of system loads. Total flow verification (predicted versus actual) should not be performed at the same time as it can skew results when they are not equal.

Details and Analysis

The existing Zone 10 model was used for Parry Sound system only and simplified to reduce short and awkward pipes. The warehouse pipe catalog (see Figure 1) was used for default pipe properties.

Steel Piping Parameters

Roughness = 0.000422 in (0.01072 mm)

Pipe Equation- Fundamental with flow dependent friction

Nominal Size	Inner Diameter for hydraulic modeling (in)	Inner Diameter for hydraulic modeling (mm)	Efficiency
0.75" W.T 2.87 mm	0.8240	20.93	0.92
1" W.T 3.38 mm	1.0488	26.64	0.92
1.25" W.T 3.56 mm	1.3795	35.04	0.92
1.5" W.T 3.68 mm	1.6102	40.9	0.92
2" W.T 3.91 mm	2.0669	52.5	0.92
3" W.T 4.8 mm	3.1220	79.3	0.96
3" W.T 4 mm	3.1850	80.9	0.96
4" W.T 4.8 mm	4.1220	104.7	0.96
6" W.T 4.8 mm	6.2469	158.67	0.96
8" W.T 4.8 mm	8.2469	209.47	0.96
10" W.T 6.4 mm	10.2461	260.25	0.96
12" W.T 6.4 mm	12.2461	311.05	0.96
16" W.T 9.53 mm	15.2496	387.34	0.96
20" W.T 7.9 mm	19.3780	492.2	0.96
24" W.T 12.2 mm	23.0394	585.2	0.96
26" W.T 7.9 mm	25.3780	644.6	0.96
30" W.T 9.53 mm	29.2496	742.94	0.96
34" W.T 9.53 mm	33.2654	844.94	0.96
36" W.T 9.2 mm	35.2756	896	0.96
42" W.T 12.7 mm	41.0079	1041.6	0.96
48" W.T 12.7 mm	46.9921	1193.6	0.96

Figure 1

February 3rd, 2023 was selected as the verification day as it was a very cold weekday (43.3 HDD) and was used to verify the Parry Sound USM model. Some colder days were available before this date, but it was determined there were issues with SCADA pressure data on these days, so the local station technician did some maintenance on site and therefore a day after this maintenance was used.

Actual hourly flows and distribution model flows were collected and a non-dimensional profile for the general service customers was developed. Actual system pressures were extracted and compared to modeled results.

After source gate station pressure and flows were aligned, the resultant pressures into Parry Sound TBS were too low (conservative) in the model relative to the actuals. First, an efficiency of 99% was used on all pipe to try to align this. This was deemed reasonable due to the minimal amount of fittings and services/takeoffs on this long system of high pressure pipe. Using this update alone, modeled pressures were still too low. Once the 99% efficiency was combined with a roughness modification to 0.00429260 mm (0.000169 in) the model verified within 5% as seen in Appendix A. This value chosen is the roughness for High Frequency Induction Welded (HFIW) pipe which is a common fabrication method for pipe of this size.

Recommendations

Based on the overall verification results, the recommendation is to use the pipe network from the verified model in the new design model.

References

Not applicable

Document Control and Maintenance

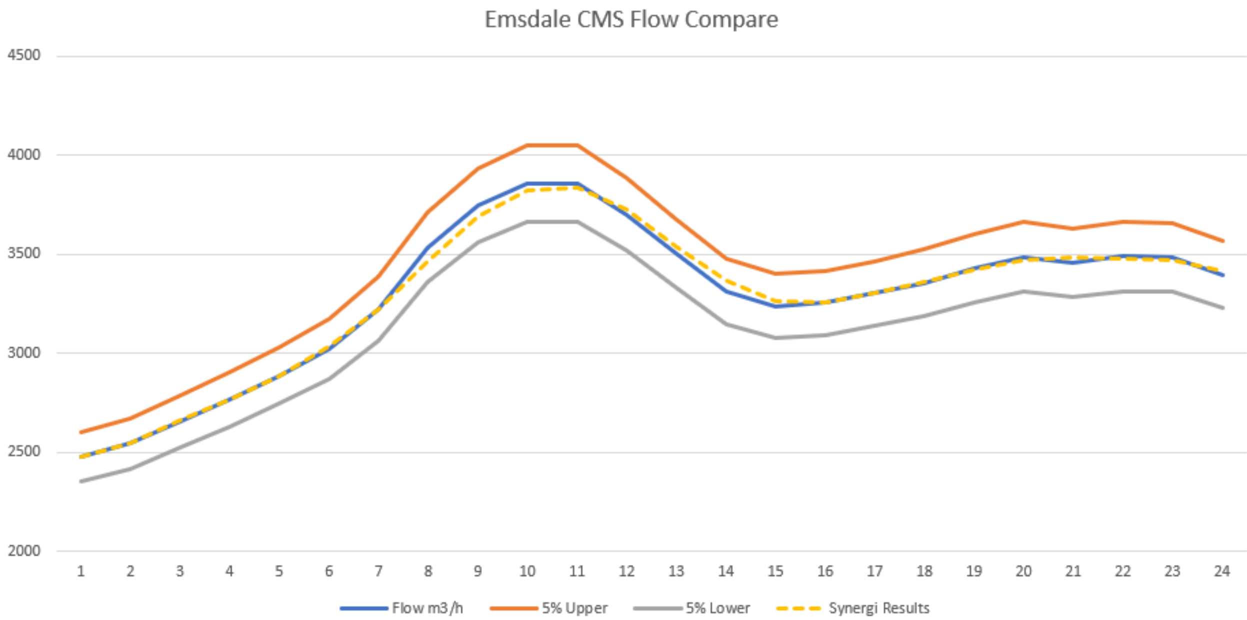
For document control and maintenance purposes, the following table captures important information related to this document.

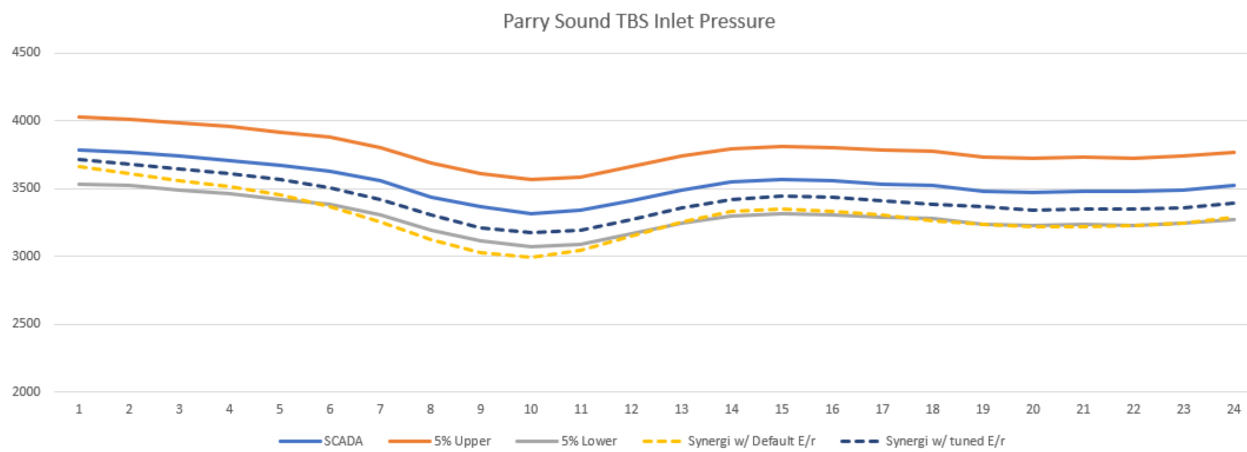
Category	Value
Owned by:	Distribution Optimization Engineering Department
Review interval:	N/A

Revision History

Date	Summary of Changes	Prepared by:	Approved by:
2023_03_13	Initial Version	Dean Egerter, Senior Engineer, Distribution Optimization Engineering	Kurtis Lubbers, Supervisor, Distribution Optimization Engineering

Appendix A (Results)





ENBRIDGE GAS INC.

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Reference:

Exhibit B, Tab 1, Schedule 1, Figures and Exhibit C, Tab 1, Schedule 1

Preamble:

To evaluate the proposed project and alternatives, one would need enhanced information regarding the forecasted flows and other parameters that the define the need that is being addressed in this application for Parry Sound.

Question(s):

Please provide the forecasted peak hourly demand for each winter from 2023/24 to 2031/32 for the following paths:

a) Emsdale Station to the Parry Sound Town Border Station
b) Parry Sound Town Border Station flowing to each of the 4 distribution stations to the Northwest depicted in Figure 2.
c) Parry Sound Town Border Station flowing to each of the 2 distribution stations to the Southeast depicted in Figure 2.

Response:

The following are peak hourly flows estimated for the winter of 2023/24. Since the pipe from TCE to the inlet of Parry Sound TBS is modeled in an Unsteady State ("USM") flows may not add up at any given time due to linepack changes.

a) The flow at the outlet of Emsdale is 5,186 m^3/h.
b) The flow going north from Parry Sound TBS is 4,765 m^3/h.
c) The flow going south from Parry Sound TBS is 587 m^3/h.

As per response at Exhibit I.STAFF-23, part b), Enbridge Gas will work with the TWG to provide updates to modelling and project alternatives over the term of the Pilot Project to ensure the optimal project is being planned.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Reference:

Exhibit B, Tab 1, Schedule 1, Figures and Exhibit C, Tab 1, Schedule 1

Preamble:

To evaluate the proposed project and alternatives, one would need enhanced information regarding the forecasted flows and other parameters that the define the need that is being addressed in this application for Parry Sound.

Question(s):

Please provide the network analysis of both the steady state and unsteady state models that provide the resulting pressures and flows across all of the years analyzed for this application. Please ensure that the analysis output provides the specific winter pressures and flows at the following locations, before and after each of the proposed modifications in Exhibit C (for 2025, 2027 and 2030) have been completed:

a) At the inlet and outlet of the Emsdale Station (currently and after proposed
b) At the end of the 11.6km NPS 6 HP St on the source pipe
c) At the inlet to the Parry Sound Town Border Station
d) The outlet pressure of the Parry Sound Town Border Station
e) The inlet to the Miller Street District Regulating Station
f) The outlet of the Miller Street District Regulating Station
g) The pressure at the low point of the 420 kPa system.

Response:

The following are peak hourly flows estimated for the winter of 2023/24. Flows and pressures upstream of Parry Sound TBS are based on unsteady state modelling, where anything downstream of this station are steady state results and hence may not be equal due to the linepack. The results have been summarized in a table below:

Part	Model	Description	Pressure (kPa)	Flow (m^3/hr)
a	USM	Emsdale Inlet	4570	5109
a	USM	Emsdale Outlet	4308	5109
b	USM	Downstream of 11.6 km NPS 6	4270	5117
c	USM	Inlet to the Parry Sound Town Border Station	2637	5165
d	SSM	Outlet of the Parry Sound Town Border Station	1104	5352
e	SSM	Inlet to the Miller Street District Regulating Station	666	3145
f	SSM	Outlet of the Miller Street District Regulating Station	275	3145
g	SSM	Low point of system downstream of Miller St District	179	N/A

Note: Unsteady State Model is referred to as USM, Steady State Model is referred to as SSM

As noted in response at Exhibit I.STAFF-23, part b), Enbridge Gas will work with the TWG to provide updates to modelling and project alternatives throughout the Pilot Project term to ensure the optimal project is being planned. The baseline facility alternatives will be updated throughout the Pilot Project term. The requested data for future years will take more time to complete than is available for the completion of the interrogatory responses.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Reference:

Exhibit B, Tab 1, Schedule 1, Figures and Exhibit C, Tab 1, Schedule 1

Preamble:

To evaluate the proposed project and alternatives, one would need enhanced information regarding the forecasted flows and other parameters that the define the need that is being addressed in this application for Parry Sound.

Question(s):

The 2027 Pipeline Reinforcement is proposed to be the replacement of 11.5 km of NPS 4 pipe with NPS 6. Please provide the length of pipe that would be required if the NPS 4 was looped with NPS 6 instead of replacing.

a) Please describe the relative costs of looping vs. replacing.

Response:

The length of pipe that would be required if the NPS 4 was looped with NPS 6 instead of replaced with NPS 6 is 10.5 km.

a) The analysis of the relative costs of looping versus replacement for this Project showed that replacement is more economical (the replacement alternative is $19.6 million less than looping the NPS 4 with NPS 6), based on several assumptions including utilizing the existing running line trench and easement, the rocky terrain in the area, CNG during the isolation, and other factors.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Reference:

Exhibit B, Tab 1, Schedule 1, Figures and Exhibit C, Tab 1, Schedule 1

Preamble:

To evaluate the proposed project and alternatives, one would need enhanced information regarding the forecasted flows and other parameters that the define the need that is being addressed in this application for Parry Sound.

Question(s):

Please clarify if modifications to the Parry Sound Town Border Station were considered.

a) If so, please provide the design parameters (minimum inlet and maximum outlet pressures and flows), the nature of the work and the cost estimate for the work.

b) If not, please provide the design parameters and the make, model and size (including regulator orifices if applicable) of the operating current equipment (meter, filter, regulators, etc.) and any considered changes.
   i. Please provide the resulting design parameters with the considered changes, the estimated cost of the changes and the reasons for rejecting the alternative.

Response:

a-b) Yes, modifications to the Parry Sound Border Station ("TBS") were initially considered but not in further detail since the TBS was already fully rebuilt in 2020. The station rebuild provided lower minimum inlet pressures and less differential and the approximate cost was $1.3 million. The design parameters for the station are a minimum inlet pressure of 1,380 kPag and an outlet pressure of 1,104 kPag to meet a required flow of 6,680 m^3/hr.

Please see response at Exhibit I.STAFF-23, part b). Enbridge Gas will work with the TWG by providing updates to modelling and project alternatives to ensure the optimal project is being planned over the next few years.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Reference:

Exhibit B, Tab 1, Schedule 1, Figures and Exhibit C, Tab 1, Schedule 1

Preamble:

To evaluate the proposed project and alternatives, one would need enhanced information regarding the forecasted flows and other parameters that the define the need that is being addressed in this application for Parry Sound.

Question(s):

Please clarify if the largest customer has contract rate.

a) If so, is there currently any interruptible hourly demand in their contract.

b) If not, please describe any discussions that EGI has had with any customer to consider moving to an interruptible rate including the potential for a negotiated rate.

Response:

a) The largest customer is not a contract rate customer therefore there are no interruptible hourly demands.

b) Enbridge Gas has not had discussions with any customer regarding moving to contract interruptible rates as there are currently no contract rate customers in the Parry Sound Pilot Project area.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Reference:

Exhibit B, Tab 1, Schedule 1, Figures and Exhibit C, Tab 1, Schedule 5

Preamble:

To evaluate the proposed project and alternatives, one would need enhanced information regarding the forecasted flows and other parameters that the define the need that is being addressed in this application for Parry Sound.

Question(s):

We understand that there is a hospital served by the Parry Sound system.

a) Please confirm that Ontario requires hospitals to have a minimum amount of back-up fuel for emergency conditions.

b) Please clarify that amount of time established as a minimum.

c) Please describe any discussions that EGI has held with the hospital to incent them to use their back-up capability to move a portion of their load to an interruptible contract.

Response:

a-b) Enbridge understands there may be requirements for hospitals to have back-up fuel for emergency conditions but is not aware of the exact details of that requirement.

c) Enbridge Gas did not have any discussions to incent the customer to use their back-up capability. Please see response at Exhibit.I.SEC.6 for a summary of Enbridge Gas's engagement with the customer.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Reference:

Exhibit D, Tab 1, Schedule 1, p. 6

Preamble:

EGI describes the use of CNG as an alternative. We would like to understand more about EGI's current experience with this approach and its potential application in Parry Sound.

Question(s):

Please provide information on current CNG installations that EGI currently has implemented including forecasted design utilization versus actual utilization.

a) Please provide any operational issues that arose from utilization.

b) Specific to the potential Parry Sound application, please provide the standard cubic meter of inventory that one trailer would hold

c) Please provide the cost of one trailer of the suitable size to deliver the forecasted 240 m3/hr.

Response:

a) Enbridge Gas has previous experience with CNG operations. The Company's most recent use of CNG for winter peak shaving applications was in Bayfield and Kingston, Ontario. During the last winter season, neither site had any utilization. Neither project encountered operational issues.

b) CNG trailers come in various sizes but typically carry approximately 10,000 m^3.

c) The cost of one trailer with 10,000 m^3 of capacity is approximately $800,000.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Reference:

Exhibit D, Tab 1, Schedule 1, p. 25 and 30

Preamble:

We would like to understand the value proposition with heat pumps.

Question(s):

In a simple table, please provide the range(s) of efficiency for electric and gas air-source heat pumps and their range of impact on the peak hour demand for a residential customer.

a) Do these reductions include diversification associated with reduced demand for gas source heat pumps relative to the variability in the on/off cycles of a traditional gas furnace?
   i. If not, please provide a quantitative or qualitative assessment of that aspect.

Response:

Please see Table 1 for the ranges of efficiency for electric air source heat pumps and gas heat pumps, and the range of impact on the peak hour demand for a residential customer.

Table 1

Equipment	Unit	Efficiency Range*				Impact to Gas Peak Hour Demand for Space Heating
	Temp (C)	8.3C	0	-15C	-30C	
Natural gas furnace (Blended AFUE based on market mix)	AFUE (%)	89.9%	89.9%	89.9%	89.9%	Base case
ccASHP (with no gas furnace)	COP	3.49 - 4.63	2.99 - 3.4	1.82 - 2.54	1.0 - 1.25	100% reduction in peak hour**
Simultaneous Hybrid Heating (ASHP with gas furnace)	COP / AFUE (%)	3.55 / 80-85%	2.89 / 80-85%	1.88 / 80-85%	1.0 / 80-85%	40-50% reduction in peak hour
Gas Heat Pump*** (Vicot V20)	GUE (%)	172%	158%	144%	119%	24%reduction in peak hour (goes up to 26% if DHW savings included)

*Efficiency ranges are expressed in annual fuel utilization efficiency (AFUE) for furnace, coefficient of performance (COP) for electric ASHPs, and gas utilization efficiency (GUE) for gas heat pump.

**COP shown is for the ccASHP only and does not include the efficiency of the auxiliary heating system. See the responses to Exhibit J11.5 and J11.6 from EB-2022-0200 regarding electric heating loads at very low temperatures and the total system efficiency. This will have a significant impact on peak electricity demand and would be full electrification of space heating.

***The gas heat pump for the residential sector is designed as combi heating providing high efficiency heating for both space and domestic hot water (DHW) usage. Additional peak savings from water heating is expected beyond what is shown in the table above. While fuel switching is an effective strategy to reduce natural gas peak demand, gas heat pumps can be a good option for areas constrained for electric supply. It could achieve sizeable peak savings for both space and water heating, and therefore it is important to include this technology in the Pilot Project.

a- i) These reductions do not include diversification. Diversification is generally determined for actual customers at an aggregate system level. It can be expected that the diversified load would be lower but the magnitude of the diversification on the reductions stated in Table 1 from part a) is unknown. Analysis of specific customer hourly measurement would provide additional insight into diversification at a more granular/individual customer level.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Reference:

Exhibit D, Tab 1, Schedule 2, p. 8-13

Preamble:

We would like to understand the potential efficacy of an enhancement to the proposed DR program.

Question(s):

From the jurisdictional scans undertaken, does any system operator consider raising the temperature on the thermostat a degree or two in the hour prior to the 2-degree turnback in 7-10am time period?

a) Please describe fully along with EGI's thoughts on the potential efficacy of that approach as it pertains to customer acceptance and peak hour impact.

Response:

Through preliminary jurisdictional scans of the residential space heating gas demand response programs in North America, Enbridge Gas has observed that Consumers Gas in Michigan and National Grid in New York have applied pre-heating (i.e., raising the temperature of the thermostat before a demand response event) in their programs/pilots.

a) Enbridge Gas agrees that preheating will extend the time for a participant's temperature drop to their setback temperature. However, there are concerns regarding comfort during preheating (i.e., indoor temperature too warm) and concerns regarding energy efficiency during the preheat, as gas usage is affected by the difference between indoor and outdoor temperatures. Operating at their setback temperature reduces gas usage over time when compared to normal settings while preheating is expected to do the opposite and increase gas usage. Depending on the level of control and data available from the thermostat manufacturers, this concept may be investigated as part of the DR pilot.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Reference:

Exhibit D, Tab 1, Schedule 3, p. 2

Preamble:

EGI evidence states: *"Currently at a system level, daily to peak hour conversion factors and profiles are recalculated annually using actual hourly gate station flows. This unique nondimensional profile represents all of the customers downstream of the gate stations combined. While this is a good representation of the entire customer group downstream of the gate station on systems, granularity at a customer level and their change in usage is unavailable."*

We would like to understand a baseline for the data and the process of conversion to peak hour load.

Question(s):

In Excel format, please provide the hourly flow for the Parry Sound system along with the temperature and wind speed for that hour for January and February of the last 3 winters and the flow and temperature for July and August for the last 3 summers.

a) Please provide a description and calculations associated with the determination of the peak hourly demand of the Parry Sound system.

b) Please comment on efficacy and limitations of this type of data for single feed distribution systems.

Response:

Please see Attachment 1.

a) Please see response at Exhibit I.CCC-8.

b) This type of data for single feed systems is optimal for determining the overall demand for an entire system, as there are no other system feeds or sources of data to analyze or cause errors or assumptions. One limitation still present for this system is whether the demand profile on the system is partially flattened due to linepack as the flow measurement is located at Emsdale and not Parry Sound TBS.

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Please see Exhibit I.FRPO-13-Attachment 1.xlsx on the OEB’s RDS.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Reference:

Exhibit D, Tab 1, Schedule 3, p. 2

Preamble:

EGI evidence states: *"Currently at a system level, daily to peak hour conversion factors and profiles are recalculated annually using actual hourly gate station flows. This unique nondimensional profile represents all of the customers downstream of the gate stations combined. While this is a good representation of the entire customer group downstream of the gate station on systems, granularity at a customer level and their change in usage is unavailable."*

We would like to understand a baseline for the data and the process of conversion to peak hour load.

Question(s):

Please describe the difference between a non-steady state (transient) model and a steady state model as it pertains to system design including concepts such as linepack.

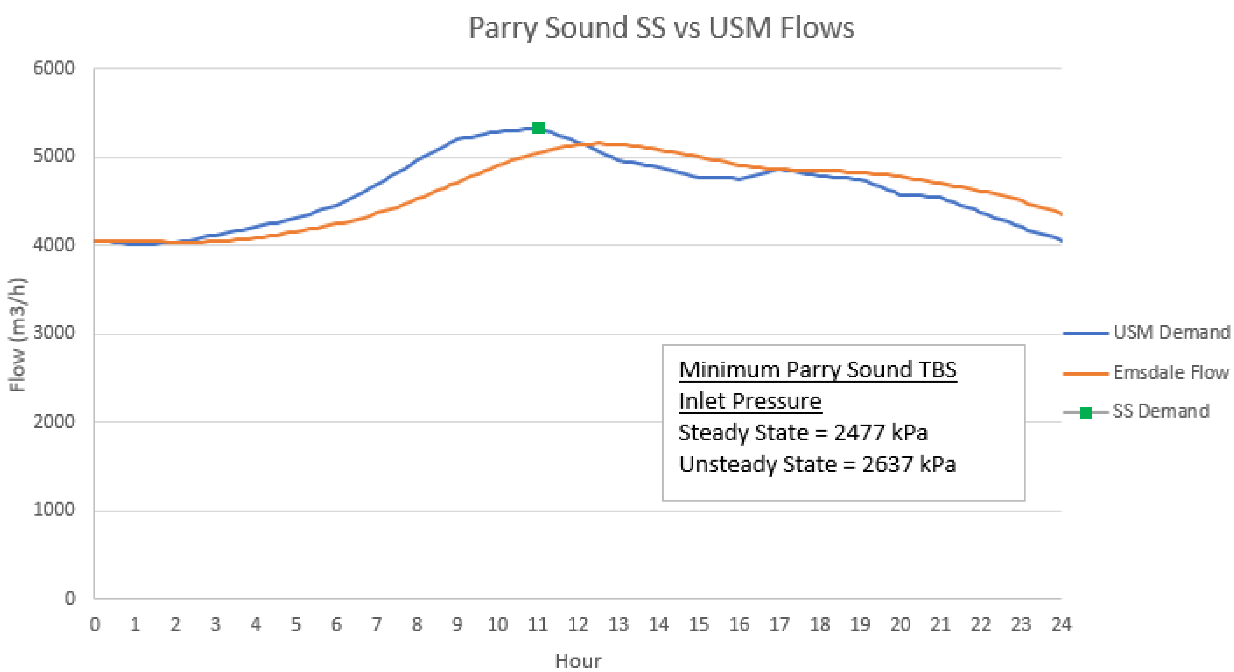
a) Using the data from the last three years, please provide an example of the analysis that can be undertaken to reconcile the derived peak hour flows and pressures between the Emsdale station and the Parry Sound Town Border station for a non-steady state (transient) model and a steady state model.

b) Please comment on what EGI has learned from the development of a non-steady state model for the Parry Sound high pressure feed.

Response:

a) It is accepted in the industry that due to the more detailed modeling approach including elements such as profiling loads and inclusion of linepack, unsteady modeling is more accurate than steady state modeling. Lower pressure/smaller diameter systems typically behave very close to steady state which results in much quicker set up and still produces very accurate results. Due to these reasons unsteady state modelling is typically used on large diameter very high-pressure pipelines of great length while steady state is used on the smaller diameter lower pressure distribution pipelines. Enbridge Gas does not typically look to examine the exact difference in accuracy between these approaches but works with verified models of both types where appropriate depending on the particular system characteristics. As the Parry Sound unsteady state model (USM) was recently developed, a comparative chart for the two model types can be provided in this case.

Figure 1 shows the estimated USM demands for a design day in the winter of 2023/2024 (assuming 4570 kPa at TCE). This process uses two years of historical data to create an average profile at various temperatures. The details of this process are described in EB-2022-0200 Exhibit 4, Tab 2, Schedule 3, paragraph 59. This profile is input into the verified USM model as the demand and the hydraulic model is able to calculate the flow at the Emsdale Gate station shown below. This USM analysis results in a minimum pressure over the 24-hour period of 2,637 kPa at the inlet to Parry Sound TBS. For informational purposes, when the USM model is evaluated in steady state at the peak hour flow of the same profile the resultant pressure at the inlet to Parry Sound TBS is 2,477 kPa.



b) A USM utilizes available linepack in longer and/or larger high-pressure pipelines which can be used to delay and/or minimize pressure loss downstream. Utilizing a USM model for Parry Sound better reflects actual system reactions and provides a more accurate reflection of the system operation as the system is operating at higher pressure and has a significant length but limited by the smaller diameter. The difference of 160 kPa provides an approximation of the difference that might be seen with a verified steady state model. This difference will serve to help defer the need for a project in this area but won't eliminate it entirely. As noted in the TWG updates, the USM model has provided a more accurate model and reduced project scope.

As per response at Exhibit I.STAFF.23, part b), Enbridge Gas will provide updates to the TWG throughout the Pilot Projects term regarding model updates and the correlating preferred project.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Reference:

Exhibit D, Tab 1, Schedule 3, p. 3 and Exhibit E, Tab 1, Schedule 1, pg. 8

Preamble:

EGI evidence states: *"In the Southern Lake Huron Pilot Project area, most residential and small commercial customers are equipped with existing ERTs. These existing ERTs were previously only read at the same bi-monthly frequency but have presently been configured to start recording hourly data. Within the SLH Area of Influence, an additional installation of approximately 940 residential ERTs is required. In the remaining Sarnia area, additional installation of approximately 360 hourly measurement devices is required, primarily for the larger commercial and industrial customers.*

We would like to understand the cost effectiveness of the broad installation of ERT's.

Question(s):

Please provide a map that shows:

a) The critical low point(s) of the Area of Influence

b) The location of all distribution stations feeding that area

c) An indication of which of those distribution stations has flow measurement that can provide hourly flow

d) If there are any distribution stations that do not have flow measurement, please provide an estimate, based upon a similar flow measurement installation in the EGI system in recent years, for the cost of adding flow measurement at stations that currently are not equipped.

Response:

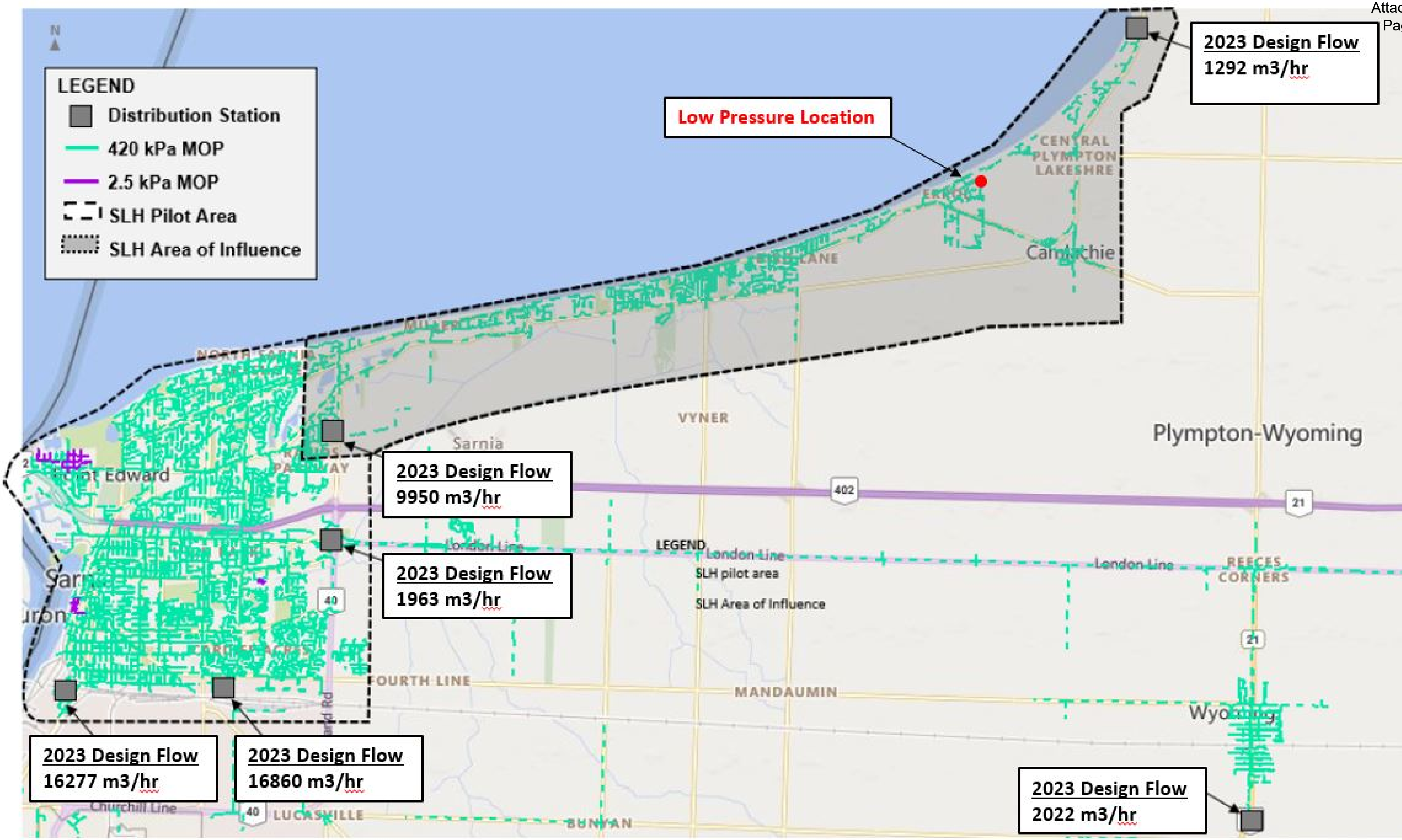
a) Please see Attachment 1.

b) Please see Figure 4 at Exhibit B, Tab 1, Schedule 1, page 11 of 15.

c) None of the distribution stations shown in Figure 4, Exhibit B, Tab 1, Schedule 1, page 11 of 15 have flow measurement.

d) To upgrade the six distribution stations that do not currently have flow measurement, the cost is estimated to be approximately $4.5 million.

Figure 4 – Map of Southern Lake Huron Pilot Area



ENBRIDGE GAS INC.

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Reference:

Exhibit D, Tab 1, Schedule 3, p. 3 and Exhibit E, Tab 1, Schedule 1, pg. 8

Preamble:

EGI evidence states: *"In the Southern Lake Huron Pilot Project area, most residential and small commercial customers are equipped with existing ERTs. These existing ERTs were previously only read at the same bi-monthly frequency but have presently been configured to start recording hourly data. Within the SLH Area of Influence, an additional installation of approximately 940 residential ERTs is required. In the remaining Sarnia area, additional installation of approximately 360 hourly measurement devices is required, primarily for the larger commercial and industrial customers.*

We would like to understand the cost effectiveness of the broad installation of ERT's.

Question(s):

For those stations that have hourly flow measurement, please provide the hourly flow and corresponding temperature for the ten coldest days in the three years.

a) Please provide with the data, EGI's current determination of the peak design hour for each station of the distribution system.

b) Please comment on how EGI will use the additional flow information from the hundreds of additional ERT's to improve the establishment of the peak design hour.

c) Please comment on the cost effectiveness of these additional ERT installations for future projects.

d) Please confirm that, through this pilot application, EGI is not seeking data to support nor the approval of Advanced Metering Infrastructure (AMI) for all customers served by future projects contemplating IRPA's.

i. If not confirmed, please provide specifics on the objectives and approvals sought for full deployment of technology providing hourly meter reading for substantial percentages of customers served by a potential IRPA.

Response:

a) The six stations do not have flow measurement, please see response at Exhibit I.FRPO-15, Attachment 1.

b) Additional flow measurement using ERTs will ensure hourly data is available for analysis of customers that opt into either ETEE or DR programs within the area of influence. This represents data on roughly 23% of customers in the area of influence for Southern Lake Huron. Please see Exhibit D, Tab 1, Schedule 3:

> In order to evaluate the impact of ETEE on peak hour flow, hourly flow measurement and data from customers in the Pilot Project areas is a critical component. Currently, actual flow data for individual customers is collected on a bi-monthly interval for billing purposes which typically results in 6 readings per year. Enbridge Gas is proposing that the Pilot Projects have complete coverage of hourly flow measurement in both Pilot Project areas to ensure the largest possible sample size of customers is attained within specific groupings of customers. This will support the analysis of trends by customer type and allow for a more representative sample size that can be more easily extrapolated to Enbridge Gas's total franchise area. Having full coverage for baseline data will also ensure that any customers that participate in ETEE program will have a full range of data to be analyzed before and after implementation. Additionally, hourly customer flow data provides greater granularity of customer consumption at specific times of day, whereas bi-monthly data would average and trend customer habits over a wide range of degree days. Acquiring more frequent hourly data closer to the design day heating degree day, will provide more data allowing for higher confidence and better forecasted flow during colder temperatures. Currently at a system level, daily to peak hour conversion factors and profiles are recalculated annually using actual hourly gate station flows. This unique nondimensional profile represents all of the customers downstream of the gate stations combined. While this is a good representation of the entire customer group downstream of the gate station on systems, granularity at a customer level and their change in usage is unavailable. Further, new customers are added to the system each year and existing system customer's usage changes. This presents further challenges to the Company in its attempt to understand individualized trends when looking at overall system trends absent individual hourly metering.[1]

[1] Exhibit D, Tab 1, Schedule 3, pp. 1-4, 10.

For additional information regarding the requirement for complete coverage of ERTs, please see response at Exhibit I.STAFF-5.

c) The Pilot Project will determine the cost effectiveness of additional ERT installations for future projects. The approximate cost for hourly measurement by customers in Southern Lake Huron is $1M, whereas installing flow measurement on the six stations feeding this area is approximately $4.5M (please see response at Exhibit I.FRPO-15, part d) and this option will not provide granular customer data. Please see response at Exhibit I.SEC-12 for additional details on the potential for requiring hourly measurement in future IRPAs.

d) Confirmed.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Reference:

Exhibit E, Tab 1, Schedule 2, p.4-5

Preamble:

EGI evidence states: *"Enbridge Gas proposes to allocate the IRP Operating Costs and the IRP Capital Costs deferral account balances related to the Parry Sound Pilot Project to Union North rate classes in proportion to the system peak and average day demands, excluding the demands of customers who are served by sole use mains. The proposed cost allocation methodology is consistent with the allocation of joint use mains in the Union North rate zone in Union's 2013 OEB-approved Cost Allocation Study. ….*

Enbridge Gas proposes to allocate the IRP Operating Costs and the IRP Capital Costs deferral account balances related to the Southern Lake Huron Pilot Project to Union South in-franchise rate classes in proportion to Union South design day demands, excluding design day demands served directly off transmission lines. The proposed cost allocation methodology is consistent with the allocation of distribution mains in the Union South rate zone in Union's 2013 OEB-approved Cost Allocation Study."

We would like to understand better the principles behind these proposals and the consistency of these proposals.

Question(s):

In the first excerpt, EGI proposes to allocate the costs "in proportion to the system peak and average day demands". Please clarify, this statement relative to proportionality of the peak vs. the average or some other interpretation.

a) Given the above answer, please clarify the difference between the Parry Sound and South Huron proposed allocations associated with peak design day demands.

b) Please provide EGI's views on adopting these methodologies as compared to what was proposed in the Rebasing Application.

Response:

The current OEB-approved cost allocation methodology for Union North joint use distribution mains uses an average (50%/50% proportion) of peak and average day demands excluding the demands of customers who are served by sole use mains. Please see Table 1 for the derivation of the peak and average day demand allocator used in this Application.

Table 1
Derivation of Peak and Average Day Demand Allocator

Line No.		Peak Day Demand	Average Day Demand	Average
		(a)	(b)	(c)
1	Rate 01	41%	30%	35%
2	Rate 10	12%	10%	11%
3	Rate 20	28%	26%	27%
4	Rate 25	5%	4%	4%
5	Rate 100	14%	31%	22%
6	Total	100%	100%	100%

a) The Union North cost allocation methodology proposed for the Parry Sound Pilot Project costs is based on the allocation methodology for joint-use distribution mains which uses an average (50%/50%) of both peak and average day demands. The Union North distribution system operates as a separate distribution system at each take off from TransCanada's mainline. In the absence of allocating lateral specific costs on the basis of lateral specific demands, the use of a system peak and average day demand allocator was found to provide a reasonable proxy for the use of a lateral specific peak day demand allocation factors.

The Union South cost allocation methodology proposed for the South Huron Pilot Project costs is based on the allocation methodology for distribution mains which uses peak design day demands, less peak design day demands served from transmission mains. The Union South distribution system is designed and operates on a single integrated basis unlike the Union North distribution system.

The cost allocation methodologies proposed reflect the current approved cost allocation methodologies for the Union North and Union South rate zones.

b) Please see response at Exhibit I.STAFF-20.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Reference:

Exhibit F, Tab 1, Schedule 1, p.1 and
EB-2022-0200, EGI_ReplyArg_2024 Rebasing_20231011, pg. 55

Preamble:

In the second reference, EGI argues that the company *"Developed and rolled out its Pilot Project Area Stakeholder Engagement Plan and delivered initial webinars with pilot project stakeholders, including meetings with municipalities, LDCs, IESO, Hydro One, in-person public meetings and meetings with municipal councils; "*

Question(s):

Please file copies of all of the information and materials provided by EGI to stakeholders in these engagement exercises.

Response:

Please see response at Exhibit I.PP-15 for the IRP Pilot presentations that were shared during initial virtual meetings with municipalities, LDC's, IESO and Hydro One and for presentations used during the in-person public meetings and meetings with municipal councils.

Links to all other materials used during stakeholder engagement activities can be found in response at Exhibit I.PP-30.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Independent Electricity System Operator (IESO)

Interrogatory

Reference:

Exhibit D, Tab 1, Schedule 1, p. 2
Exhibit B, Tab 1, Schedule 1, p. 4

Preamble:

At reference 1, Enbridge states:

> "The proposed Parry Sound Pilot Project offers a unique opportunity to explore the potential applicability and feasibility of electricity-based IRP measures in an isolated environment that can help support future broad-based integrated resource planning efforts with local LDCs and the IESO."

-and-

At reference 2, Enbridge states that a primary objective of the Parry Sound Pilot Project is to:

> "…gather initial learnings of the impact of electrification measures on the local electric grid via engagement with Local Distribution Companies ("LDCs") to support future integrated energy planning with the electric sector;"

Question(s):

a) At the above references, Enbridge indicates that the lessons learned through the Parry Sound Pilot Project (Pilot) are expected to support future integrated resource planning efforts with its counterparts in the electricity sector, including the IESO and LDCs. Would Enbridge be amenable to coordinating with the IESO on the design and delivery of the Pilot, to ensure the lessons learned through it are supportive of coordinated planning processes?

b) Please describe how Enbridge anticipates engaging with LDCs to determine the impact of electrification measures on the local electricity grid, as described at reference 2. Also, please indicate whether Enbridge would be amendable to sharing the findings of its LDC engagement with the IESO.

Response:

a) Yes, Enbridge Gas is amenable to coordinating with the IESO on the design and implementation of the Pilot Projects to ensure the lessons learned through them are supportive of coordinated planning processes.

b) As noted at Exhibit F, Tab 1, Schedule 1, page 1 and Exhibit I.PP-15, Enbridge Gas met with the municipalities, the electric LDCs and the IESO to discuss the Pilot Projects. Enbridge Gas will continue to work with the electric LDCs throughout the duration of the Pilot Projects, providing updates on electric measures programming, take-up and results to help understand the impacts on the local electricity grid. With agreement of the electric LDCs, Enbridge Gas will share all findings with the IESO.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Independent Electricity System Operator (IESO)

Interrogatory

Reference:

Exhibit D, Tab 1, Schedule 1, pp. 24-26

Preamble:

The above reference describes the electrification measures proposed by Enbridge for inclusion in the Parry Sound Pilot project: cold climate air source heat pumps and ground source heat pumps (collectively referred to as the "electrification measures"). At the same reference, Enbridge also indicates that to promote participation, additional incentives to those currently offered by the HER+ program will be made available to customers in the region. The table below, excerpted from the Application, demonstrates the additional incentives proposed by Enbridge, as well as the total incentive available to customers for the installation of the electrification measures.

Pilot Project HER+ Measures	NRCan Incentive (A)	EGI DSM Plan Incentive (B)	HER+ Program Maximum Incentive (C = A + B)	EGI Pilot Project Additional Incentive (D)	Pilot Project HER+ Maximum Incentive (E = C + D)	EGI Pilot Project Funded Incentive (F = B + D)
Space Heating Heat Pump						
Install a ground source heat pump – full system.	$5,000	$1,500	$6,500	$3,500	$10,000	$5,000
Replace a ground source heat pump – heat pump unit only.	$3,000	$1,000	$4,000	$2,000	$6,000	$3,000
Install a complete ENERGY STAR certified new or replacement air source heat pump (ASHP) system or a variable capacity cold climate air source heat pump (ccASHP) system. The system must be intended to service the entire home.	$2,500	$750	$3,250	$1,750	$5,000	$2,500
Install a complete new or replacement variable capacity cold climate air source heat pump (ccASHP) system, intended to service the entire home.	$5,000	$1,500	$6,500	$3,500	$10,000	$5,000

Question(s):

a) Enbridge is proposing to offer additional incentives for both ENERGY STAR certified and non-ENERGY STAR certified ccASHPs. Please clarify why the incentive offered for the ENERGY STAR certified ccASHPs is lower than the incentive for a non-ENERGY STAR certified unit.

b) Enbridge is proposing to offer additional incentives for ENERGY STAR certified ASHPs and ccASHPs. Please provide the reasons for why Enbridge is proposing to provide additional incentives for non-ccASHPS (i.e., ASHPs). When responding, please also describe why the additional incentives proposed for ccASHPs and non-ccASHPs are the same.

c) Please describe Enbridge's strategy for educating customers on the benefits of the electrification measures as well as the increased incentives available through the Pilot for them. When responding, please identify any partners Enbridge will engage to provide this customer education.

Response:

a) The incentive structure and base HER+ offering incentive levels follow the approved amounts stated in Schedule B of the 2023 to 2025 DSM Plan Decision (EB-2021-0002). For the proposed Pilot Projects, the enhanced incentive amounts for the ccASHPs measures were escalated by the same percentage increment (~54%) above the combined incentive (NRCan & DSM).

b) As part of the incentive structure for measures for the HER+ program in Schedule B of the 2023 to 2025 DSM Plan Decision (EB-2021-0002), ENERGY STAR certified new or replacement air source heat pump (ASHP) systems and variable capacity cold climate air source heat pump (ccASHP) systems have been grouped into the same incentive levels. As part of the Pilot Projects, the incentive will only be provided for the cold climate variety of heat pumps. Please see the table below for the revised blacklined table of Table 10 from Exhibit D, Tab 1, Schedule 1, page 26.

Pilot Project HER+ Measures	NRCan Incentive (A)	EGI DSM Plan Incentive (B)	HER+ Program Maximum Incentive (C = A + B)	EGI Pilot Project Additional Incentive (D)	Pilot Project HER+ Maximum Incentive (E = C + D)	EGI Pilot Project Funded Incentive (F = B + D)
Space Heating Heat Pump						
Install a ground source heat pump – full system.	$5,000	$1,500	$6,500	$3,500	$10,000	$5,000
Replace a ground source heat pump – heat pump unit only.	$3,000	$1,000	$4,000	$2,000	$6,000	$3,000
Install ~~a complete ENERGY STAR certified new or replacement air source heat pump (ASHP) system or~~ a variable capacity cold climate air source heat pump (ccASHP) system. The system must be intended to service the entire home.	$2,500	$750	$3,250	$1,750	$5,000	$2,500
Install a complete new or replacement variable capacity cold climate air source heat pump (ccASHP) system, intended to service the entire home.	$5,000	$1,500	$6,500	$3,500	$10,000	$5,000

c) As noted in Exhibit D, Tab 1, Schedule 1, paragraph 49, Enbridge Gas has proposed the electrification measures in the Pilot Project even though the current IRP Framework does not make provisions for funding electric IRPAs. Enbridge Gas will develop the strategy and marketing materials related to the electrification measures following the OEB's Decision on the current Application.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Greenhouse Vegetable Growers (OGVG)

Interrogatory

Reference:

Exhibit B Tab 1 Schedule 1 Page 8
Exhibit B Tab 1 Schedule 1 Page 12

Preamble:

Both pilot projects are being brought forward in response to growth related needs, as opposed to in response to a need to replace deteriorating assets.

Question(s):

To what extent, if any, will the results of the proposed pilot projects be relevant to future IRP projects where Enbridge is not dealing with growth related needs, but is instead exploring IRP options to address the pending need to replace assets in use as a result of the condition of the assets and concerns with respect to asset failure?

Response:

While the needs identified in the Pilot Projects are largely driven by growth, Enbridge Gas expects that the learnings obtained from the Pilot Projects will also be transferable to both the assessment and implementation of IRPAs for non-growth projects. Pilot Project learnings that are expected to be transferrable include insights on peak hour flows, peak hour flow reductions resulting from different enhanced targeted energy efficiency (“ETEE”) measures and different customer types, as well as what impact varying program design has on the adoption rates of IRPAs.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Greenhouse Vegetable Growers (OGVG)

Interrogatory

Reference:

Exhibit D Tab 1 Schedule 1 Page 15
Exhibit D Tab 1 Schedule 1 Page 20

Preamble:

The intent of the ETEE HER+ offer is to provide as close to full cost incentive coverage for the selected measures as possible, however, the total incentive amount available to each customer is capped at 100% of the cost of the measure.

For the Parry Sound Pilot Project targeted measures, the proposed ETEE-version of the direct install offering will cover up to 100% of the energy efficiency project costs (including the equipment and installation costs of the project). Full cost coverage of the energy efficiency projects seeks to address the identified barrier of a lack of capital known to impact the participation levels of this target market segment [commercial and industrial customers].

For the Parry Sound Pilot Project targeted measures, the ETEE-version of the custom offering proposes to provide enhanced incentives up to twice that of the existing DSM offering (up to 50-75% of the full energy efficiency project costs including equipment and installation costs of the project) as described in Table 9.

Question(s):

a) Does Enbridge expect that, for residential customers, most if not all customers will have 100% of the cost of their implemented measures covered by the proposed incentives, such that most if not all customers participating in the ETEE HER+ will not have to contribute to the cost of the measures they receive? If not, what level of expense, in dollars, does Enbridge expect the average residential customer to have to spend on their implemented measures?

b) Does Enbridge expect that, for commercial and industrial customers, most if not all customers will have 100% of the cost of their implemented measures covered by the proposed incentives, such that most if not all customers participating in the ETEE version of the direct install program will not have to contribute to the cost of the measures they receive? If not, what level of expense, in dollars, does Enbridge expect the average commercial and/or industrial customer to have to spend on their implemented measures?

c) For the ETEE-version of the custom offering, please discuss the feasibility of increasing the percentage of costs covered by the program to 100%, similar to the intent of the previously discussed programs in a) and b), while still implementing the proposed total hard per offering.

Response:

a) Residential homes can vary greatly in both size and condition, and the same is true for the cost and range of efficiency upgrades and/or equipment that individual homes choose to undertake. It is expected that most homes and efficiency upgrades would have 100% cost coverage for the measures with the enhanced incentive levels as part of the pilot and if not, the cost coverage would be a large percentage of the cost.

b) The proposed enhancement to the direct install program for commercial and industrial program is up to 100% project cost coverage and therefore Enbridge Gas expects that all customers participating in this offer will receive up to 100% cost coverage for the energy efficiency measures installed.

c) Industrial and larger commercial energy efficiency upgrades can vary greatly in terms of cost. Higher levels of cost coverage could potentially have a large portion of the proposed funding allocated to a single participant, potentially crowding out other customers and, therefore, narrowing the learnings from the Pilot Projects. Enbridge Gas believes doubling the available incentive is an appropriate starting point, especially when coupled with the proposed flexibility to be able to increase the incentives over the term of the Pilot Projects.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Greenhouse Vegetable Growers (OGVG)

Interrogatory

Reference:

Exhibit D Tab 1 Schedule 1 Page 24

Preamble:

On a limited participant basis, the Company proposes to offer additional incentives for cold climate air source heat pumps ("ccASHP") and ground source heat pumps ("GSHP") in the Pilot Project ETEE-version of the HER+ offering for Parry Sound.

Question(s):

a) To what extent does Enbridge expect the "Limited ETEE Offering for Electrification Measures" component of the Parry Sound Pilot to lead to the complete electrification of the participating customers, such that they disconnect from the Enbridge system entirely?

b) For participants in the "Limited ETEE Offering for Electrification Measures", please comment on the economics of remaining connected to the Enbridge system for non-space heating related natural gas consumption; for example, will it make economic sense for a customer that has been converted to an electric heat pump to maintain natural gas service (and therefore subject to Enbridge's delivery rates) solely for use with a natural gas water heater rather than convert to an electric water heater?

c) Please confirm that if participants in the "Limited ETEE Offering for Electrification Measures" component of the Parry Sound Pilot fully disconnect from the Enbridge system, Enbridge has no mechanism to recover any costs from the disconnected customer, including, for example, a contribution to Enbridge's IRP costs.

Response:

a) There is no requirement for participants of the Limited ETEE Offering for Electrification Measures to disconnect from the Enbridge Gas system. However, as part of the offering, the Company will require participants receiving Enhanced IRP Incentives for ground source heat pumps or ccASHP to disconnect their current primary space heating gas appliance (i.e., gas furnace) such that it is no longer used for space heating purposes.

   The Company has no particular expectation or forecast of whether participants will choose to fully electrify their homes and disconnect from the gas system, and consumers may make that choice.

   Enbridge Gas notes that as discussed at Exhibit D, Tab 1, Schedule 1, paragraph 49 electrification measures are not covered in the current IRP Framework and the proposed inclusion of such measures in the pilot is to evaluate these measures on a limited basis. Enbridge Gas is not requesting framework policy be addressed in this application, as it is expected that changes to the IRP Framework would be considered in a future proceeding. The inclusion of electrification measures in the pilot application should also not be taken as Enbridge Gas having any particular position on electrification policy.

b) Enbridge Gas does not have a position or view on the economics of remaining connected to the Enbridge Gas system in this scenario, as the situation, costs and preferences for different consumers can vary significantly, and therefore any point estimate would not be applicable to all consumers. The Company notes that consumer choices are not necessarily purely economic. Most notably, the underlying principle for the ETEE's is providing information and incentives to influence consumers choices, but the choices or decisions are ultimately for consumers to make based on their own circumstances.

c) Confirmed.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Question(s):

Please detail what facility projects will be avoided, delayed or reduced as a result of each proposed Pilot Project.

Response:

The facility projects ("Baseline Facility Alternatives") for Parry Sound are described at Exhibit C, Tab 1, Schedule 1, pages 1 to 3. To see the impact of Pilot Projects on the Baseline Facilities for Parry Sound, please see Exhibit D, Tab 1, Schedule 1, pages 32 to 34.

The Baseline Facility Alternatives for Southern Lake Huron are described at Exhibit C, Tab 1, Schedule 1, pages 3 to 4. To see the impact of Pilot Projects on the Baseline Facilities for Southern Lake Huron, please see Exhibit D, Tab 1, Schedule 2, pages 12 to 14.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Question(s):

a) For each proposed Pilot Project, please provide a copy of the completed IRP Screening documents for the capital project(s) being avoided, delayed or reduced.

b) For the capital project(s) being avoided, delayed or reduced, please provide a copy of all related reports or documents which assesses the technical feasibility and likelihood of IRP alternatives (IRPA) eliminating, reducing or deferring the project scope.

c) Please provide a copy of all materials (e.g. documents, reports, spreadsheets, presentations, etc.) assessing cost effectiveness of the IRP alternatives proposed for each Pilot Project

Response:

a) Please see Appendix B – IRP (Updated) of the EGI Asset Management Plan Addendum - 2024, filed October 31, 2023, in EB-2020-0091.

b) Please see Attachment 1 for the technical evaluation forms

c) As stated in Exhibit B, Tab 1, Schedule 2:

> Enbridge Gas has collaborated with the TWG in determining components of an enhanced DCF+ test; however, at this time the enhanced economic test has not been finalized. Enbridge Gas will file a proposed enhanced DCF+ test along with the DCF+ Supplemental Guide together with the first IRP Plan application in the future. The Company is not seeking any determination from the OEB regarding the draft enhanced DCF+ test or associated Supplemental Guide as part of the current Application.

Please see Exhibit C, Tab 1, Schedule 1 for the Pilot Project Costs & Economics.

Legend	
Mandatory	Do Not Fill
Fill If Applicable	

IRP TECHNICAL REVIEW
(Distribution Pipe Reinforcement / Replacements Projects)

C55 Investment #	30523	**Asset Class**	Growth
Project Name	SRP North Parry Sound Seguin Trail Reinforcement NPS 6 8500m 4960 kPa		
Operating Area (EGI)	Div_43 - Sudbury $ S.S. Marie	**In Service Date (ISD)**	12/31/2032
City/Town	Parry Sound	**IRP Review Lead**	HT
Coordinates	45.492214, -79.455703	**DOE Review Lead**	DE
DOE Supervisor Check	KL	**Date of Review**	2/6/2023

Scope Refinement

Existing Scope (size for size replacements, or SRP reinforcement)

Scope of Work: 8.5 km of NPS 6 steel looping is required on the existing Parry Sound Lateral (4960 kPa) to maintain the minimum inlet into the Parry Sound TBS station (44801002) and support the forecasted growth in Parry Sound. This pipeline supports the entire Parry Sound system and is the sole feed from the TCE Tap. Actual growth rates and loads will need to be confirmed closer to the project planning stages.

Resources: Company crews, 3rd party contractor crews and 3rd party vendors.

Solution Impact: Supports organic growth on the Parry Sound system. This reinforcement supports the entire system and downstream networks.

Modified Scope (Can scope be smaller or shorter for construction year / in-service prior to consideration of IRPAs)

2023- Install CNG to defer project until pipe is required.
Timing TBD, install ~18.8 km of NPS 6 SC 4960 kPa MOP. Install 670 m of NPS 4 SC 1725 kPa MOP.
Rebuild Emsdale CMS to minimize differential across station.

IRP General Review

Is this a replacement project?	No
Is the majority of the project NPS 2?	No
Are there services on this pipeline that cannot be served elsewhere?	No
Are there external factors driving the project schedule?	Yes

Comments

TCE lowering their delivery pressure to EGI is driving the advanced timing, and increase scope of this project.

If the above section fails, Project fails Technical Review (do not continue)

Supply Side - CNG

Is the In Service Date (ISD) - Current day more than 3 Years	Yes
Does system demand decline in 5 years from in-service date?	No
Can CNG be leveraged to defer the project?	Yes

If CNG is implemented for up to 5 years, is the following possible for the project scope?

Elimination	No	**Comments**	
Reduction	No	**Comments**	
Deferral	Yes	**Comments**	

Potential Scope Changes

Project can be defered by using CNG, system being proposed as an IRP pilot to determine peak hour reduction potential. Pipe and station reinforcement work could also be eliminated until at least 2036 with permanent CNG <2000m3/h.

Location used for CNG Injection Location Modelling	**1313855.88,5673844.25**
Likelihood of obtaining land for CNG Injection	**High**
Can a limit of 2,000 m3/hr defer the project for 5 years?	**Yes**
What demand reduction is required?	**1000 - 2000 m³/hr**
What is the MOP (kPa) ?	**1725**
What is the injection pressure (kPa) ?	**1104**
CNG Feasibility	**High**

CNG Recommendation

CNG is recommended to be installed to bridge at least one year of growth and potentially several. Due to the very high costs of the permanent pipe reinforcement, and the low volumes of CNG required, CNG should be considered as a medium-long term solution.

Supply Side - Market Based Supply Side

Is the project area part of a system that is fed by a 3rd party source where contract pressures/capacity can impact the system (i.e. system fed by TCE Tap)	Yes
Would higher pressures or higher capacity impact the project need?	Yes
Pressure Required (kPa)	**Dependent on scope reduction/deferral required**
Capacity Required	**N/A**
If yes to above, are higher pressure/capacity available?	

Based on the Market Based Supply Side analysis, is the following possible for the project scope?

Elimination	No	**Comments**	
Reduction	Yes	**Comments**	
Deferral	Yes	**Comments**	

Market Based Supply Side Feasibility	**High**

Supply Side Recommendation

Depending on the amount of increased pressure potentially available from TCE, this will impact how much scope can be defered/reduced. Discussions have started with TCE to increase the contract delivery pressure. TCE recently retracted an elevated pressure of 4570 kPa, down to 4000 kPa, driving the CNG need for winter 2023/2024.

Demand Side - ETEE

Provide demand reduction needed in Year 1 of project and 5 years out? *fill out Project Data tab*

Based on the ETEE analysis, is the following possible for the project scope?

Elimination	No	**Comments**	
Reduction	Yes	**Comments**	
Deferral	No	**Comments**	Already at a capacity shortfall, ETEE can't defer.

Potential Scope Changes

Preliminary analysis showed that reduction of scope is likely possible, but demand probably can't be reduced enough to completely eliminate all facilities. Detailed scoping is in progress.

How much firm contract demand is on this system	**0**	m3/hr
Would modifications to existing contract customers on the system support a significantly reduced scope?	No	
Demand Side Feasibility	**High**	

ETEE Recommendation

Investigate impact of ETEE on peak hour reduction to facilitate facility reduction so that financials can be determined.

Other Comments

Technical Review - Results

Pass

Viable IRPAs Considered for technical asssessment

CNG	High
Supply Side	High
ETEE	High

Overall Recommendation

CNG, Market-Based Supply Side, ETEE - CNG and Market-Based Supply Side potentially could reduce or defer project scope, ETEE potentially could reduce project scope

IRP Value Rank	**High**

New Project Scope (If applicable)

Due to the high sensitivity of the system to load changes and the large facility costs of improving the capacity of this system, all IRPAs should undergo detailed review so that the optimal alternative can be implemented.

Technical Review - Approval

Date of Tech Review Completion Check	2/6/2023	**Completed By**	HT
Date Provided to IRP Manager for review	2/8/2023	**IRP Mgr Approval**	CR
Date of Approval	2/8/2023		

Legend	
Mandatory	Do Not Fill
Fill If Applicable	

IRP TECHNICAL REVIEW
(Distribution Pipe Reinforcement / Replacements Projects)

C55 Investment #	30560	**Asset Class**	Growth
Project Name	SRP_Southwest_Sarnia_New STN & Reinforcement_NPS6_1600m_420kPa		
Operating Area (EGI)	Southwest	**In Service Date (ISD)**	12/31/2032
City/Town	Sarnia / Camlachie	**IRP Review Lead**	HT
Coordinates	43.008398, -82.320551	**DOE Review Lead**	SE
DOE Supervisor Check	KL	**Date of Review**	2/6/2023

Scope Refinement

Existing Scope (size for size replacements, or SRP reinforcement)

A new distribution station off of the existing 1,210 kPa system and a main extension to tie into the 420 kPa system north of Sarnia along the water is required.

Modified Scope (Can scope be smaller or shorter for construction year / in-service prior to consideration of IRPAs)

Project now required in 2025, other facility alternatives will be considered and assessed

IRP General Review

Is this a replacement project?	No
Is the majority of the project NPS 2?	No
Are there services on this pipeline that cannot be served elsewhere?	No
Are there external factors driving the project schedule?	No

Comments

If the above section fails, Project fails Technical Review (do not continue)

Supply Side - CNG

Is the In Service Date (ISD) - Current day more than 3 Years	Yes
Does system demand decline in 5 years from in-service date?	No
Can CNG be leveraged to defer the project?	Yes

If CNG is implemented for up to 5 years, is the following possible for the project scope?

Elimination	No	**Comments**	
Reduction	Yes	**Comments**	May work but financial viability needs to be reviewed
Deferral	Yes	**Comments**	Works

Potential Scope Changes

The scope requires a new lateral pipe to tie into the existing system so financial analysis is required to determine if ETEE costs can justify downsizing and intoducing a bottleneck into the system

Location used for CNG Injection Location Modelling	**43.042070, -82.184291**
Likelihood of obtaining land for CNG Injection	**High**
Can a limit of 2,000 m3/hr defer the project for 5 years?	**Yes**
What demand reduction is required?	**< 500 m³/hr**
What is the MOP (kPa) ?	**420**
What is the injection pressure (kPa) ?	**175**

CNG Feasibility	**High**

CNG Recommendation

90 m3/hr in 2025 and 190 m3/hr in 2029

Supply Side - Market Based Supply Side

Is the project area part of a system that is fed by a 3rd party source where contract pressures/capacity can impact the system (i.e. system fed by TCE Tap)	No
Would higher pressures or higher capacity impact the project need?	No
Pressure Required (kPa)	
Capacity Required	
If yes to above, are higher pressure/capacity available?	

Based on the Market Based Supply Side analysisis, is the following possible for the project scope?

Elimination	No	**Comments**	
Reduction	No	**Comments**	
Deferral	No	**Comments**	

Market Based Supply Side Feasibility	**N/A**

Supply Side Recommendation

N/A

Demand Side - ETEE

Provide demand reduction needed in Year 1 of project and 5 years out? *fill out Project Data tab*

Based on the ETEE analysis, is the following possible for the project scope?

Elimination	Yes	**Comments**	Depends on ETEE reduction potential, not likely
Reduction	Yes	**Comments**	May work but finacial viability is questionable
Deferral	Yes	**Comments**	

Potential Scope Changes

The scope requires a new lateral pipe to tie into the existing system so financial analysis is required to determine if ETEE costs can justify downsizing and intoducing a bottleneck into the system

How much firm contract demand is on this system	**0**	m3/hr
Would modifications to existing contract customers on the system support a significantly reduced scope?	No	

Demand Side Feasibility	**High**

ETEE Recommendation

0.4% blanket res/com reduction required by 2025 and 3.4% by 2029 above ETSA. There is sufficient time to determine if ETEE can defer the project

Other Comments

Technical Review - Results

Pass

Viable IRPAs Considered for technical asssessment

CNG	High
Supply Side	N/A
ETEE	High

Overall Recommendation

CNG, ETEE - Potentially could defer project scope.

IRP Value Rank	**High**

New Project Scope (If applicable)

Consider this project for further detailed analysis. Economics will need to be determined. High likelihood to defer, downsizing is not as favourable as it will restrict the area in the future again.

Technical Review - Approval

Date of Tech Review Completion Check	2/6/2023	**Completed By**	HT
Date Provided to IRP Manager for review	2/8/2023	**IRP Mgr Approval**	CR
Date of Approval	2/8/2023		

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Reference:

PollutionProbe_IR_AppendixA_EnbridgeIRPGuide_20231013

Question(s):

a) Please confirm that Enbridge created its internal IRP Guide to guide IRP assessment in accordance with OEB requirements.

b) Please explain how Enbridge's IRP Guide was used to identify and assess the opportunity to apply IRP for the pilots. Alternatively, if the Guide was not used, please explain why not.

Response:

a) Enbridge Gas interprets this question to be referring to the "Draft Binary & Technical Screening document".[1] This document is not intended "guide IRP assessment in accordance with the OEB requirements". It is a supplemental document that is used to support Enbridge Gas's technical assessments. This document will be updated on an annual basis to reflect any learnings obtained during Enbridge Gas's ongoing IRP Assessment Process, and the updated document will be included in the IRP Annual Report for stakeholder review.

   This approach is aligned with the OEB requirements set out in the EB-2020-0091 Decision which states:

   > Within its annual IRP report, Enbridge Gas is to report on the results of its IRP Assessment Process, including reporting on those system needs where a negative result at step two (binary screening) or step 3 (technical/economic evaluation) resulted in a determination by Enbridge Gas for no further assessment of IRPAs. The IRP Technical Working Group will also be expected to review a draft of Enbridge Gas's annual IRP report, with the review coordinated by OEB staff.[2]

[1] EB-2022-0200, Exhibit JT5.36, Attachment 2.
[2] EB-2020-0091, Decision and Order, July 22, 2021, P. 38.

b) The Draft Binary & Technical Screening document described in part a) was not used to assess the Pilot Projects. The Draft Binary & Technical Screening document is a compilation of learnings to be applied systematically in future technical assessments of projects within the Asset Management Plan ("AMP").

The two Pilot Projects passed the Binary Screening and were then technically assessed for viable IRP alternatives.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Question(s):

For each Pilot Project impacted area, please provide:

a) The total peak system design capacity
b) The current peak capacity per year for the past 10 years
c) The peak capacity reduction targeted by the pilot project
d) A list of upstream pipelines that feed the pilot area (or a map of the gas supply route to feed these communities from transmission lines if that is easier)

Response:

a) The capacity of the system (its ability to service demands) is dependent on the demands, the location of the demands, and the system configuration. All of these items are changing on a regular basis, and in some cases on a daily basis.

   To calculate the system capacity, there must be a discrete system (like the 4960 kPa feed into Parry Sound) or a discrete scenario. Neither of these exist for the South Lake Huron Pilot Project area, which is a complex and interconnected system. The same can be said for the Parry Sound 1725 kPa and 420 MOP systems, where capacity depends on actual attachments and locations.

   Based on the current system and it being primarily a single feed with most demand at the end, the Parry Sound 4960 kPa lateral has approximately 55 m^3/hr capacity remaining. This assumes that Enbridge Gas can continue to meet the minimum inlet pressure into the Parry Sound Town Border Station on a design day (and assuming 4000 kPa from TC Energy).

b) The peak capacity for each system for the past 10 years cannot be determined due to changing systems (new pipelines and/or station modifications) and customers behaviors.

c) The purpose of the Pilot Projects is to explore peak hour demand reductions, not capacity reductions. For the estimated peak hour demand reduction targeted by the Pilot Projects please see Exhibit D, Tab 1, Schedule 1, page 32 for Parry Sound and Exhibit D, Tab 1, Schedule 2, page 13 for South Lake Huron.

d) Please see Exhibit B, Tab 1, Schedule 1, pages 5 to 6 for Parry Sound, and Exhibit B, Tab 1, Schedule 1, page 10 for Southern Lake Huron.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Question(s):

For each proposed Pilot Project, please provide the following:

- Please provide a list of objectives from the municipality that were provided for consideration and explain which were accepted/rejected by Enbridge and why.
- Please provide a list of objectives from the local LDCs that were provided for consideration and explain which were accepted/rejected by Enbridge and why.
- Please provide a list of objectives from the IESO that were provided for consideration and explain which were accepted/rejected by Enbridge and why.
- Please provide a list of objectives from the OEB IRP Technical Working Group that were provided for consideration and explain which were accepted/rejected by Enbridge and why.
- Please provide a list of objectives from other relevant stakeholders that were provided for consideration and explain which were accepted/rejected by Enbridge and why.

Response:

Enbridge Gas did not receive a list of objectives from municipalities, LDCs, the IESO or other stakeholders for the Pilot Projects. Please see response at Exhibit I.PP-15 and Exhibit I.PP-30 for more details on the type and content of the discussions Enbridge Gas had with stakeholders. Discussions, meeting notes, and presentations that support the work with the Technical Working Group (“TWG”) can be found in response at Exhibit I.ED-2.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Question(s):

Please provide a full list of potential IRP alternatives that could be applied under the OEB IRP Decision and related IRP Framework. Please provide a column for each pilot project proposed and mark which of IRP alternatives from the full list are proposed to be applied to each pilot project.

Response:

The following provides the full list of potential IRP alternatives (IRPAs) that could be applied under the OEB IRP Decision.

IRP Alternatives	**Parry Sound**	**Southern Lake Huron**
Supply Side		
Market-based supply side alternatives (i.e. contractual agreement on delivery of natural gas)	Y	N/A
Compressed Natural Gas (CNG) / Liquified Natural Gas (LNG) injected into constrained area	Y	Y
Renewable Natural Gas (RNG) sourced in constrained area and injected into constrained area	N/A – no available firm RNG supply in system	N/A - no available firm RNG supply in system
Demand Side		
Enhanced Targeted Energy Efficiency (ETEE)	Y	Y
Demand Response (DR) – General Service	N	Y
Demand response (DR) - Interruptible Rates	N/A – no contract customers	N/A – one contract customer but already on interruptible rate

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Question(s):

For each pilot project, please provide a table of each IRP alternative being piloted and include the following information for each:

- Number of customers for each IRP alternative proposed (by customer type if possible)
- The estimated peak (per unit and total) demand load reduction per IRP alternative
- The estimated cost (per unit and total) per IRP alternative
- The estimated benefit (per unit and total) per IRP alternative
- The net economic analysis result (all IRP tests) (per unit and total) per IRP alternative

Response:

Please see the following information requested for the Parry Sound Pilot Project:

	Supply Side – Increased Pressure	**Supply Side – CNG**	**Demand Side – ETEE**
# of customers	See Exhibit D, Tab 1, Schedule 1, Page 8, Table 2		
Estimated peak hour reduction (per year)	N/A	N/A	Exhibit D, Tab 1, Schedule 1, Page 32, Table 12
Estimated peak hour reduction (total)	N/A	N/A	187 m^3/hr
Estimated cost (per unit)	N/A	N/A	$18,609 / m^3/hr
Estimated cost (total)	Exhibit E, Tab 1, Schedule 1, Attachment 1, Line 1	Exhibit E, Tab 1, Schedule 1, Attachment 1, Line 2 and Attachment 2 Line 1	Exhibit E, Tab 1, Schedule 1, Page 5, Table 3, Line 16
Estimated benefit	Benefits were not estimated as a DCF+ test was not conducted.		
Net Economic Analysis	Exhibit E, Tab 1, Schedule 1, Page 10, Table 6		

Please see the following information requested for the Southern Lake Huron Pilot Project:

	Supply Side – CNG	**Demand Side – ETEE**	**Demand Side - DR**
# of customers	Exhibit D, Tab 1, Schedule 2, Page 6, Table 2 & 3		
Estimated peak hour reduction (per year)	N/A	Exhibit D, Tab 1, Schedule 2, Page 13, Table 5	
Estimated peak hour reduction (total)	N /A	Exhibit D, Tab 1, Schedule 2, Page 13, Table 5	
Estimated cost (per unit)	N/A	Exhibit E, Tab 1, Schedule 1, Page 13, Table 10	
Estimated cost (total)	Exhibit E, Tab 1, Schedule 1, Attachment 1, Line 12 and Attachment 2 Line 6	Exhibit E, Tab 1, Schedule 1, Page 13, Table 9, Line 5	Exhibit E, Tab 1, Schedule 1, Page 13, Table 9, Line 10
Estimated benefit	Benefits were not estimated as a DCF+ test was not conducted.		
Net Economic Analysis	Exhibit E, Tab 1, Schedule 1, Page 18, Table 13		

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Reference:

"…the Company intends to present a three-stage enhanced DCF+ as part of its first full IRP Plan application for adjudication, not as part of the current Application…" [Exhibit B, Tab 1, Schedule 1, Page 5]

Question(s):

a) Please explain why this application is exempt from full DCF consideration including the three-stage enhanced DCF.

b) Has Enbridge conducted its own DCF calculations for the proposed Pilot Projects? If yes, please provide a copy.

Response:

a) As described in Exhibit B, Tab 1, Schedule 2, pages 3, 5 and 6, due to the timing of the work with the Technical Working Group on the enhanced DCF+ test and the primary objectives of the Pilots Projects, only a Stage 1 test was completed for the purposes of the Pilot Projects. Enbridge Gas's proposed DCF+ methodology will be filed in 2024 with the first IRP Plan per the OEB's IRP Decision in EB-2020-0091 where it states:

> The OEB directs that Enbridge Gas file an enhanced DCF+ test for approval as part of the first non-pilot IRP Plan.[1]

b) Enbridge Gas has not completed a DCF+ analysis for the Pilot Projects.

[1] EB-2020-0091, Decision and Order, July 22, 2021, P. 57

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Question(s):

For each pilot area:

a) Please explain what curtailment tools are included or considered options for each pilot area being considered.

b) Please provide what amount (and percentage) of the peak load could be avoided if all commercial and industrial large volume customers could be curtailed.

Response:

a) There are no large volume customers on the Parry Sound system where curtailment is an option. In the Southern Lake Huron system, there is one contract customer with fully interruptible service as noted in Exhibit B, Tab 1, Schedule 1, page 10, footnote 11. This customer is assumed curtailed on design conditions. This customer is not located in the Southern Lake Huron Area of Influence and has minimal effect on the system constraint.

b) As noted in part a), there is only one large volume customer in the Pilot Project areas, which has minimal effect on the system constraint when curtailed.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Question(s):

For each pilot area please provide an estimate of DSM/Greener Homes Grant results expected over the next 10 years, by year and in aggregate.

Response:

The funding for the current DSM Plan through the 2023 to 2025 DSM Plan Decision (EB-2021-0002) ends as of December 31, 2025. The funding for Canada Greener Homes incentives ends as of March 31, 2027. Enbridge Gas is unable to provide an estimate of DSM/Greener Homes Grant results expected for each of the Pilot Project areas, as the Company does not forecast DSM results geographically and has no tested methodology to do so, nor does Enbridge Gas believe there would be any accuracy in such a forecast.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Question(s):

Did Enbridge conduct broader integrated energy considerations (e.g. the community full energy needs and plans to meet those needs) as part of Pilot Projects or just those related to natural gas for each Pilot Project?

Response:

Enbridge Gas engaged local stakeholders, including the municipalities, local distribution companies ("LDCs"), and Hydro One to better understand their growth forecasts and electric system constraints as part of the stakeholder engagement process. However, the Pilot Projects are only focused on the natural gas facility needs per the objectives of the IRP Pilots. Please see response at Exhibit I.PP-15 for a summary of the discussions during those meetings.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Reference:

"Following the OEB's Decision on Enbridge Gas's IRP proposal, the Company developed specific objectives for the pilot projects (described in detail at Exhibit C, Tab 2, Schedule 1). Enbridge Gas then selected two Pilot Projects that were able to meet those objectives." [Exhibit B, Tab 1, Schedule 1, Page 1]

Question(s):

Please provide a copy of the completed evaluation for all pilot options considered, including the Pilot Projects selected by Enbridge.

Response:

Please see Exhibit C, Tab 1, Schedule 2, page 3, Table 1.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Reference:

[Exhibit C, Tab 1, Schedule 1]

Question(s):

Enbridge indicates that in the 2023-2032 AMP, the required in-service date to address the identified system need/constraint in the Parry Sound system is 2032, but then Enbridge identifies additional projects for Parry Sound in 2025, 2027 and 2030. Are all these projects avoided if the IRP alternatives are successful? If not, please explain.

Response:

No, please see Exhibit D, Tab 1, Schedule 1, pages 32 to 34 and Exhibit D, Tab 1, Schedule 2, pages 12 to 14, where Enbridge Gas states that the baseline facility projects are required but will be reduced and deferred through the implementation of the IRP Plan. Please also see response at Exhibit I.PP-1.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Reference:

[Exhibit C, Tab 1, Schedule 1]

Question(s):

Enbridge indicates that In the 2023-2032 AMP, the required in-service date to address the identified SLH system need/constraint is 2032, but then Enbridge identifies additional projects for SLH in 2025 and 2032. Are all these projects avoided if the IRP alternatives are successful? If not, please explain.

Response:

No, please see Exhibit D, Tab 1, Schedule 2, page 14, paragraph 29:

> Based on the above estimated peak hour reductions from the proposed ETEE and DR programming, Enbridge Gas expects the timing for some of the baseline facility projects designed to address the underlying identified system need/constraint (as described in Exhibit C, Tab 1, Schedule 1) will be deferred. Accordingly, the facilities described below are expected to be required at the conclusion of the Southern Lake Huron Pilot Project, for a total cost of $3.25 M. While the projected scope of these facility projects is not expected to change materially at the conclusion of the Southern Lake Huron Pilot Project, it is important to note that scope changes are somewhat dependent upon Pilot Project participant levels, realized peak hour reductions and location of the reductions. The timing and scope of the underlying identified system need/constraint will be reassessed throughout the Pilot Project to understand whether facilities can be further deferred following the initial Pilot Project term. Where such assessment indicates that the baseline facilities can no longer be deferred, the Company will complete a thorough review of all facility and non-facility alternatives in order to select a preferred alternative.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Question(s):

a) Please provide a copy of the criteria and weighting used to select each pilot location.

b) Please provide the completed assessment used to evaluate and select the pilot locations.

c) Please provide a copy of the correspondence to the municipalities and related LDCs for the Pilot Project identifying the reasons for selecting their territory for the gas IRP pilot.

Response:

a-b) Please see Exhibit C, Tab 1, Schedule 2, pages 1 to 8 for details on the weighting and criteria used to select each Pilot Project location.

In addition, please see EB-2023-0092, Exhibit H, Tab 1, page 6 and 7 where Enbridge Gas explains that the Pilot Project selection process was undertaken by Enbridge Gas and input was sought from the IRP Technical Working Group ("TWG") during Q2 and Q3 2022. As noted in the above referenced evidence, the selection process included Enbridge Gas defining the objectives and developing a set of criteria to guide the Pilot Project selection process. The objectives together with the criteria formed the basis for a 'Pilot Evaluation Criteria and Scoring Matrix' that was applied to potential Pilot Project options.

The objectives of the Pilot Projects are to:

- Develop an understanding of how to design, deploy and evaluate an enhanced targeted energy efficiency ("ETEE") and a demand response ("DR") program.
- Develop the ability and data to understand how ETEE and DR measures impact peak-hour demands.

Enbridge Gas reviewed the Company's 10-year Asset Management Plan ("AMP") to develop a list of potential Pilot Project options, and considered the following:

- The forecast system need should pass the binary screening set out in the IRP Framework for Enbridge Gas.
- The Pilot Project should have the potential to avoid, defer or reduce a forecasted system need identified in Enbridge Gas's most recent 10-year AMP.
- The Pilot Project should have the potential for effective data collection and measurement of the impact that IRPAs have on peak demand.
- The Pilot Project should act as a "proof-of-concept" project with potential for scalability and transferrable learnings.

The potential Pilot Project options were then evaluated and ranked using a weighted average scoring matrix, outlined in the table below (which is a reproduction of Table 1 at Exhibit C, Tab 1, Schedule 2). Enbridge Gas selected the two projects the Company identified as scoring the highest on the matrix, Southern Lake Huron and Parry Sound. More details including presentations and the Enbridge Gas rationale behind each of the evaluation criteria can be found on the OEB IRP Technical Working Group web page[1] and in response at Exhibit I.ED-2.

		Multiple System Needs			Single System Need				
Criteria	**Weight**	**Sarnia**	**Ottawa**	**Brantford**	**Bayfield**	**Brooklin**	**Kemptville**	**Parry Sound**	**Southampton**
System configuration	15%	3	1	3	4	3	4	5	4
Balanced customer mix & potential for scalability	25%	4	5	4	2	2	3	2	2
Peak hourly flow data collection potential	25%	5	1	2	3	3	3	4	3
Feasibility of supply-side IRPA implementation in the short-term	15%	4	2	3	3	4	5	5	5
Feasibility for ETEE	20%	3	1	2	5	2	3	4	2
Weighted Average	100%	**3.9**	2.2	2.8	3.3	2.7	3.5	**3.8**	3.0

c) Please see Attachment 1 for the presentations used during the initial meetings with municipalities, LDCs, and the Independent Electricity System Operator, that discuss

[1] Natural Gas Integrated Resource Planning (IRP) | Engage with Us (oeb.ca) (Meeting #'s 5,6,8,10,12, 14,16)

the reasons for selecting their municipalities / areas for a Pilot Project.

Parry Sound IRP Pilot

December 15, 2022

ENBRIDGE

Pathways to Net Zero Emissions for Ontario

Report Summary

ENBRIDGE

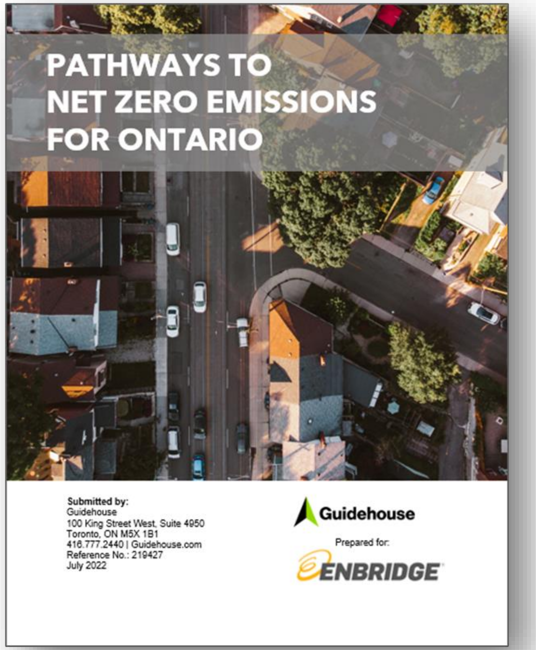
Date

Pathways To Net Zero

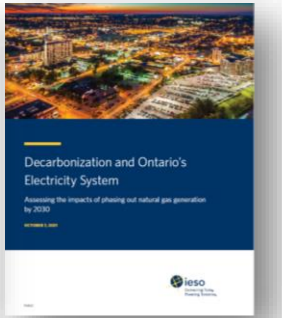
- Enbridge is committed to supporting the achievement of a clean energy future in Ontario.
  - Actively working on solutions to help meet Ontario's energy needs, while reducing emissions cost effectively.
  - Proactively engaged a consultant to evaluate energy system pathways to net zero.
- Approximately 30 percent of emissions in Ontario are from the use of natural gas.
- While Ontario is on track to meet its 2030 emission target of 30 percent below 2005 levels, achieving net zero requires more investment in renewables, lower emissions fuels and carbon capture.
- The gas distribution system in Ontario is a resource that can be leveraged to enable further GHG reductions beyond 2030, including net zero.

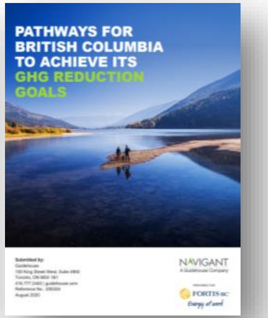
ENBRIDGE
Life Takes Energy

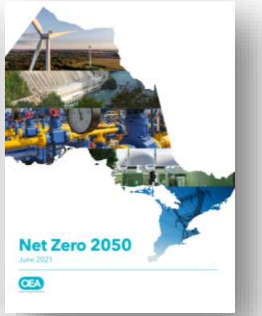
Pathways To Net Zero

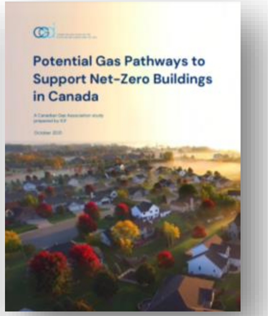


- Enbridge commissioned a study to evaluate two energy system pathways to net zero; Diversified & Electrification
- The study showed both pathways are expensive, and that **a diversified pathway, with pipes and wires, is a more cost effective and reliable pathway to net-zero.**
- Regardless of the pathway chosen, there are “safe bet” actions that should be taken immediately for Ontario to reach net zero.
- This is further supported by studies conducted across North America and Europe.





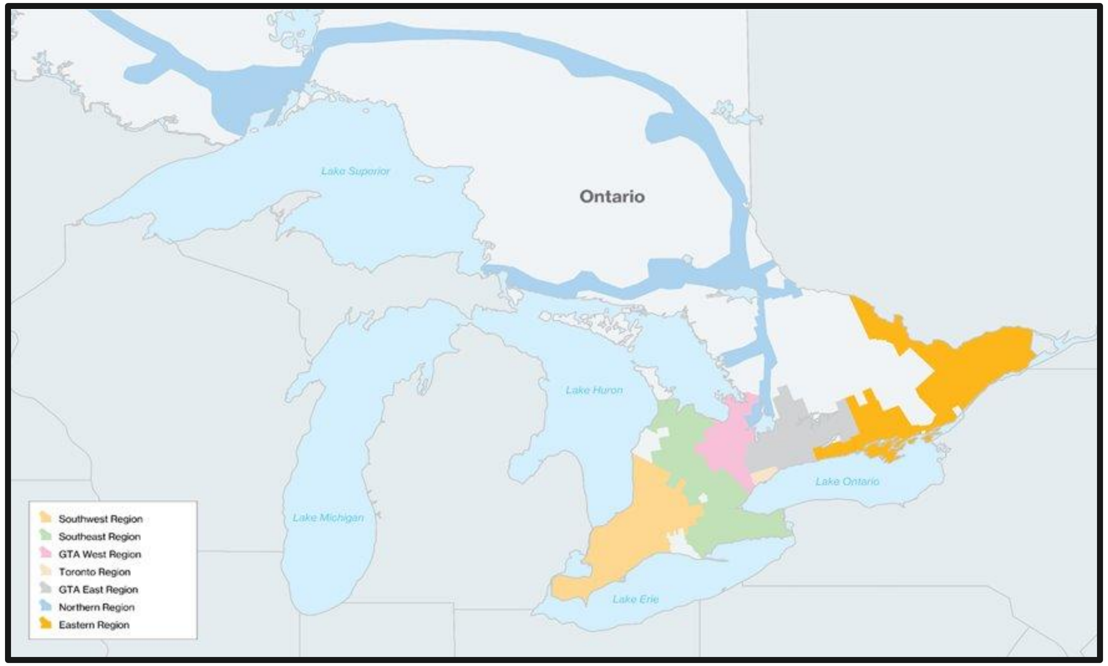




Integrated Resource Planning

Planning For the Future

- Over the next 30 years, Ontario's population is expected to grow by nearly 5.3 million.
- Through the Integrated Resource Planning process, we forecast energy demand to determine whether a traditional pipe project or an alternative will meet energy needs.
- As part of this process, we're gathering input and feedback from communities on what matters most.



Integrated Resource Planning

- Integrated Resource Planning (IRP) is an enhanced planning strategy and process[1].
- Enbridge Gas evaluates non-pipeline alternatives that could be used to defer or avoid implementing a traditional pipe project to meet a system need.
- Consideration is given to safety, cost-effectiveness, and the ability for alternative solutions to meet customer demands reliably.

[1] IRP Framework was published by the OEB on July 22, 2021.

ENBRIDGE
Life Takes Energy

IRP Alternatives (IRPAs)

Non-pipeline alternatives can include:

- **Demand side alternatives:**
  - Lowering energy use through energy efficiency programs such as Enhanced Targeted Energy Efficiency (ETEE) programs or Demand Response programs
- **Supply side alternatives:**
  - Delivering more energy without adding new pipeline using Compressed Natural Gas (CNG) or Liquified Natural Gas (LNG)
  - Displacing conventional natural gas with carbon-neutral Renewable Natural Gas and Hydrogen
  - Adding supply through upstream deliveries
- Alternatives can be implemented individually or in combination to meet the system need cost-effectively and within the required timeframe.

How to Stay Involved

Visit our Regional Planning webpage to:

- Sign-up for email updates to receive information for upcoming stakeholder events and webinars
- Register for events
- Review regional pages that include all IRP projects in your community
- Submit feedback through the 'Have your Say'
- Search for other IRP information as required

Sign-up today for email updates and don't miss out on future IRP events!

https://www.enbridgegas.com/sustainability/regional-planning-engagement

Over the next 30 years, Ontario's population is expected to grow by nearly 5.3 million[1]. To keep up with energy demands, we're planning now to ensure our natural gas system can meet long-term energy needs affordably and sustainably.

Through our regional Integrated Resource Planning (IRP) process, we forecast what energy demand will look like and determine whether a traditional pipe project or an alternative will meet the energy need, and then lay out a roadmap for how we'll manage it. As part of this process, we're gathering input and feedback from communities on what matters most.

What options will regional plans explore?

Regional Integrated Resource Planning explores energy needs and the associated costs and benefits of a pipe or an alternative solution such as:

- Conservation and demand management
- Clean energy options, such as compressed and renewable natural gas
- Pilot projects

Community engagement

We are gathering input from Indigenous groups and community stakeholders to help us understand what matters most. Stakeholders can include customers, intervenors, environmental groups, municipalities, government and other groups.

How the process works

1

Identifying needs

The first step is to identify the energy needs and the associated project.

2

Screening the need

Needs that require more urgent action may be excluded from the IRP. Additionally projects may also be screened out by specific criteria that has been approved by the Ontario Energy Board.

3

Two-stage evaluation

Project alternatives will be evaluated based on technical and economic feasibility. During this evaluation stage a decision to move forward with a traditional pipe project or an alternative will be made.

4

Periodic review

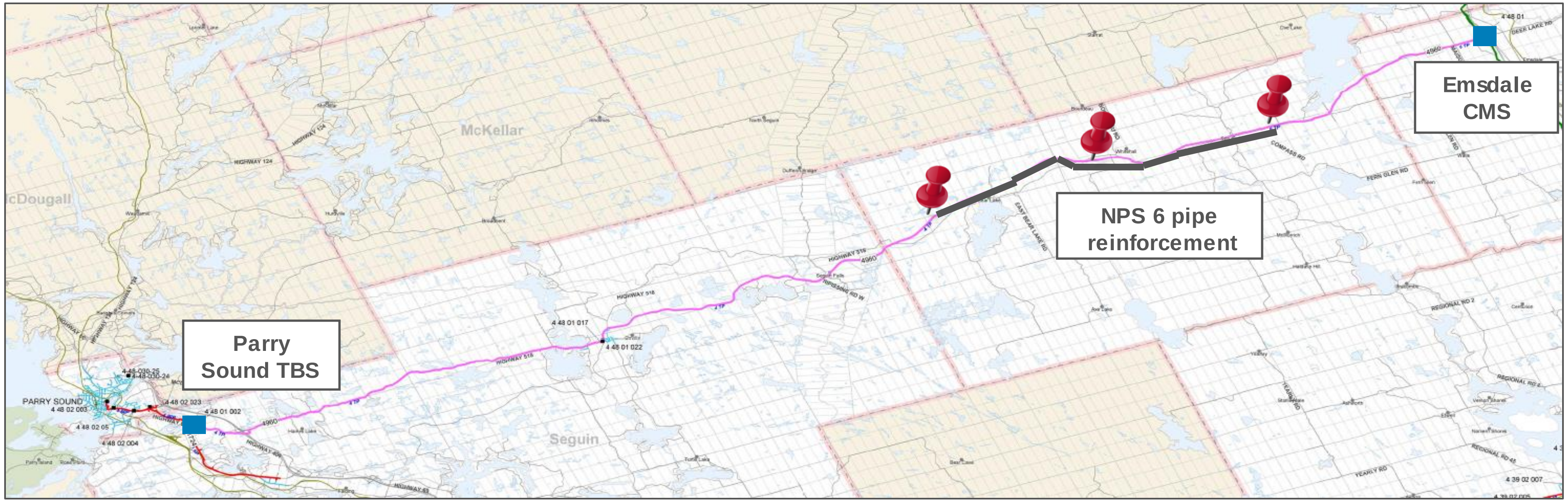
Changes, such as policies or timing, may impact the decisions made in the previous steps. Any changes will be reported annually.

IRP Pilot

Overview of Parry Sound

Parry Sound System Overview

- Parry Sound system is fed by TC Energy (Emsdale CMS) with an existing NPS 4 and 6 4960kPa MOP feeding into Parry Sound TBS
- Customers are connected to the distribution systems downstream of Parry Sound TBS
- System reinforcement was originally identified as a requirement in 2032 due to growth
- Recent reduction in contracted pressure from TC Energy has advanced the original system reinforcement from 2032 to 2023. Detailed designs are now being reviewed.



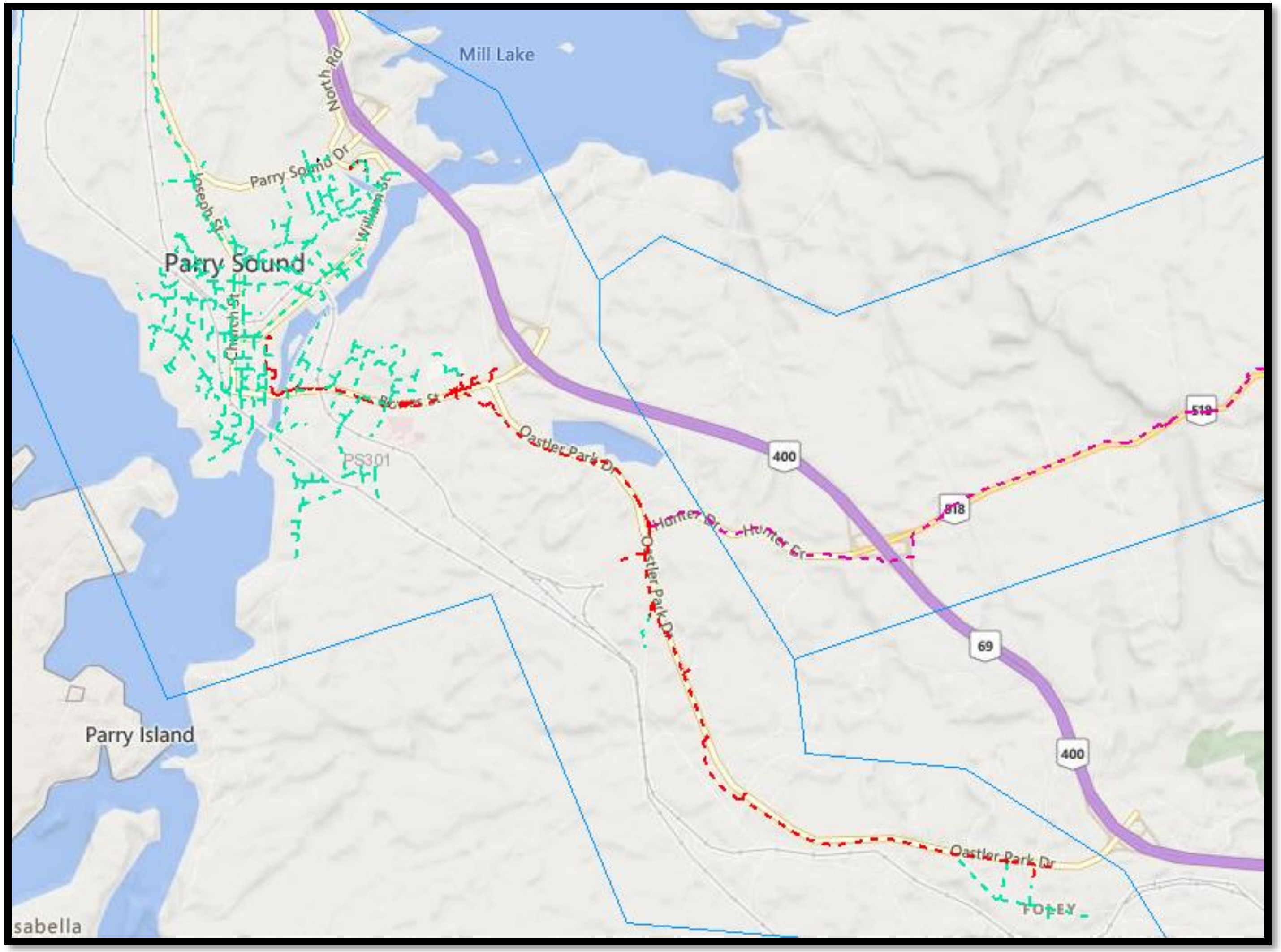
Parry Sound System Overview

- **Existing Customer Mix**
  - ~2070 customers (1800 Residential, 270 Commercial/Industrial)

    * Note: Apartments units are considered residential
- **Demand Forecast for Parry Sound**
- Data is collected from a variety of sources to determine the load forecast (approved proposals, municipal draft plans, econometric forecast, energy transition factors)
  - Load forecast & existing customer usage data combined to determine demand forecast & 10-year infrastructure requirements
  - Customer Average use by type (residential, commercial)
  - Projected Growth: 472 Residential, 59 Commercial forecasted from 2022 to 2031
    - > ~ 50 residential units / year for 10 years (declining forecast)
    - > ~6 commercial units / year over 10 years

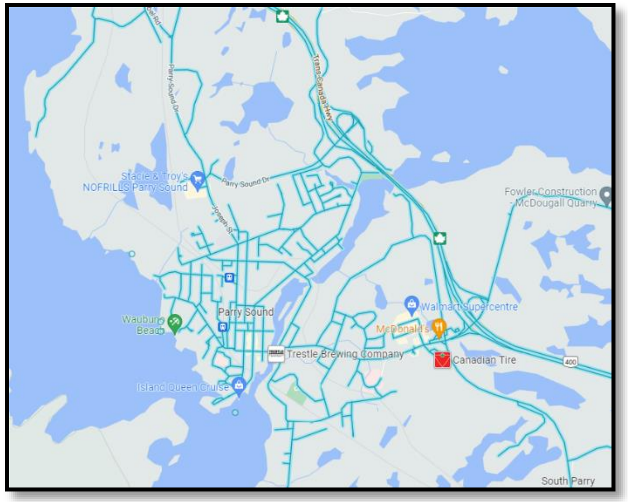
Parry Sound System

- Forecasted growth on the system is spread out, or placed at known locations when provided
- Zoning changes?
- Municipal growth plans?



Parry Sound Pilot Overview

- **Key Pilot Objectives**
  - Develop an understanding of how to design, deploy and evaluate an Enhanced Targeted Energy Efficiency (ETEE) program.
  - Develop the ability and data to understand how ETEE measures impact peak hour demands.



- **Selected IRPAs**
  - Supply Side – Higher contracted source pressure from TCE
  - Supply Side – CNG as a bridging solution
  - Demand Side – Enhanced Targeted Energy Efficiency (ETEE)

- **Measurement**
  - Customer hourly measurement (via ERTs) and additional metering to be installed to help understand and evaluate the impacts of IRPAs on the system

Southern Lake Huron IRP Pilot

Jan. 16, 2023

ENBRIDGE

Pathways to net-zero emissions for Ontario

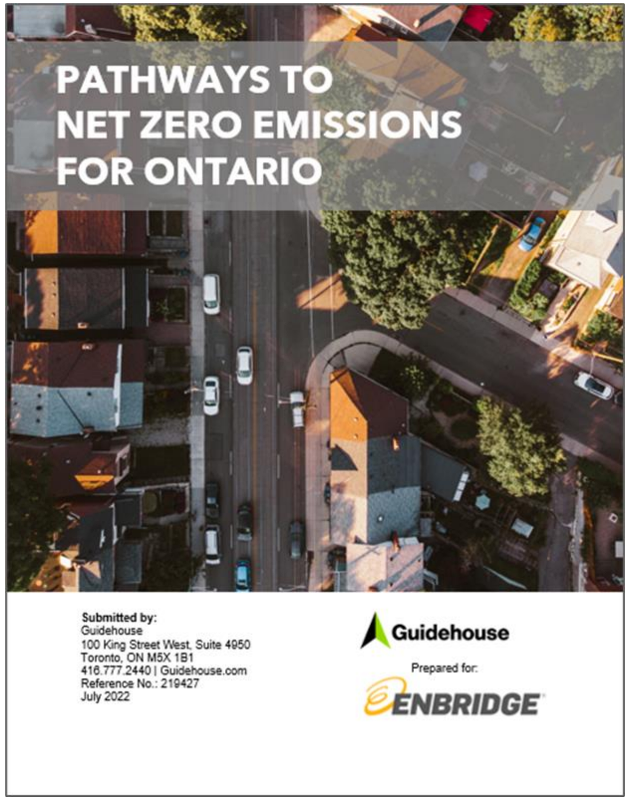
Report summary

ENBRIDGE
Life Takes Energy

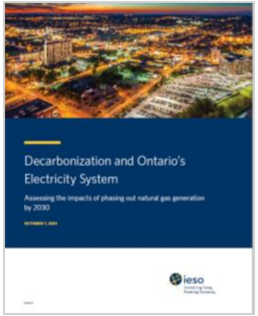
Pathways to net zero

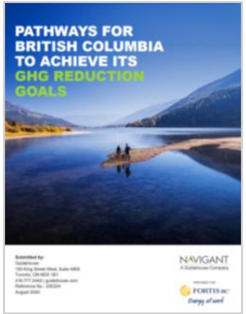
- Enbridge is committed to supporting the achievement of a clean energy future in Ontario.
  - Actively working on solutions to help meet Ontario's energy needs, while reducing emissions cost effectively.
  - Proactively engaged a consultant to evaluate energy system pathways to net zero.
- Approximately 30 percent of emissions in Ontario are from the use of natural gas.
- While Ontario is on track to meet its 2030 emission target of 30 percent below 2005 levels, achieving net zero requires more investment in renewables, lower emissions fuels and carbon capture.
- The gas distribution system in Ontario is a resource that can be leveraged to enable further GHG reductions beyond 2030, including net zero.

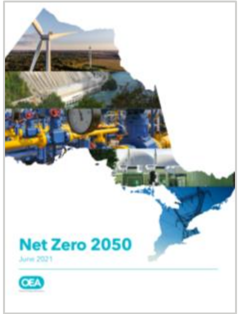
Pathways to net zero

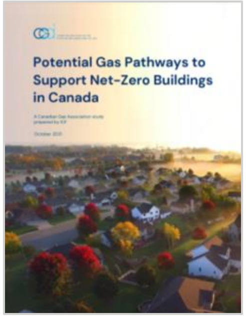


- Enbridge commissioned a study to evaluate two energy system pathways to net zero; Diversified & Electrification.
- The study showed both pathways are expensive, and that a diversified pathway, with pipes and wires, is a more cost effective and reliable pathway to net zero.
- Regardless of the pathway chosen, there are “safe bet” actions that should be taken immediately for Ontario to reach net zero.
- This is further supported by studies conducted across North America and Europe.









Integrated Resource Planning

Planning for the future

ENBRIDGE
Life Takes Energy

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Integrated Resource Planning

ENBRIDGE
Life Takes Energy

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[1] IRP Framework was published by the OEB on July 22, 2021.

IRP Alternatives (IRPAs)

Non-pipeline alternatives can include:

- Demand side alternatives:
  - Lowering energy use through energy efficiency programs such as Enhanced Targeted Energy Efficiency (ETEE) programs or Demand Response programs.
- Supply side alternatives:
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How to stay involved

ENBRIDGE
Life Takes Energy®

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The first step is to identify the energy needs and the associated project.

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3

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Project alternatives will be evaluated based on technical and economic feasibility. During this evaluation stage a decision to move forward with a traditional pipe project or an alternative will be made.

4

Periodic review

Changes, such as policies or timing, may impact the decisions made in the previous steps. Any changes will be reported annually.

IRP Pilot

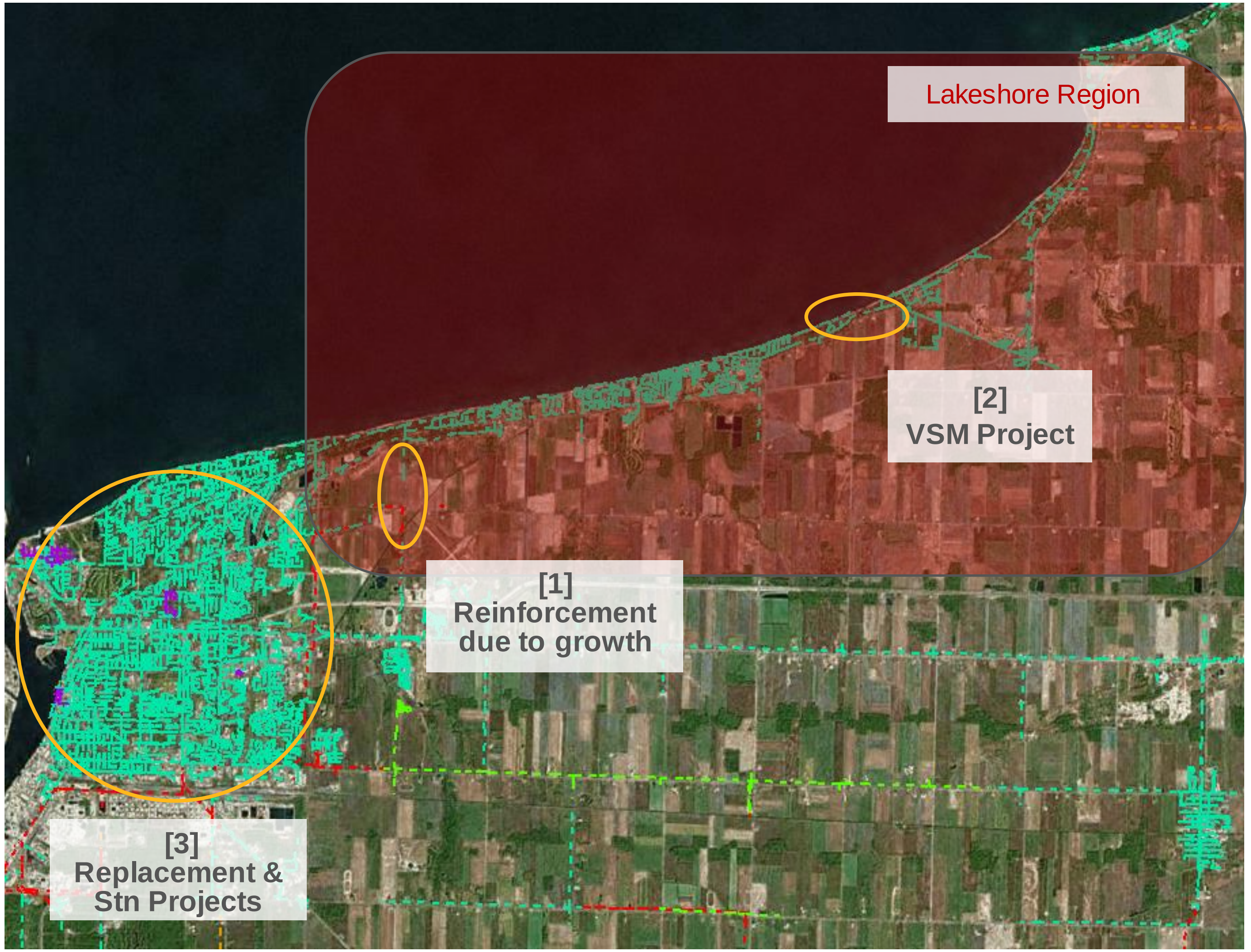
Overview of Southern Lake Huron

ENBRIDGE

Southern Lake Huron System overview

ENBRIDGE
Life Takes Energy

- Southern Lake Huron distribution system is fed by multiple stations.
- Observing an increase in growth along Lakeshore region (low point on system).
- Pipe and station reinforcement and Vintage Steel Main (VSM) project located within Lakeshore region.
- Additional replacement and station projects located within Sarnia core.



Southern Lake Huron System overview

Existing customer mix

- Entire Southern Lake Huron: ~30,000 customers (27,960 residential, 2,100 commercial, 70 industrial).
- Lakeshore region ~4,200 customers (4,100 residential, 80 commercial, 10 industrial).

Demand forecast for Lakeshore

- Data is collected from a variety of sources to determine the load forecast, such as approved proposals, municipal plans, econometric forecast, energy transition factors, etc.
- Load forecast and existing customer usage data are combined to determine demand forecast and 10-year infrastructure requirements.
- Customer average use by type (residential, commercial).
- Projected growth in Lakeshore region: 650 customers forecasted from 2022 to 2031.
  - Primarily assumed 65 residential units/year for 10 years (declining forecast).

Southern Lake Huron Pilot overview

Key pilot objectives

- Develop an understanding of how to design, deploy and evaluate an Enhanced Targeted Energy Efficiency (ETEE) and Demand Response (DR) program.
- Gain insight into how ETEE measures & DR programs impact peak hour demand.

Selected IRPAs

- Demand Side: Enhanced Targeted Energy Efficiency (ETEE)
- Demand Side: Demand Response (DR)

Measurement

- Hourly measurement tools already exist in most of the Southern Lake Huron area.
- These devices have been activated to help record data at a more granular level, which will help understand and evaluate the impacts of IRPAs on the system.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Question(s):

The OEB requires Enbridge to implement IRP assessment and alternatives on all project in the Asset Management Plan and the OEB indicated that the implementation of pilots should not be a barrier to addressing a system need through IRP. Please explain how the Pilot Projects are different from just applying regular IRP requirements and what would be different if Enbridge just applied regular IRP requirements to these projects rather than treating them as specific pilot projects.

Response:

In its Decision and Order in the EB-2020-0091 proceeding ("IRP Decision"), the OEB stated that Pilot Project implementation should "not be a barrier to addressing a system need through a non-pilot IRP Plan, if an exceptional time-limited opportunity arises prior to the completion of the pilots"[1]. The timing of the Pilot Projects has not prevented Enbridge Gas from completing an IRP assessment of all projects in the Asset Management Plan ("AMP") using the framework outlined in the OEB's IRP Decision. Regardless of the timing of the Pilot Projects, Enbridge Gas will implement IRP Plans where, through IRP assessment, they are determined to be both technically and economically feasible. Enbridge Gas will incorporate learnings from the Pilot Projects into future non-pilot IRP Plans where applicable. The Pilot Projects differ from future IRP Plans in that Enbridge Gas has specific objectives to test, monitor and understand the impacts of the IRP alternatives on peak hour demands. Please see the Pilot Project primary objectives outlined at Exhibit B, Tab 1, Schedule 1, pages 3 and 4.

Enbridge Gas did conduct a Binary Screen for the Pilot Projects, and the Company has assessed the Pilot Projects' technical feasibility using the same technical feasibility assessment that is being used to assess all other projects in the AMP. In terms of an economic feasibility assessment, while Enbridge Gas considered rate payer impacts via a DCF+ Stage one analysis, it did not complete a full DCF+ analysis, as will be done for future non-pilot IRP Plans.

[1] EB-2020-0091 Decision and Order Issued July 22, 2021, page 90.

In addition, future non-pilot IRP Plans could seek incentives for the alternatives, propose a different approach to attribution of savings and costs between DSM and IRP and include a review of demand forecast sensitivities.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Reference:

"…the Company has already taken limited steps to advance their implementation, including installation of necessary measurement devices within the affected municipalities…" [EGI_LTR_IRP_Pilots_20221222_eSigned]

Question(s):

a) Please provide a summary of activities and related costs incurred to date for the Pilot Projects proposed by Enbridge.

b) Given that Enbridge has already commenced portions of the Pilot Projects, please comment on whether this restricts the OEB's ability to modify or change the pilots as proposed by Enbridge.

c) If the Pilot Projects are not accepted by the OEB, please explain how the costs incurred to-date would be treated (e.g. would they just be absorbed in Enbridge's capital and/or O&M envelope).

Response:

a) The following is a summary of activities and related costs incurred to date for the Pilot Projects:

Item	Description	Approximate 2023 YTD Spend ($)
Stakeholdering	Costs associated with community engagement and stakeholdering to support the filing of the current Application.	$5,200
Administrative / Legal	Costs associated with third-party/external support of the Pilot Projects and the current Application	$8,100

Hourly Metering Related Costs	Costs associated with procurement, installation and/or collection of hourly metering data	$9,800

b) The activities initiated in advance of the OEB Application would not restrict the OEB's ability to modify or change the Pilot Projects as proposed. As noted in part a), some of the activities directly supported the filing of the current Application and the balance involves Enbridge Gas's proactive efforts to initiate installation of some metering in advance of approval.

c) If the Pilot Projects are not accepted by OEB, Enbridge Gas will allocate the costs to the IRP deferral accounts and propose disposition of as part of the 2023 deferral disposition proceeding.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Question(s):

a) Please explain how the Pilot Projects selected are representative of recent or future Leave to Construct project candidates and how Enbridge intends to apply the learnings from these Pilot Projects to other potential projects in the IRP.

b) Please explain how the Pilots would inform IRP for the following projects currently in Enbridge's IRP:

- St. Laurent Project (any or all phases in AMP)
- Panhandle Reinforcement
- The 10 largest projects in the IRP that passed the IRP Screening and required detailed IRP assessment.

Response:

a) The Pilot Projects identified needs on the system based on current and future demand forecasts, similar to past and other current projects within the AMP. The Pilot Project learnings, such as ETEE take-up rates, ETEE measure impacts on peak hour, demand response activity/impacts, costs, etc., will provide more accurate data and information that can be used in future IRP assessments for projects in the AMP.

b) Enbridge Gas cannot explain how the Pilot Project learnings would inform specific projects in the AMP as the Company does not have any learnings at this time. Please see response to part a).

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Question(s):

Please explain the process used for Enbridge management approval to select the proposed Pilot Projects and provide a copy of the materials used to gain that approval (e.g. presentations, emails, etc.).

Response:

The process and information as described in response at Exhibit I.PP-15 and Exhibit C, Tab 1, Schedule 2, pages 1 to 8 was used to obtain Enbridge Gas VP approval to select the proposed Pilot Projects. Enbridge Gas used the TWG presentations in response at Exhibit I.ED-2 to review the projects internally for VP approval. There are no other emails or presentations that were used for management approval.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Question(s):

a) Please confirm that Enbridge's current Asset Management Plan resulted in 878 projects passing the IRP Screening resulting in the need for further IRP assessment and potential implementation of IRP alternatives in lieu of the pipeline solution. If incorrect, please provide the right value.

b) The OEB requires that Enbridge shall identify potential system needs/constraints up to ten years in the future and describe these in annual updates to the Asset Management Plan (AMP) to allow time for a detailed examination of IRPAs [OEB IRP Framework, Section 5.1]. Please identify which IRP alternatives in the Pilot Projects are options appliable to the 878 (or alternate value from Enbridge) projects that passed the IRP Screening in Enbridge's current Asset Management Plan.

c) Enbridge has proposed a Pilot timeframe from 2024-2027, which suggests that the final analysis and report would be available in 2027 or later. Please indicate how Enbridge intends to apply Pilot Project learnings real-time starting in 2024 to projects in Enbridge's Asset Management Plan.

d) Please provide a spreadsheet with the 878 (or alternate value from Enbridge) projects in Enbridge's current AMP that passed the IRP Screening requiring detailed analysis. Please highlight the lines that related to the projects proposed to be replaced by the Pilot Projects. Please include the following columns in the spreadsheet.

- Project name
- Year Project is expected to be required
- Project Costs
- Project Description (per AMP)

Response:

a) As per response in EB-2022-0200, Exhibit I.2.5-PP-31, filed March 8, 2023, the number of projects that passed the IRP Binary Screening stage was 886. For updated Binary Screening results please see Appendix B – IRP (Updated) of the EGI Asset Management Plan Addendum - 2024, filed October 31, 2023, in EB-2020-0091, which indicates that 1036 projects have passed the IRP Binary Screening stage.

b) The list of IRPAs proposed in the two Pilot Projects are listed below.

The Parry Sound Pilot Project will include:

- Procurement of market-based supply;
- Localized injection of CNG; and
- ETEE programming.

The Southern Lake Huron Pilot Project will include:

- Localized injection of CNG;
- ETEE programming; and
- DR programming.

These IRPAs were proposed to acquire key learnings on their effectiveness, performance, and scalability. The application of these learnings will allow for more effective evaluation and implementation of future IRPAs. Depending on the Pilot Project learnings obtained, this same list of IRPAs could continue to be used in the technical and economic feasibility assessments conducted for projects that pass the IRP Binary screening; however, should the IRP Pilot learnings indicate that any one of these IRPAs is potentially not a viable IRPA, Enbridge Gas would have to determine what the implications are for future technical and economic feasibility assessments.

Please see Appendix B – IRP (Updated) of the EGI Asset Management Plan Addendum - 2024, filed October 31, 2023, in EB-2020-0091 for information on the IRPAs for consideration in the IRP Assessment Process.

c) Pilot Project learnings will be obtained via an iterative process that includes data collection, data preparation, data analysis, data interpretation and finally learnings reporting. This iterative process is expected to result in the compilation of learnings, on an ongoing basis, which will be used to both iterate the current Pilot Projects, as well as shape future non-pilot IRP Plans, design, deployment, and evaluation.

The first year of data collection provides a reference point for trend determination and the second year of data collection provides the data required for trend development. The third and fourth year of data collection provides the data required for trend confirmation to develop Pilot Project learnings. Results from the annual data collection, analysis and applicable learnings will be reported in the following year through the Annual Report to the OEB and stakeholders. The Pilot Project Report will be filed at the end of the fourth year of the Pilot Project duration and the learnings will be incorporated into IRP assessment of future projects in the AMP.

The timing of this process is subject to the date of OEB approval of the Pilot Projects.

d) Please see EGI Asset Management Plan Addendum - 2024, filed October 31, 2023, in EB-2020-0091.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Question(s):

a) Please explain what risk assessment Enbridge did to identify potential challenges and barriers related to the proposed pilot areas. Please provide a copy of those risks and any proposed mitigation measures.

b) Did Enbridge consult with the local LDCs and IESO about any electricity constraints or other factors (e.g. DER/CDM pilots or planned facilities) in the proposed pilot areas. If not, why not. If yes, please provide a copy of the responses.

Response:

a) Enbridge Gas did not perform a formal risk assessment on the Pilot Projects as it is anticipated that the Pilot Project learnings will inform future IRP Plans and risk assessments. However, as outlined in Exhibit C, Tab 1, Schedule 2, paragraph 3, Enbridge Gas considered criteria such as system configuration, customer mix, and data collection potential when evaluating and ranking potential Pilot Projects, which would minimize potential risk to the distribution system.

   As outlined in Exhibit B, Tab 1, Schedule 2, paragraph 12, the effectiveness of the demand-side IRPAs in the Parry Sound and Southern Lake Huron Pilot Projects in reducing peak period (hourly) flows/demands and reducing, deferring or avoiding the baseline facility projects, will be monitored and evaluated throughout the duration of the Pilot Projects to mitigate risk. In addition, to ensure the reliable and safe delivery of natural gas volumes to system customers during peak periods is maintained over the course of the Pilot Project term, Enbridge Gas proposes to implement a reliable supply-side CNG injection IRPA if needed. Please see response at Exhibit I.STAFF-12 for discussions on barriers and risks identified during the Pilot Project development process.

b) Yes. Please see response at Exhibit I.PP-15.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Reference:

Southern Lake Huron Pilot Project Area [Exhibit A, Tab 2, Schedule 1, Attachment 1, Page 2]

Question(s):

a) Please explain the difference between the SLH Pilot Area vs. the SLH Area of Influence.

b) Please explain why the Parry Sound pilot does not have an area of influence.

Response:

a) Please see Exhibit B, Tab 1, Schedule 1, page 11:

> The Southern Lake Huron Pilot Project area has a sub-region located in the northeast, identified in Figure 4 as the “SLH Area of Influence”, where changes in peak hour demand will most significantly impact the identified system constraint. Changes in peak hour demand within the remaining Southern Lake Huron Pilot Project area, referred to as “greater Southern Lake Huron”, will not significantly impact the identified system constraint.

b) The Parry Sound Pilot Project does not require this distinction because the customers are on a downstream system that is solely fed by the constrained pipeline requiring reinforcement. This means that changes in peak hour demand in the Pilot Project area will directly impact the system constraints and reinforcements.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Question(s):

a) Please provide a summary of how DSM (plus Greener Homes Grant program delivered by Enbridge with DSM, as applicable) programs, research, incentives, learning and other value has been leveraged to develop and implement the proposed Pilot Projects.

b) Please estimate the cost savings for the proposed Pilot Projects due to the synergies and value extracted from DSM and other programs as noted in part a.

c) In accordance with the OEB's DSM (EB-2021-0002) Decision, will any customers be incented to disconnect from natural gas (e.g. via DSM, Greener Homes Grant, or other incentives) as part of the proposed Pilot Projects, in order to test the effectiveness of those incentives?

Response:

a) As detailed in Exhibit D, Tab 1, Schedule 1 and Exhibit D, Tab 1, Schedule 2, certain offerings within the portfolio of ETEE programming of the Pilot Projects will leverage existing DSM programming as approved by the OEB in the DSM Plan (EB-2021-0002), targeting customers in the residential, commercial, and industrial sectors. The existing DSM programs have been leveraged to achieve the best outcomes for the Pilot Projects ETEE programs where Enbridge Gas expects value through shorter program development, simplified marketing messaging aligning with current in-market offers, and utilization of existing delivery channels that may be expanded as part of the Pilot Projects.

b) Enbridge Gas acknowledges that there have been substantial cost and development time savings for the Pilot Projects compared to a situation where the Company did not have existing programs for energy reductions measures in the marketplace. In particular, the timeline to develop net new programs would have been considerably longer, and in a situation where there were no staff experienced in designing and delivering programs, there would have been a requirement to acquire appropriate resources prior to commencing development. Enbridge Gas has not quantified these savings because the analysis would not be relevant for the proposed pilots and such analysis may be time-consuming and inaccurate to estimate. Please see response at Exhibit I.PP-31, part c) regarding synergies for the Pilot Projects.

c) Please see response at Exhibit I.OGVG-3, part a).

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Question(s):

a) Please confirm that Enbridge understood it was not able to include electric IRP alternatives (e.g. electric cold climate air source heat pumps) in the Pilot Project application, resulting in exclusion of those alternatives.

b) If the OEB confirms that electric IRP alternatives (e.g. electric cold climate air source heat pumps) are an option for the Pilot Project application, please highlight what will be required by Enbridge to include such alternatives.

Response:

a) As noted in Exhibit D, Tab 1, Schedule 1, pages 1 and 2, Enbridge Gas acknowledges that the OEB's first generation IRP Framework does not support funding for electric IRPAs. However, the proposed Parry Sound Pilot Project offers an opportunity to explore the potential applicability and feasibility of electric-based IRP measures in an isolated environment that can support future broad-based integrated resource planning efforts with local electric distribution companies and the Independent Electricity System Operator.

b) If the OEB approves the utilization of electric heat pumps as an IRP alternative for the Pilot Projects, Enbridge Gas will provide incentives to install electric heat pumps in a similar manner to the HER+ Program. In addition, please see response at Exhibit I.OGVG-3.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Reference:

PollutionProbe_IR_AppendixB_CanmetReport_20231013 [from Enbridge per EB-2022-0200 Exhibit J11.5]

Question(s):

a) Please confirm that a Hybrid Heating system using and air source heat pump and gas furnace switches from the heat pump to the gas furnace based on the temperature (or other) setting programed into the controls. If incorrect, please explain.

b) Please explain what temperature control setting Enbridge proposes to use to switch to the gas furnace for the Hybrid Heating systems.

Response:

a) Enbridge Gas can confirm that the proposed Hybrid Heating System does not switch between gas equipment and electric equipment. The controller operates both the air source heat pump (primary heating source) and the gas furnace simultaneously to reduce the peak gas load. The current proposed Hybrid Heating System uses one of two commercially available heating system types.

   i. An electric air source heat pump (eASHP) and a gas furnace, or
   ii. An electric air source heat pump, gas combi boiler or tankless water heater and air handling unit.

b) Please see response to part a). The controller does not switch between the gas and electric equipment. The controller operates both the air source heat pump and the gas furnace simultaneously to reduce the peak gas load. The electric air source heat pump is the primary heating equipment for the system that operates any time there is a call for space heating. When the capacity of the heat pump can’t meet the entire heating demand of the home, the controller will activate the gas equipment to provide supplementary heat. This is similar to how an all-electric system with heat pump operates with an auxiliary electric heating coil.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Reference:

PollutionProbe_IR_AppendixB_CanmetReport_20231013 [from Enbridge per EB-2022-0200 Exhibit J11.5]

Preamble:

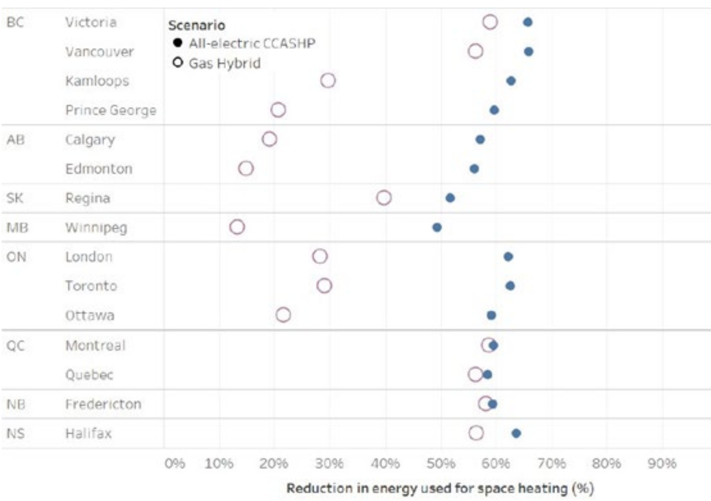


Figure 15: Comparison between energy savings achieved by all-electric CC-ASHP and gas-hybrid in Archetype B (Post 1980s 2-story home), relative to a gas-furnace

Question(s):

The above-noted CanmetENERGY report indicates that Hybrid Heating systems are less efficient than an all electric ccASHP system. If Enbridge has any reports or information which suggests otherwise, please provide a copy.

Response:

Enbridge Gas is not aware of any publicly available reports that show hybrid heating systems (comprised of current commercialized equipment) with greater energy efficiency than an all-electric ccASHP system. The Company notes that the same referenced report outlines that hybrid heating systems can be more cost effective from a consumer point of view due to the higher cost per unit of energy for electricity.

In addition, there is evidence to show that hybrid heating, with gas furnaces to supplement ccASHPs on cold days, is a promising solution for the purposes of resilience and moderating peak electricity system impacts.[1] This is because hybrid heating systems enable electricity to be used when a heat pump can operate most efficiently, and switch to gas during peak heating periods when electric heat pump can no longer perform efficiently. As such, hybrid heating systems can drive the reductions in GHG emissions while reducing peak electricity demands, which reduces electrification costs by the elimination of infrastructure build-up to meet peak electric energy demands.

[1] See Powering Ontario's Growth, at page 27, for discussion of hybrid heating as an Government of Ontario promoted program. Available https://www.ontario.ca/files/2023-07/energy-powering-ontarios-growth-report-en-2023-07-07.pdf See also "Hybrid heat in Québec: Energir and Hydro-Québec's collaboration on building heat decarbonization", https://climateinstitute.ca/publications/hybrid-heat-in-quebec/#:~:text=Dual%20energy%20agreement%20between%20Hydro,both%20electricity%20and%20natural%20gas

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Question(s):

Have benefits from the electricity grid (e.g. reduced summer peak loads due to IRP alternatives, or community GHG emission reductions, etc.) been considered and captured in the benefit costs analysis of the project? If not, why not. If yes, please provide a summary of those benefits, value and source (e.g.IESO).

Response:

As noted in Exhibit E, Tab 1, Schedule 1, page 1, only a Stage 1 DCF economic analysis was completed for the Pilot Projects. Stage 1 consists of a DCF analysis specific to Enbridge Gas, which assesses the economic benefits and costs from the rates perspective and indicates whether the project is likely to result in future increases to utility rates. As such, the benefits from the electricity grid, community GHG emission reductions etc. are not considered in the economic analysis.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Question(s):

Enbridge recently confirmed [EB-2022-0200] that there have been no costs included in the OEB approved IRP Operating Cost or Capital Cost Deferral Accounts. It seems odd that Enbridge has never incurred any IRP related costs, including costs related to the proposed Pilot Projects. Please confirm or provide an update on the costs applied to these accounts if this has changed.

Response:

Enbridge Gas is unaware of the confirmation being referenced in this Interrogatory. Enbridge Gas can confirm, as detailed in the 2021 Utility Earnings and Disposition of Deferral & Variance Account[1] and the 2022 Utility Earnings and Disposition of Deferral & Variance Account[2] proceedings that the Company has requested clearance of its IRP Operating Costs Deferral Accounts. The balances in the IRP Operating Costs deferral account were $0.058 million in 2021 and $2.285 million in 2022.

Enbridge Gas can confirm that it will clear any costs related to the IRP Pilot Projects, if costs have been incurred, starting in the 2023 Utility Earnings and Disposition of Deferral & Variance Accounts.

[1] Filed: 2022-05-31 EB-2022-0110 Exhibit C Tab 1 Page 15 and 16.
[2] Filed: 2023-06-14 EB-2023-0092 Exhibit C Tab 1 Page 15 to 27.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Reference:

The OEB indicates that the IRP Variance Accounts must recognize off setting amounts in the account balances to reflect avoided capital cost impacts related to facilities projects that are delayed, avoided or downsized by IRP. [EB-2022-0200 dec_Settlement Proposal_EGI 2024 Rebasing_20230817, Page 54]

Question(s):

For each Pilot Project, please provide the estimated value and timing proposed for off setting amounts in the account balances to reflect avoided capital cost impacts related to facilities projects that are delayed, avoided or downsized by IRP.

Response:

Please see response at Exhibit I.STAFF-18.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Question(s):

a) Please provide a full list of stakeholders consulted during development of the Pilots and a summary of feedback received.

b) Please confirm which stakeholders Enbridge provide details of this OEB proceeding to consider the Pilot Projects and details on how to participate.

c) Please provide a list of all municipalities considered for the IRP pilots and a copy of correspondence provided.

Response:

a) In the tables below and separated by meeting dates is the list of stakeholders consulted and a summary of the feedback received during the development of the Parry Sound Pilot Project and the Southern Lake Huron Pilot Project.

Parry Sound:

Meeting date: Dec 15, 2022
Attendees: Hydro One – Engineering, Customer Experience & Energy Conservation, Distribution Asset Management. **IESO** - Community Engagement, Engineer/Technical Officer. **Lakeland Power** - Operations Supervisor, Asset & Engineering Supervisor. **Municipality of Parry Sound** - Director of Development & Protective Services, Director of Public Works, Economic Development Officer Manager of Planning.
Summary of Discussion: **Enbridge:** • Confirmed correct personnel at the meeting. • Review Parry Sound system needs and potential project. • Outlined constraints driven by pressure reduction from TC Energy and its impact on project plans. • Described Enbridge Gas's growth projections for the region.

- Outlined Pilot Project plan and rationale behind IRPAs including ETEE and DR.
- Provided details on enhanced programs for building envelope and destratification programs for small to medium-sized business energy reductions.

Hydro One:
- There could be some alignment with Hydro One offering rolling out next year, will be able to share more details in the new year.

IESO:
- Save On Energy already works with Enbridge Gas DSM, will include additional people from IESO to these discussions.

Municipality:
- Suggestion that additional people be invited to subsequent meetings.
- Had not anticipated a constraint on the natural gas system.
- Municipal 10-year growth pattern is quite different to their 2-year model, based on their work in development charge initiatives.
- Development applications indicate significant growth, there have been more applications in the last year than in the previous 10 years.
- 2-year model shows much higher projections.
- There are Seguin township developments which are immediately to the south of Parry Sound that may impact forecast.
- Town philosophy is to promote growth as much as they can and see the value of natural gas to support that growth.
- Interested in the Pilot Project's ETEE offering and wanted to understand what it means to municipality and customers.
- Also interested in municipal facility energy efficiency program elements including CNG/RNG.

Meeting date: February 22, 2023

Attendees: IESO - Business Advisor LDC Support, Senior Transmission Planning Engineer, Energy Transition, Supervisor, Program Design & Innovation, Supervisor Integrated Conversion Planning **Hydro One** - Customer Experience & Energy Conservation

Summary of Discussion:

Enbridge:
- Confirmed correct personnel at the meeting.
- Review Parry Sound system needs and potential project.
- Outlined constraints driven by pressure reduction from TC Energy and its impact on project plans.
- Described Enbridge's growth projections for the region.
- Outlined Pilot Project plan and rationale behind IRPAs including ETEE and DR.
- Provided details on enhanced programs for building envelope and destratification programs for small to medium-sized business energy reductions.

IESO:
- Aligned with forecasted projected growth.
- Potential concerns regarding forecasted needs and the move from gas to electric space heating.

• Discussed the development of energy programs and potential collaboration efforts in the future. **Hydro One:** • If Enbridge Gas is looking to change homes to electric heating would need forecasts of conversions to ensure capacity available.
Meeting date: March 8, 2023
Attendees: Municipality of Parry Sound - Director of Development & Protective Services, Director of Public Works. **Lakeland Power**: Asset & Engineering Supervisor
Summary of Discussion: **Enbridge:** • Confirmed correct personnel at the meeting. • Review Parry Sound system needs and potential project. • Outlined constraints driven by pressure reduction from TC Energy and its impact on project plans. • Described Enbridge Gas's growth projections for the region. • Outlined Pilot Project plan and rationale behind IRPAs including ETEE and DR. • Provided details on enhanced programs for building envelope and destratification programs for small to medium-sized business energy reductions. **Municipality:** • Expressed concerns that the Pilot Project meant that they would not get additional natural gas facility investment to support their projected growth. • Expressed broad support of conservation efforts but highlighted desire to promote expansion in the area. • Confirmed staff support for pursuit of a Letter of Support from Council. **Lakeland:** • Discussed potential projects to increase capacity to address forecasted growth in the region including transmission capacity increases via Hydro-One. • Expressed broad-based concerns about conversions to electric space heating but not specifically in the Pilot Project area.

Southern Lake Huron:

Meeting date: January 16, 2023
Attendees: County of Lambton - Chief Building Official, Manager of Planning & Development Services, Sarnia Lambton Economic Partnership**. City of Sarnia** - Director of Economic Development, Economic Development Officer. **Plympton-Wyoming** - Director of Public Works. **IESO** - Sr Transition Planner, Outreach & Engagement for SW&NE Ontario
Summary of Discussion: **Enbridge:** • Outlined the planning and forecasting process. • Confirmed correct personnel at the meeting. • Reviewed SLH system and constraints and internal growth forecast. • Outlined pilot design and scope including potential IRPAs (DR and ETEE). **Municipality:** • Confirmed Enbridge Gas growth projection. • Indicated that the County can speak to residential development but less so to Commercial and Industrial activity. • Committed to connecting Enbridge Gas with Ops and Engineering teams for future projects. **IESO:** • Suggested ongoing connection with their Energy Efficiency Team. • Confirmed that IESO has received a directive for new programs. • Their forecasting shows emerging needs in 5-10 years in the region.
Meeting date: February 15, 2023
Attendees: Plympton-Wyoming Director of Public Works, Senior Planner
Summary of Discussion: **Enbridge:** • Outlined the planning and forecasting process. • Confirmed correct personnel at the meeting. • Outlined Pilot Project design and scope. • Reviewed SLH system and constraints and internal growth forecast. • Outlined Pilot Project design and scope including potential IRPAs (DR and ETEE). **Municipality:** • Confirmed demand forecast but indications there could be more development in the Wyoming area than originally forecasted. • Highlights a significant uptick in regional growth from 2018 from 25 to 100 customers a year. • Highlighted that Pilot Project area has larger than average home size. • Broad support for IRP and efficiency programs. • Based on experience some barriers to program uptake may include customer reluctance due to distrust in the marketplace, understanding of program details, specifically DR. • Council supports gas expansion in the area, citing cost/access profiles.
Meeting date: February 23,2023
Attendees: **City of Sarnia** - Economic Development Office, Manager Building Services, General Manager Infrastructure & Development Services, **Bluewater Power** - Director, Special Projects
Summary of Discussion:

Enbridge:
- Reviewed SLH system and constraints and internal growth forecast.
- Outlined Pilot Project design and scope including potential IRPAs (DR and ETEE).
- Asked about potential concerns regarding program uptake.
- Asked for guidance regarding public outreach strategies.
- Outlined regulatory process and the request for a letter of support from council.

Municipality:
- Agreed to share public council reports for regional growth.
- Highlighted potential limited customer uptake in ETEE programming due to lack of awareness in the past.
- Broad support for Gas expansion, IRP, and letter of support from council.

Bluewater Power:
- Forecast aligned with growth projections in area.
- Radio frequency metering currently being utilized by LDC as an analogue to AMR.

b) Enbridge Gas provided information and details of the Pilot Projects Application and OEB proceeding during its Pilot Project open houses, which occurred as part of the Pilot Project outreach.[1,2] In addition, the Company has included links to provide regulatory updates on its specific pilot web pages.[3,4] During the discussions with the respective Municipalities, LDCs and IESO it was noted that Enbridge Gas would be filing an Application with OEB for the Pilot Projects. Further Enbridge Gas sought letters of support from the respective municipal councils to support this Application. Please see Attachment 1 for the presentations that were given to the respective Municipalities. Please see Exhibit F, Tab 1, Schedule 1, Attachments 1, 2 and 3 for the council letters of support.

c) Enbridge Gas did not reach out to those municipalities that were not selected for the Pilot Projects. Once the Pilot Project areas were selected, Enbridge Gas engaged with the respective municipalities. Please also see response at Exhibit I.PP-15.

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[1] Slide 11 - IRP Pilot Parry Sound Open House Slides
[2] Slide 12 - IRP Pilot Southern Lake Huron Open house Slides
[3] https://www.enbridgegas.com/sustainability/regional-planning-engagement/parry-sound-project
[4] https://www.enbridgegas.com/sustainability/regional-planning-engagement/southern-lake-huron-project

Enbridge Gas

Integrated Resource Planning (IRP) Southern Lake Huron Pilot Project

Proudly Serving Ontario | 175 YEARS

June 12, 2023
City of Sarnia

IRP Pilot Project - Request for Consideration of Support

- A letter or resolution of support for the IRP Pilot Project will help demonstrate local support and engagement.

- The OEB regulatory application process for the IRP Pilot project will review both the need and community support for the proposed pilot.

Integrated Resource Planning

- Integrated Resource Planning (IRP) is an enhanced planning strategy and process[1].
- Enbridge Gas evaluates non-pipeline alternatives that could be used to defer or avoid implementing a traditional pipe project to meet a system need.
- Consideration is given to safety, cost-effectiveness, and the ability for alternative solutions to meet customer demands reliably.

[1] IRP Framework was published by the OEB on July 22, 2021.

Southern Lake Huron Pilot Overview

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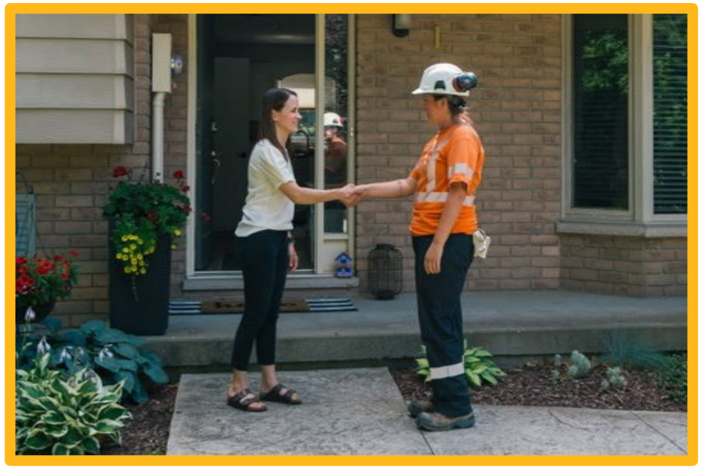
- **Key Pilot Objectives**
  - Develop an understanding of how to design, deploy and evaluate an Enhanced Targeted Energy Efficiency (ETEE) and Demand Response (DR) program
  - Gain insight into how energy efficiency measures and DR programs impact peak-hour demand



- **Selected IRP Alternatives (IRPAs) being proposed**
  - Injection of Compressed Natural Gas (CNG)
  - ETEE programming
  - DR programming

Southern Lake Huron Pilot Overview

ENBRIDGE
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- **Area eligible for IRP alternatives**

  Enbridge Gas customers within the pilot area as outlined in the map are eligible for ETEE and DR programming.

- **What is the benefit to the community?**

  Customers participating in the ETEE or DR programming may see reduced natural gas consumption and the potential for lower energy bills.

- **Measurement and Evaluation**

  Hourly measurement tools already exist in most of the Southern Lake Huron area and have been activated to help record data at a more granular level.

Southern Lake Huron IRPA Pilot Community Consultation

ENBRIDGE
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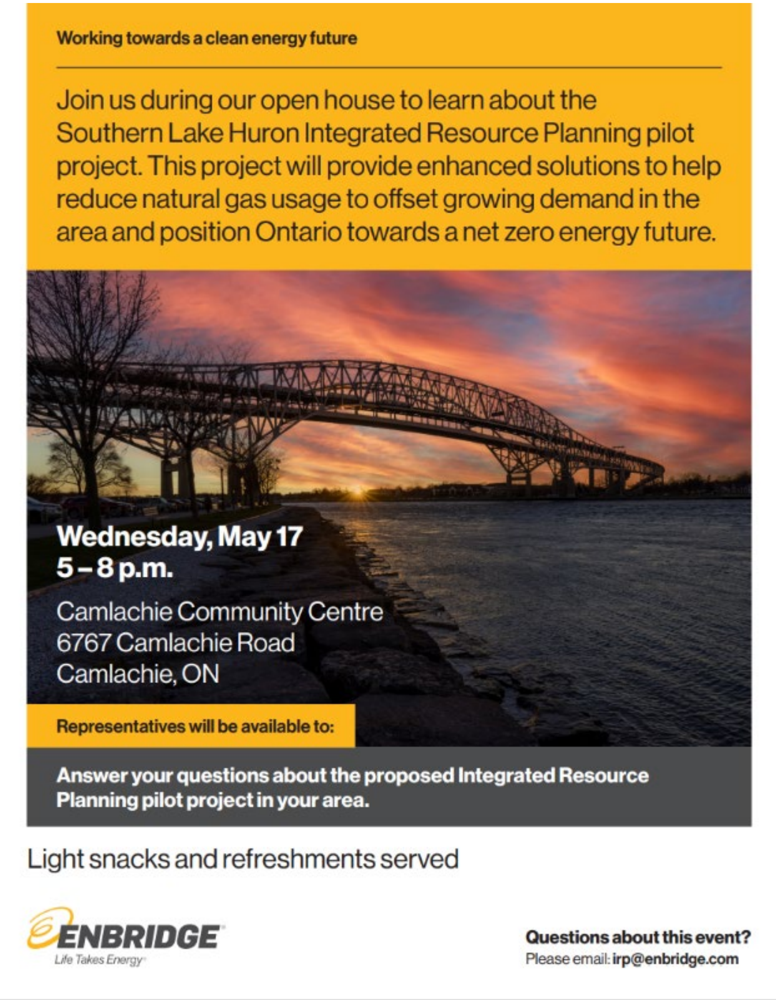
- **Municipal Staff Meeting**
  Enbridge met with Municipal staff on January 16, February 15, and 23, 2023

- **Regional Webinars**
  Enbridge hosted regional webinars through April and May, with the southwest region webinar on April 6.

- **Open House**
  Enbridge hosted an in-person open house at Camlachie Community Centre on Wednesday, May 17, 5:00pm – 8:00pm



Q&A

Thank you

Appendix

Southern Lake Huron System Overview

ENBRIDGE
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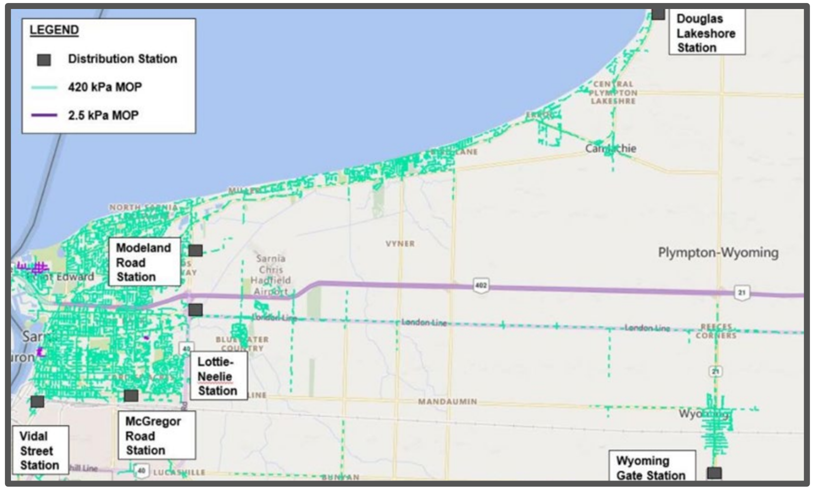
- Entire Southern Lake Huron: ~30,000 customers
- Lakeshore region ~4,200 customers
- Projected growth in Lakeshore region: 650 customers from 2022 to 2031.
- Primarily assumed 65 residential units/year for 10 years
- Southern Lake Huron distribution system is fed by multiple stations.
- Observing an increase in growth along Lakeshore region
- Pipe and station reinforcement and Vintage Steel Main (VSM) project located within Lakeshore region.
- Additional replacement and station projects located within Sarnia core.



Resources

Proudly Serving Ontario | 175 YEARS

Web page link:
Southern Lake Huron Pilot Project - Regional Planning & Engagement | Enbridge Gas

Enbridge Gas

Integrated Resource Planning (IRP) Southern Lake Huron Pilot Project

June 28, 2023
Town of Plympton-Wyoming

IRP Pilot Project - Request for Consideration of Support

- A letter or resolution of support for the IRP Pilot Project will help demonstrate local support and engagement.
- The OEB regulatory application process for the IRP Pilot project will review both the need and community support for the proposed pilot.

Integrated Resource Planning

ENBRIDGE
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- Integrated Resource Planning (IRP) is an enhanced planning strategy and process[1].
- Enbridge Gas evaluates non-pipeline alternatives that could be used to defer or avoid implementing a traditional pipe project to meet a system need.
- Consideration is given to safety, cost-effectiveness, and the ability for alternative solutions to meet customer demands reliably.

[1] IRP Framework was published by the OEB on July 22, 2021.

Southern Lake Huron Pilot Overview

ENBRIDGE
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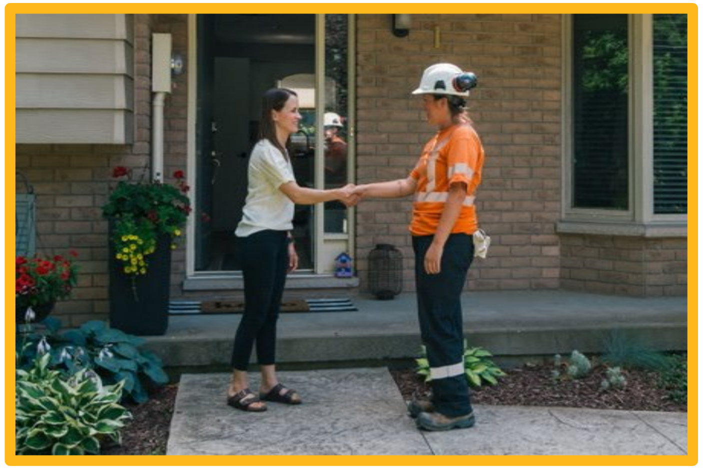
- **Key Pilot Objectives**
  - Develop an understanding of how to design, deploy and evaluate an Enhanced Targeted Energy Efficiency (ETEE) and Demand Response (DR) program
  - Gain insight into how energy efficiency measures and DR programs impact peak-hour demand



- **Selected IRP Alternatives (IRPAs) being proposed**
  - Injection of Compressed Natural Gas (CNG)
  - ETEE programming
  - DR programming

Southern Lake Huron Pilot Overview

- **Area eligible for IRP alternatives**

  Enbridge Gas customers within the pilot area as outlined in the map are eligible for ETEE and DR programming.

- **What is the benefit to the community?**

  Customers participating in the ETEE or DR programming may see reduced natural gas consumption and the potential for lower energy bills.

- **Measurement and Evaluation**

  Hourly measurement tools already exist in most of the Southern Lake Huron area and have been activated to help record data at a more granular level.

Southern Lake Huron IRPA Pilot Community Consultation

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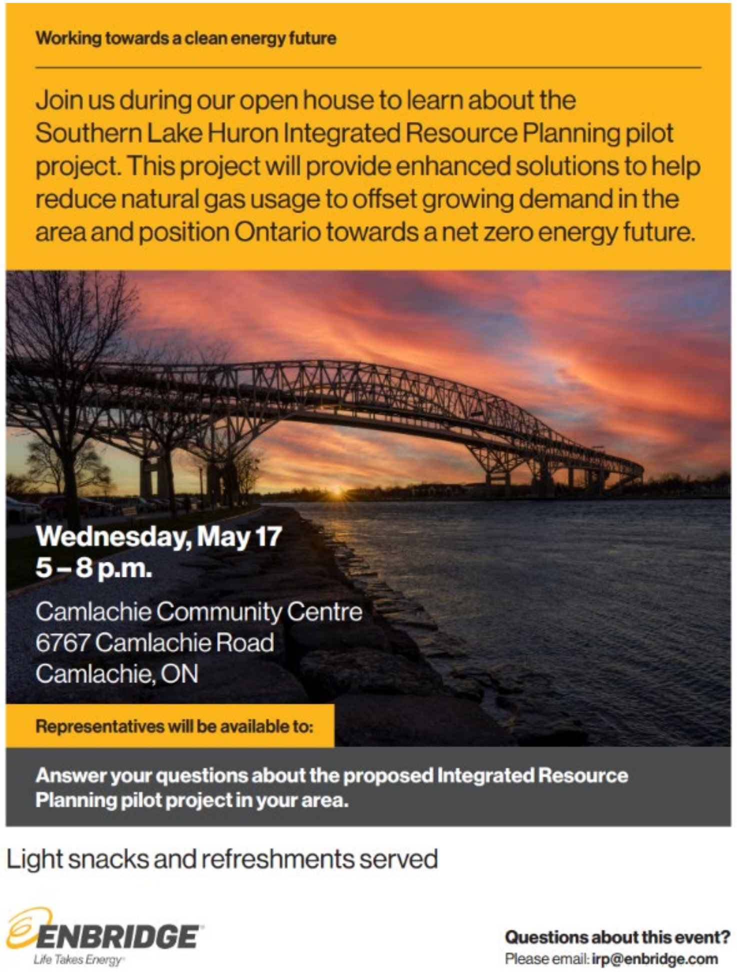
- **Municipal Staff Meeting**
  Enbridge met with Municipal staff on January 16, February 15 and 23, 2023

- **Regional Webinars**
  Enbridge hosted regional webinars in April and May, with the southwest region webinar occurring on April 6.

- **Open House**
  Enbridge hosted an in-person open house at Camlachie Community Centre on Wednesday, May 17 from 5 – 8 p.m.



Q&A

Thank you

Appendix

Southern Lake Huron System Overview

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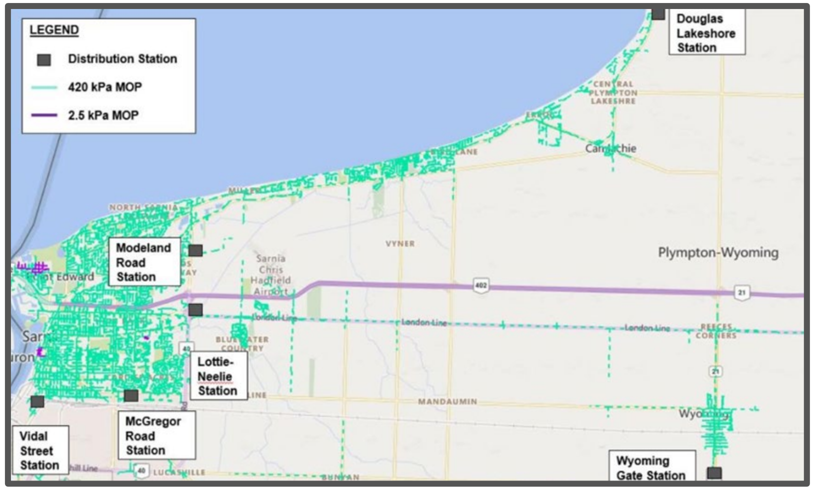
- Entire Southern Lake Huron: ~30,000 customers
- Lakeshore region ~4,200 customers
- Projected growth in Lakeshore region: 650 customers from 2022 to 2031.
- Primarily assumed 65 residential units/year for 10 years
- Southern Lake Huron distribution system is fed by multiple stations.
- Observing an increase in growth along Lakeshore region
- Pipe and station reinforcement and Vintage Steel Main (VSM) project located within Lakeshore region.
- Additional replacement and station projects located within Sarnia core.



Resources

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Web page link:
[Southern Lake Huron Pilot Project - Regional Planning & Engagement | Enbridge Gas]

Enbridge Gas

Integrated Resource Planning (IRP) Parry Sound Pilot Project

June 20, 2023
Town of Parry Sound

IRP Pilot Project - Request for Consideration of Support

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- A letter or resolution of support for the IRP Pilot Project will help demonstrate local support and engagement.

- The OEB regulatory application process for the IRP Pilot project will review both the need and community support for the proposed pilot.

Integrated Resource Planning

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- Integrated Resource Planning (IRP) is an enhanced planning strategy and process[1].
- Enbridge Gas evaluates non-pipeline alternatives that could be used to defer or avoid implementing a traditional pipe project to meet a system need.
- Consideration is given to safety, cost-effectiveness, and the ability for alternative solutions to meet customer demands reliably.

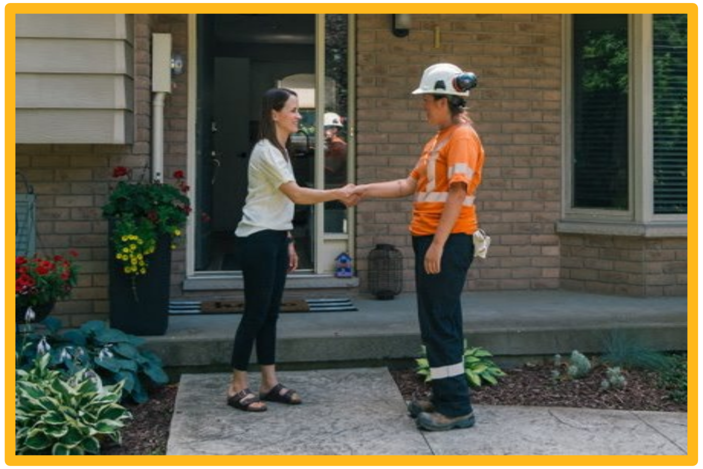
[1] IRP Framework was published by the OEB on July 22, 2021.

Parry Sound Pilot Overview

ENBRIDGE
Proudly Serving Ontario | 175 YEARS

- **Key Pilot Objectives**
  - Develop an understanding of how to design, deploy and evaluate an Enhanced Targeted Energy Efficiency (ETEE) program.
  - Gain insight into how energy efficiency measures impact peak-hour demand.

- **Selected IRP Alternatives (IRPAs) being proposed**
  - Supply Side – Higher contracted source pressure from TCE
  - Supply Side – CNG as a bridging solution
  - Demand Side – Enhanced Targeted Energy Efficiency (ETEE)

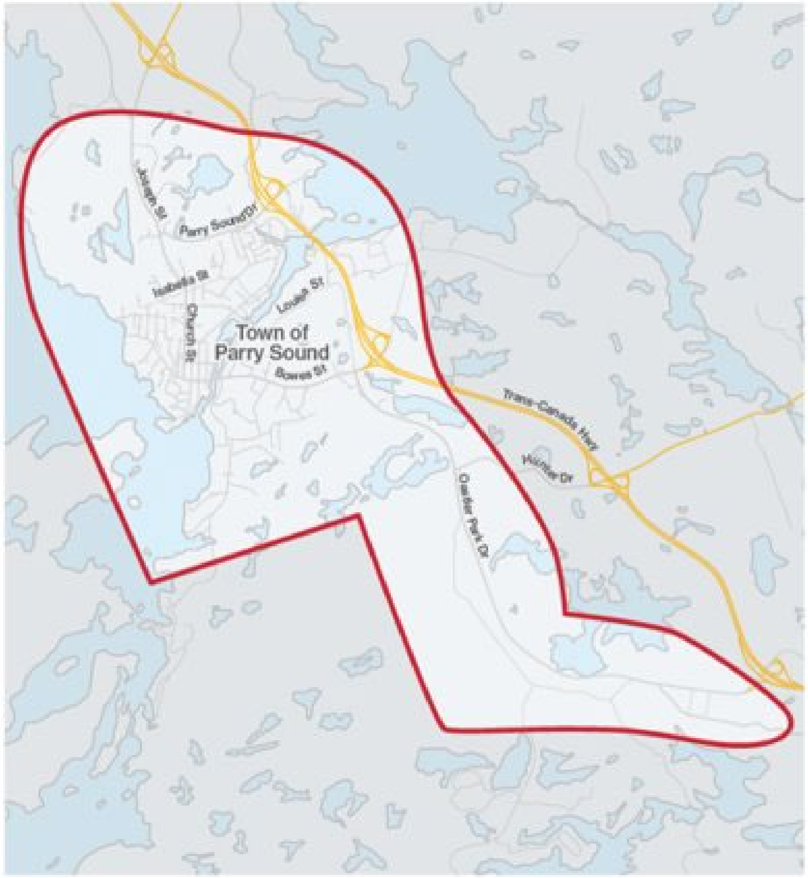


Parry Sound Pilot Overview

- **Area eligible for IRP alternatives**
  Enbridge Gas customers within the pilot area (outlined in the map) are eligible for ETEE programs.

- **What is the benefit to the community?**
  Customers participating in ETEE programming may see reduced natural gas consumption and the potential for lower energy bills.

- **Measurement and Evaluation**
  Customer hourly measurement (via ERTs) and additional metering will help us understand and evaluate the impacts of IRPAs on the system.



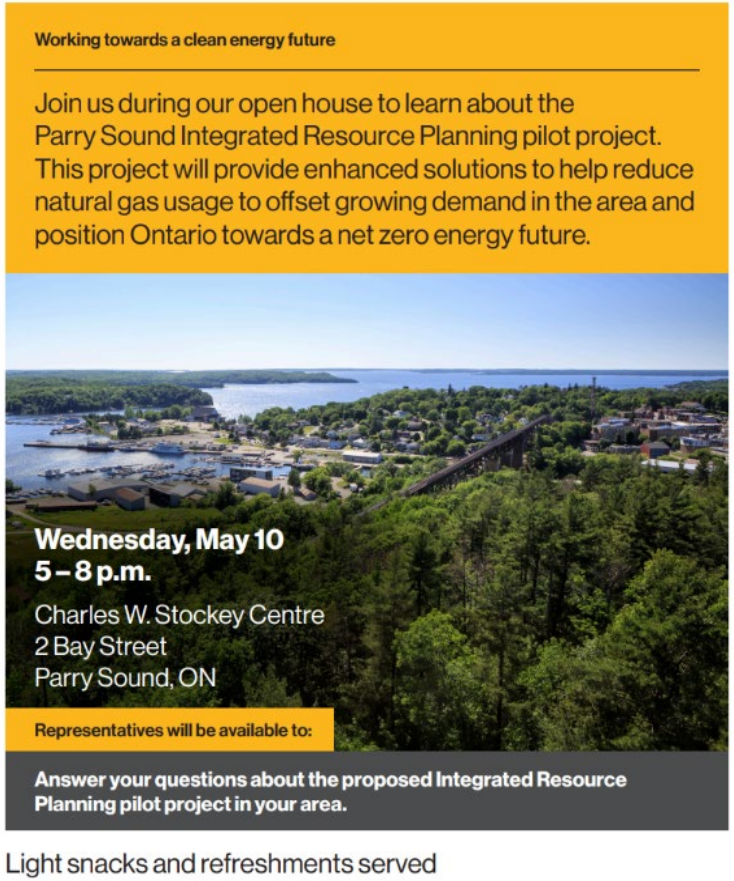
Parry Sound IRPA Pilot Community Consultation

ENBRIDGE
Proudly Serving Ontario | 175 YEARS

- **Municipal Staff Meeting**
  Enbridge met with municipal staff on December 15, 2022 February 22, and March 8, 2023

- **Regional Webinars**
  Enbridge hosted regional webinars through April and May. The Northern region webinar was held on April 25, 2023

- **Open House**
  Enbridge hosted an in-person open house at the Charles W. Stockey Centre on Wednesday, May 10, 2023 from 5 – 8 p.m.



Q&A

Thank you

Appendix

Parry Sound System Overview

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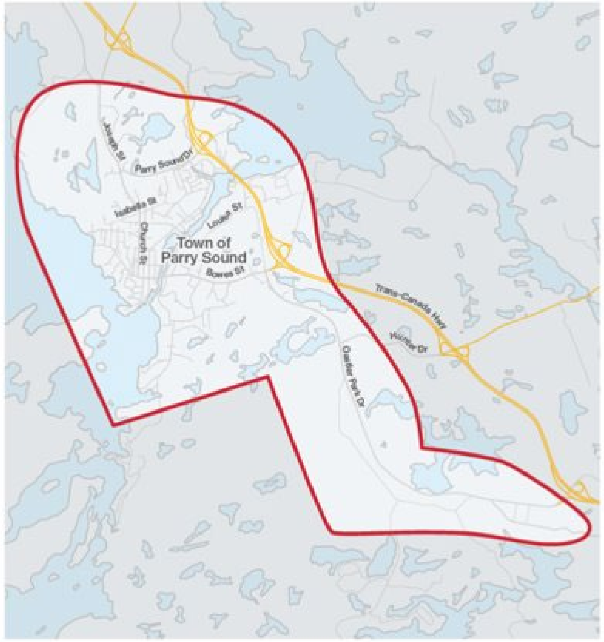
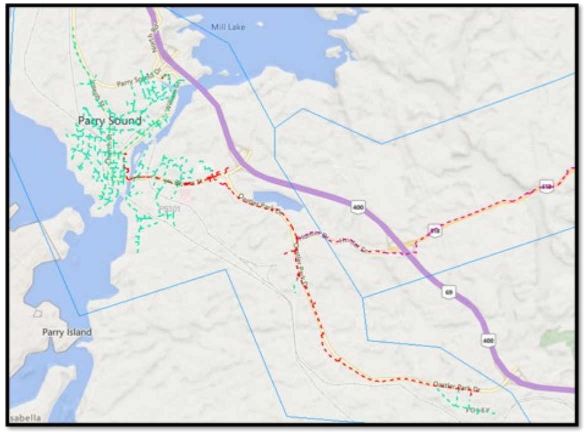
- **Existing Customer Mix**
  - ~2,070 customers (1,800 Residential, 270 Commercial/Industrial)
- **Demand Forecast for Parry Sound**
- Data is collected from a variety of sources to determine the load forecast (approved proposals, municipal draft plans, econometric forecast, energy transition factors)
  - Load forecast & existing customer usage data combined to determine demand forecast & 10-year infrastructure requirements
  - Customer Average use by type (residential, commercial)
  - Projected Growth: 472 Residential, 59 Commercial forecasted from 2022 to 2031
    - ~ 50 residential units / year for 10 years (declining forecast)
    - ~ 6 commercial units / year over 10 years





Resources

Web page link:
Parry Sound Pilot Project - Regional Planning & Engagement | Enbridge Gas

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Question(s):

a) Please provide a copy of the municipal energy and emission plans for each municipality where the Pilot Projects are proposed to be conducted and please explain how the pilot objectives align with each municipal energy and emission plan.

b) For each pilot, please explain how the pilot activities align with the LDC CDM activities/programs in accordance with the OEB CDM Guidelines.

c) Please identify the synergies and/or efficiencies of selecting these locations for the Pilot Projects, including:

- Alignment with specific municipal energy and emission programs, resources or metrics.
- Alignment with LDC CDM programs, consumer outreach or resources.
- Alignment with IESO CDM programs, funding, consumer outreach or resources.
- Alignment with Greener Homes Grant Program incentives, consumer outreach or resources.

Response:

a) Below are the links to the known municipal energy and emissions plans for the municipalities involved in the Pilot Project areas. Currently, these energy and emissions plans primarily focus on facilitating the decrease of energy and GHG emissions in the municipality's own facilities. Irrespective of being a Pilot Project area, Enbridge Gas already offers DSM programs in these areas, which aligns with these municipal plans. The proposed Pilot Projects will further support the municipal energy and emissions plans by offering ETEE programs that provide additional incentives to assist municipalities in reducing their natural gas annual usage.

   In the case of Parry Sound specifically, there is already an ongoing Integrated Community and Climate Action Plan (ICECAP) partnership in place between the

Municipalities and the First Nations located in and around the Georgian Bay Biosphere region. This partnership supports the development of a collaborative, cost-effective approach to energy management and the reduction of greenhouse gas emissions. Enbridge Gas has offered financial support to this initiative as well as technical support to promote energy conservation awareness and adoption.

https://www.parrysound.ca/inside-town-hall/climate-action-and-energy/#:~:text=The%20Town%27s%202019%20Five%20Year,through%20specific%20projects%20and%20processes.

https://georgianbaybiosphere.com/climate-action/

https://www.sarnia.ca/app/uploads/2022/01/Climate-Change-Action-Plan-and-Implementation-Strategy-Nov-15-2021.pdf

b) In the Integrated Resource Planning Proposal Decision and Order (EB-2020-0091), it is stated that “Enbridge Gas can also seek opportunities to work with the IESO or local electricity distributors to facilitate electricity-based energy solutions to address a system need/constraint, as an alternative to IRPAs or facility projects undertaken by Enbridge Gas. However, the OEB is not establishing this as a requirement for Enbridge Gas.” This is reiterated in the Conservation and Demand Management Guidelines for Electricity Distributors (EB-2021-0106). Alignment of programming was not required to be completed and it should be noted that the Pilot Projects are limited in scope for electricity-based solutions. However, Enbridge Gas has as part of its stakeholder engagement for the Pilot Projects met with both the local LDCs and IESO to explore opportunities for potential alignment and coordination in its ETEE and DR programs (e.g., discussions with IESO regarding their Residential DR program as stated in Exhibit D, Tab 1, Schedule 2, paragraph 27).

c) The Pilot Projects are limited in scope. The above-mentioned programs in aggregate exceed the proposed value of the Pilot Projects by over a 50 times multiple. Enbridge Gas did not intend to achieve, nor does it expect any synergies or efficiencies by selecting these specific locations for the proposed Pilots Projects with respect to any other programs.

Please see Exhibit C, Tab 1, Schedule 2 for the criteria that the Company utilized in selecting the Pilot Projects.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Reference:

“Enbridge Gas understands that most members are supportive of most elements of the proposed Pilot Projects. Enbridge Gas expects that where a member of the TWG has concerns with one or more elements of the proposed Pilot Projects, they will make this known through the regulatory approval process”. [Exhibit B, Tab 1, Schedule 1, Page 2]

“Enbridge Gas intends to review its application(s) and supporting evidence with members of the IRP Technical Working Group early in 2023 in order to consider their feedback, in advance of filing with the OEB”.
[EGI_LTR_IRP_Pilots_20221222_eSigned]

Question(s):

a) Please provide a copy of the materials provided to the OEB IRP TWG related to the Pilot Projects.

b) Please provide a copy of the feedback received from the OEB IRP TWG related to the IRP Pilots.

c) Were the pilots already chosen prior to discussion with the OEB IRP TWG or did the TWG have input into pilot objectives and pilot project section?

d) Enbridge indicated in December 2022 that it intended to have the OEB IRP TWG review its supporting evidence prior to filing with the OEB. Please provide copies of the supporting evidence provided to the TWG prior to filing and indicate what changes were made based on TWG feedback.

Response:

a) Please see response at Exhibit I.ED.2.

b) Please see response at Exhibit I.ED.2.

c) No, the Pilot Projects were not chosen prior to discussion with the IRP Technical Working Group ("TWG"). Enbridge Gas proposed Pilot Project objectives, selection criteria and projects to the TWG and the TWG provided feedback and input. Please also see response at Exhibit I.ED.2.

d) Please see Attachment 1 for copies of the draft evidence provided to the TWG for review. Please see Exhibit I.ED.2 for responses specific to Chris Neme's comments. Please see Table 1 for a summary of responses to comments and questions from other members of the TWG on the draft evidence.

Table 1

Item	Comments/Questions from other TWG Members on Draft Evidence	Enbridge Gas Response *(Evidence Reference and Action Taken)*
1	Does Enbridge have a specific requested approval date, and are there considerations as to whether an additional year of data will be lost for one or both projects, depending on the timing of approval? Give some thought to this, in light of the project schedules later in the application.	Ref: Exhibit A, Tab 2, Schedule 1, Paragraph 5. Additional language was included in Application per comment.
2	Subject to confirmation with our legal, I think a hearing is mandatory if a section 36 order is requested.	Ref: Exhibit A, Tab 2, Schedule 1, Paragraph 7. Noted.
3	This seems a bit underdeveloped. I presume Enbridge would be proposing to make use of the option to adjust its IRP Plan and increase costs by up to 25%without seeking additional approval (s. 13 of IRP decision)? If so, that should be stated somewhere. Perhaps that is in the outstanding exhibit E. Aside from cost consequences, is Enbridge proposing any guardrails or boundaries as to how much freedom Enbridge would have to adjust the pilot design without coming back to the OEB? I think the TWG generally agreed that relatively broad flexibility is desirable.	Ref: Exhibit A, Tab 2, Schedule 1, Paragraph 8. Additional language was included in Application per comment (Paragraph 8 and 9).

4	Maybe clarify when the analysis for the AMP was completed, to set up the discussion on the next two pages around how anticipated timing of need has changed since then. Also, perhaps note that because the AMP had forecast both the Parry Sound and Sarnia needs as being in 2032, these system needs could be considered unbudgeted in regards to the capital budget approvals for the 2024-2028 term that Enbridge has requested in the current rebasing proceeding.	Ref: Exhibit B, Tab 1, Schedule 1, Paragraph 14. The timing of when the AMP analysis was discussed at the TWG. The baseline facility projects would remain in the AMP as the projects may still be required at the conclusion of the Pilot Projects.
5	It may be worth noting that an approach to attribution of results is necessary for the purposes of determining shareholder incentives for DSM.	Ref: Exhibit D, Tab 1, Schedule 1, Paragraph 24. Additional language was included in Application per comment (Paragraph 23).
6	The application does not discuss how Enbridge plans to assess this. We had discussed the possible comparison of participation/savings program results from the pilot areas with results outside the pilot area from regular DSM programming.	Ref: Exhibit D, Tab 1, Schedule 1, Paragraph 29. Additional language was included in Application per comment in Exhibit D, Tab 1, Schedule 3, Paragraph 29.
7	Suggest noting that Enbridge has confirmed that Lakeland Power is currently a summer-peaking utility, thus heat pumps are not expected to increase annual peak.	Ref: Exhibit D, Tab 1, Schedule 1, Paragraph 50. Discussed with the TWG but not included as there is no impact to Lakeland Power's peak demand.
8	Relative to baseline of furnace meeting current minimum efficiency levels for new furnaces?	Ref: Exhibit D, Tab 1, Schedule 1, Table 11. The percent reductions are relative to a blended baseline Annual Fuel Utilization Efficiency (AFUE) for furnaces (90%).
9	Can Enbridge briefly note somewhere in the application how (if at all) savings from regular DSM are built into the load forecast underpinning the needs assessment?	Ref: Exhibit D, Tab 1, Schedule 1, Paragraph 73. Discussed with the TWG. Will be considered in future IRP Plans.

10	Might want to note that this change to program design was in response to suggestions from WG, who thought there would be value in better understanding potential of geotargeted commercial/industrial ETEE. Might also be useful to describe what learnings you might get from Southern Lake Huron on commercial/industrial ETEE that you woudn't get in Parry Sound (where participants would all be within Area of Influence). My understanding from previous WG discussions is that there is a much greater base of commercial ETEE customers in Southern Lake Huron (and more large C/I customers in particular) than in Parry Sound.	Ref: Exhibit D, Tab 1, Schedule 2, Paragraph 7. Additional language was included in Application per comment.
11	This seems like a lot of events. Recognize the need to gain data but I presume this is quite a bit more than would likely be needed in a real-world context? Might see lower program uptake (or non-participation) - just something to consider and keep an eye on.	Ref: Exhibit D, Tab 1, Schedule 2, Paragraph 22. Comment was acknowledged. The range of events was based around a review of other jurisdiction's DR pilots and IESO's proposed DR program.
12	Are the hourly flow estimates on non-event days specific to the participating customers (i.e. based on their gas use data on non-event days)? This is probably necessary as I assume that customers choosing to participate in a DR program will not be broadly representative of all customers.	Ref: Exhibit D, Tab 1, Schedule 3, Paragraph 3. Confirmed and clarified language in Application.
13	Some more explanation should probably be provided as to the relatively high share of costs that are "promotion & delivery". Are any of the costs associated with the direct install component considered "promotion & delivery"? If so, that should probably be noted.	Ref: Exhibit E, Tab 1, Schedule 1, Table 3. Exhibit D, Tab 1, Schedule 1 provides details around the proposed delivery and engagement approaches that contribute to the proposed budget.
14	Para or footnote could add link to the recently published TWG DCF+ report and note that this will inform Enbridge's proposed test and supplemental guide.	Ref: Exhibit E, Tab 1, Schedule 1, Paragraph 19. Updated Application to include link in footnote.
15	Perhaps add in brackets that projects costs for the DR offering within the Area of Influence are included in the Project Economics.	Ref: Exhibit E, Tab 1, Schedule 1, Paragraph 25. Tables in the Exhibit were updated in Application.

16	Can you clarify what accounts for the much more modest budget than we previously saw for this aspect (used to be $5M or so)? Are incentive levels or offerings reduced, or is Enbridge proposing to cap participation at a level lower than the level of uptake previously estimated?	Ref: Exhibit E, Tab 1, Schedule 1, Table 11. The budget was updated to address an error that was discovered, and the number of budgeted participants was reduced, which led to a lower budget than previously projected.
17	May wish to break down the estimated costs within the Area of Influence vs. outside it, for the meter adds.	Ref: Exhibit E, Tab 1, Schedule 1, Paragraph 34. Additional language was included in the Application.
18	informed vs guided - it is clear that the TWG was not and is not in the position of leading/guiding.	Ref: Exhibit B, Tab 1, Schedule 1, Paragraph 3. OEB Staff proposed language regarding the framing of engagement with TWG members. Updated language in Application per proposed language.
19	pipe size???	Ref: Exhibit B, Tab 1, Schedule 1, Figure 1 Information was provided in subsequent paragraph. No further updates.
20	price associated with what???	Ref: Exhibit B, Tab 1, Schedule 1, Paragraph 13. Information was provided in Exhibit D, Tab 1, Schedule 1. No further updates.
21	segmentation of existing 2,100?	Ref: Exhibit B, Tab 1, Schedule 1, Table 1. Information was provided in Exhibit D, Tab 1, Schedule 1. No further updates.
22	sources of gas to stations - feeding pipelines?	Ref: Exhibit B, Tab 1, Schedule 1, Figure 4. Upstream pipelines and system are not in scope of this Pilot Project. No future updates.

23	if this LP area is not the focus, is it going to confuse as people read the “low-pressure pipelines” as in need of attention when it just is an LP system. Area of influence vs entire pilot area?	Ref: Exhibit B, Tab 1, Schedule 1, Paragraph 21. Updated Application to clarify low-pressure refers to 2.5kPa MOP. Figure 3 illustrates the location of the LP pipes.
24	Coated and wrapped or bare, unprotected. Hopefully there is a map or schematic later to show detail.	Ref: Exhibit B, Tab 1, Schedule 1, Paragraph 27. Detail was not considered relevant to Pilot Projects. No further updates.
25	why not loop vs. replace	Ref: Exhibit C, Tab 1, Schedule 1, Figure 1. See Exhibit I.FRPO 6 for additional details.
26	Is the supply-side IRPA the station & 1600m?	Ref: Exhibit C, Tab 1, Schedule 2, Table 1 Information regarding what the considerations were for assessment of “Feasibility of supply-side IRPA” was provided in the following paragraphs in the Exhibit.
27	where on map?	Ref: Exhibit C, Tab 1, Schedule 2, Paragraph 10 Regarding system configuration, the Area of Influence was defined on a map in Exhibit A, Tab 2, Schedule 1, Attachment 1 Figure 2.
28	Does this preclude Federal funds?	Ref: Exhibit D, Tab 1, Schedule 1, Paragraph 6 Inclusion of NRCan does not impact the proposed attribution for the Pilot Projects, and program incentives from federal funds are not impacted.
29	enhanced incentives vs. benefit of deferral	Ref: Exhibit D, Tab 1, Schedule 1, Paragraph 47 The impact of Pilot Projects on the baseline facilities were explained at the end of the Exhibit and considered in Exhibit E, Stage 1 NPV calculation.

30	Number of events based on what?	Ref: Exhibit D, Tab 1, Schedule 2, Paragraph 22. The range of events was based around a review of other jurisdiction's DR pilots and IESO's proposed DR program. Additional information on types of events that may be called were provided in following paragraphs.
31	define?	Ref: Exhibit D, Tab 1, Schedule 2, Paragraph 28. Language in Application described how the peak hour reductions were estimated.
32	Why is it not proportional?	Ref: Exhibit D, Tab 1, Schedule 2, Table 5 The budgeted number of participants shown each year are incremental, whereas the estimated peak hour reduction is cumulative.
33	why not a statistically significant sample?	Ref: Exhibit D, Exhibit 1, Schedule 3, Paragraph 2. The Exhibit elaborates on the details regarding the data analysis approach and the need for hourly metering.
34	in aggregate?	Ref: Exhibit D, Tab 1, Schedule 3, Paragraph 16 Confirmed.
35	when/where does TWG get informed?	Ref: Exhibit D, Tab 1, Schedule 3, Paragraph 35 Information was provided in paragraph above.

EXHIBIT LIST

A – ADMINISTRATION

Exhibit	Tab	Schedule	Contents of Schedule
A	1	1	Exhibit List
		2	Glossary of Acronyms and Defined Terms
	2	1	Application
			Attachment 1 - Maps – Pilot 1 and Pilot 2

B – PROJECT NEED

Exhibit	Tab	Schedule	Contents of Schedule
B	1	1	Project Need
		2	IRP Framework Guiding Principles

C – ALTERNATIVES & PROJECT DESCRIPTION

Exhibit	Tab	Schedule	Contents of Schedule
C	1	1	Baseline Facility Alternatives
		2	Pilot Project Alternatives

D – PROPOSED PROJECT

Exhibit	Tab	Schedule	Contents of Schedule
D	1	1	Pilot Project Descriptions
		2	Project Alternatives
		3	Evaluation and Monitoring

E – PROJECT COST AND ECONOMICS

Exhibit	Tab	Schedule	Contents of Schedule
E	1	1	Pilot Project Costs and Economics
			Attachment 1 – O&M Cost Summary
			Attachment 2 – Capital Cost Summary
			Attachment 3 – PS Facility NPV
			Attachment 4 – PS IRPA NPV
			Attachment 5 – SLH Facility NPV
			Attachment 6 – SLH IRPA NPV
			Attachment 7 – Economic Assumptions
		2	Cost Recovery and Allocation
			Attachment 1 – IRP Capital Costs Revenue Requirements
			Attachment 2 – Allocation 2025 IRP Operating & Capital Costs Account Balances
			Attachment 3 – Unit Rates for Disposition 2025 Operating & Capital Costs Account Balance
			Attachment 4 – Bill Impacts for Typical Small and Large Customers 2025 Operating & Capital Costs Account Balance

F – STAKEHOLDERING

Glossary of Acronyms and Defined Terms

Act	Ontario Energy Board Act, 1998, S.O. 1998, c. 15, Schedule B
AMP	Asset Management Plan
AMR	Advanced Meter Reader
Applicant	Enbridge Gas Inc.
BYOD	Bring-your-own-device
CA	Collaboration Agreement
ccASHP	Cold Climate Air Source Heat Pump
CMS	Check Measurement Station
CNG	Compressed Natural Gas
DCF	Discounted Cash Flow
DERMS	Distributed Energy Resource Management System
DHW	Domestic Hot Water
DR	Demand Response
DRS	District Regulating Station
Enbridge Gas or The Company	Enbridge Gas Inc.
ESA	Energy Solution Advisors
ERT	Encoder Receive Transmitters
ETEE	Enhanced Targeted Energy Efficiency
GSHP	Ground Source Heat Pump
GHP	Natural Gas Heat Pump
HER+	Home Efficiency Rebate Plus
HWP	Home Winterproofing Program
IESO	Independent Electricity System Operator
IRP	Integrated Resource Planning
IRPA	Integrated Resource Planning Alternative
IRP Framework	Integrated Resource Planning Framework
LDC	Local Distribution Company
MOP	Maximum Operating Pressure
NPS	Nominal Pipe Size
NRCan	Natural Resources Canada
OEB	Ontario Energy Board
PCM	Phase Change Material
PE	Polyethylene
PRS	Pressure Reduction System
Projects	Parry Sound Pilot Project and Southern Lake Huron Pilot Project
ST	Steel
TBS	Town Border Station
TCE	TC Energy
TES	Thermal Energy Storage
TWG	Technical Working Group

ONTARIO ENERGY BOARD

IN THE MATTER OF the *Ontario Energy Board Act, 1998,* S.O. 1998, c. 15, Schedule B; and in particular section 36 thereof;

AND IN THE MATTER OF an application by Enbridge Gas Inc. for an order or orders approving the cost consequences of Integrated Resource Planning ("IRP") Plans for IRP Pilot Projects in the Town of Parry Sound, City of Sarnia and Town of Plympton-Wyoming.

APPLICATION

1. On July 22, 2021, the Ontario Energy Board ("OEB") issued the first iteration of the IRP Framework for Enbridge Gas Inc. ("Enbridge Gas" or the "Company") (EB-2020-0091, Appendix A). Section 12 of the IRP Framework states, "Enbridge Gas is expected to develop and implement two IRP pilot projects. The pilots are expected to be an effective approach to understand and evaluate how IRP can be implemented to avoid, delay or reduce facility projects". In accordance with the IRP Framework, Enbridge Gas hereby applies to the OEB pursuant to section 36 of the *Ontario Energy Board Act, 1998*, S.O. 1998, c. 15, Schedule B (the "Act"), for an Order or Orders approving the cost consequences of, including to record the associated costs in the IRP costs deferral accounts, the IRP Plans for two "IRP Pilot Projects".

2. During pilot project selection, Enbridge Gas reviewed the list of available IRP Alternatives ("IRPAs"), alone and in combination, to determine potential pilot project objectives. It was determined that the pilots would primarily be focused around exploring the lesser-known demand-side IRPAs, enhanced targeted energy efficiency ("ETEE") and demand response ("DR"), while leveraging more reliable supply-side opportunities where applicable. Enbridge Gas then

developed two distinct pilot projects, one in Parry Sound (the “Parry Sound Pilot Project”) and the other in the City of Sarnia and Town of Plympton Wyoming (the “Southern Lake Huron Pilot Project”).

3. The Parry Sound Pilot Project will implement Enhanced Targeted Energy Efficiency (“ETEE”) programming for residential, commercial and industrial customers in the Town of Parry Sound. The suite of ETEE offerings will include enhancement of existing DSM offerings, which includes a Limited Electric Measure ETEE offering (for residential only), and an Advance Technology ETEE offering. Enbridge Gas has incorporated two reliable supply-side IRPAs as part of the Parry Sound Pilot Project: (i) a negotiated increased contracted pressure from TC Energy (“TCE”); and (ii) CNG injection, to defer the system need during the Pilot Project term. The increased contracted pressure from TCE and the use of CNG injection will ensure that Enbridge Gas can reliably meet the system demand requirements (peak hour) while demand-side IRPAs are being tested. The primary objectives of the Parry Sound Pilot Project are to develop an understanding of how ETEE programs impact peak hour flow/demand and to develop an understanding of how to design, deploy, and evaluate ETEE programs.

4. The Southern Lake Huron Pilot Project will implement ETEE programming via enhancement of DSM offerings for residential, commercial and industrial customers, with an increased focus on the commercial and industrial sector, as well as a Demand Response (“DR”) program for residential customers in the City of Sarnia and Town of Plympton-Wyoming area. Enbridge Gas has also incorporated a supply-side IRPA as part of the Southern Lake Huron Pilot Project, where CNG injection will be leveraged in order to defer the system need during the Pilot Project term. The primary objectives of the Southern Lake Huron pilot project are to develop an understanding of how ETEE and DR programs

impact peak hour flow/demand and to develop an understanding of how to design, deploy, and evaluate ETEE and residential DR programs.

5. The Pilot Projects will act as a "proof-of-concept" for selected IRPAs by providing key learnings on the performance of IRPAs implemented within the Pilot Projects and will provide benefit to future IRP Plans through their potential for scalability and readily transferrable learnings. Further, the Pilot Projects are expected to defer, avoid or eliminate the facilities requirement for the system constraints identified in the Parry Sound and Sarnia areas, as described in Exhibits B and D.

6. Both Pilot Projects are proposed to be implemented with a term of 2023-2027, subject to the timing of receipt of a Decision and Order of the OEB. The proposed implementation schedule can be found at Exhibit D, Tab 1, Schedule 1 and 2.

7. For ease of reference and to assist the OEB with preparation of the notice of application for the IRP Pilot Projects, a map of each of the IRP Pilot Project areas is included as Attachment 1 to this Exhibit.

8. If the OEB determines that it will conduct a hearing for this application, then Enbridge Gas requests that it proceed by way of written hearing in English.

9. Pursuant to section 36 of the Act, Enbridge Gas requests an Order or Orders of the OEB approving the cost consequences of the IRP Plans for the IRP Pilot Projects, including the recording of the associated costs in the IRP costs deferral accounts for later recovery[1].

[1] EB-2020-0091 OEB Decision and Accounting Order (September 2, 2021), Schedule A; Deferral Account No. 179-385 and 179-386.

10. Enbridge Gas requests that copies of all documents filed with the OEB in connection with this proceeding be served on it and on its counsel, as follows:

(a)	The Applicant:	Brittany Zimmer Senior Advisor, Leave to Construct Applications
	Address:	P.O Box 2001 50 Keil Drive N Chatham, ON N7M 5M1
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	Telephone:	(416) 863-1500
	Fax:	(416) 863-1515
	E-Mail:	dstevens@airdberlis.com

DATED at the City of Chatham, Ontario this 20th day of June 2023.

ENBRIDGE GAS INC.

(Original Digitally Signed)

____

Brittany Zimmer,
Senior Advisor, Leave to Construct Applications

PILOT PROJECT MAPS

Figure 1 – Parry Sound Pilot Project Area

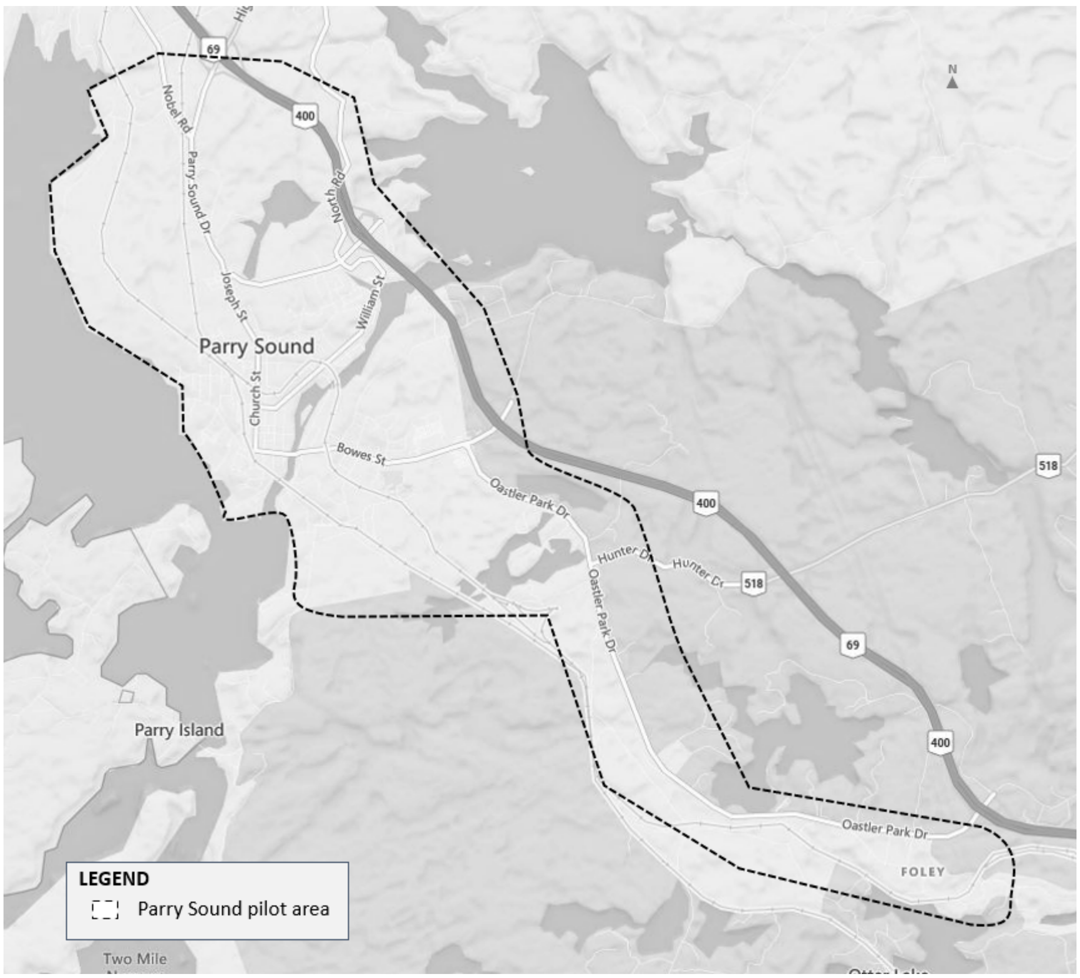
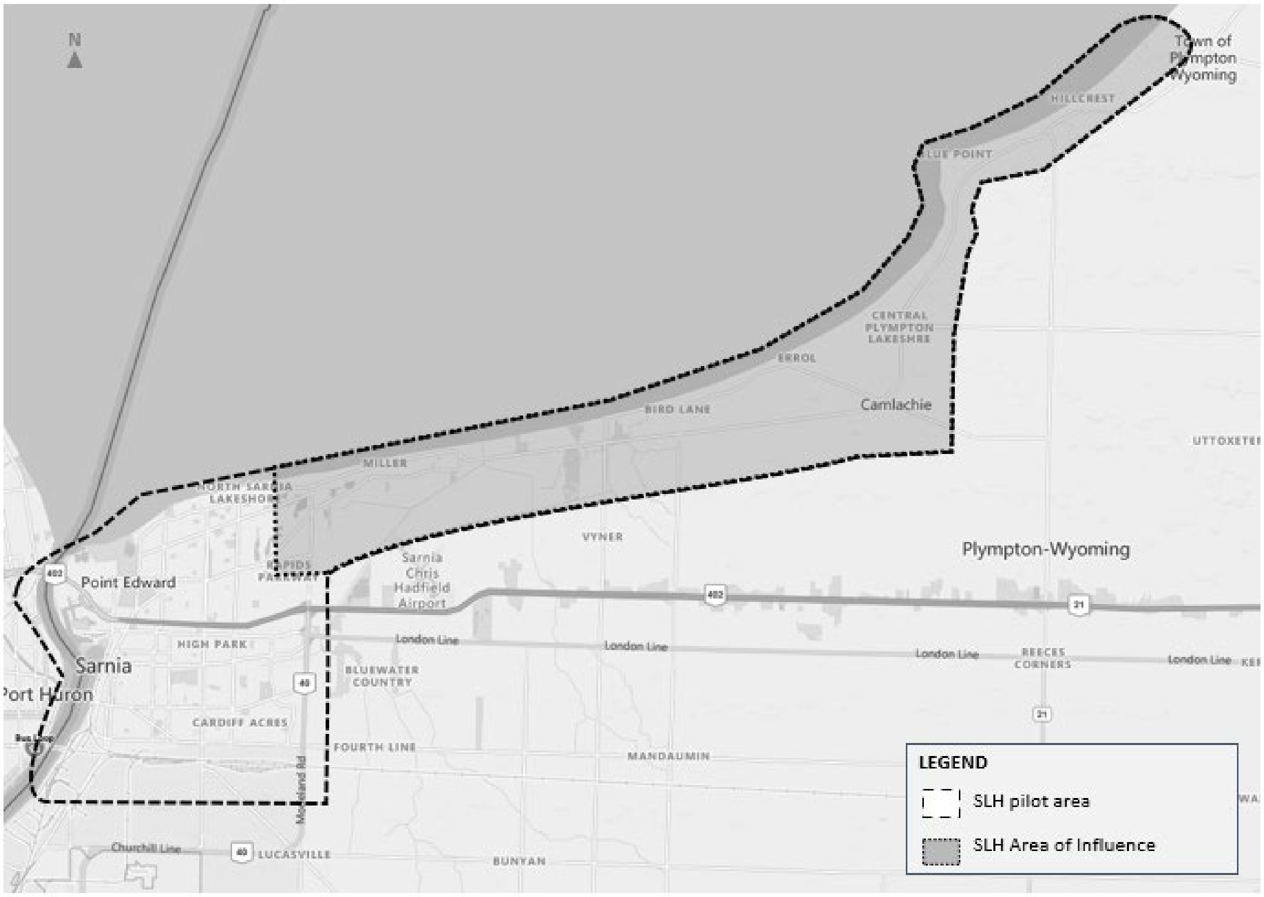


Figure 2 – Southern Lake Huron Pilot Project Area



PROJECT NEED

Pilot Projects Overview

1. Within Enbridge Gas's Integrated Resource Planning ("IRP") proposal (EB-2020-0091), the Company requested approval to develop and initiate two pilot projects to test components of its IRP proposal. Within its Decision and Order on Enbridge Gas's IRP Proposal, the OEB noted that there was universal support for Enbridge Gas's request and agreed with the Company's proposed approach. The OEB further noted that the pilot projects were seen as an effective approach to understand and evaluate how IRP can be implemented to avoid, delay or reduce facility projects and directed Enbridge Gas to apply to the OEB for approval of the IRP pilot projects by providing similar information to that of future IRP Plan applications.[1]

2. Following the OEB's Decision on Enbridge Gas's IRP proposal, the Company developed specific objectives for the pilot projects. These are described in detail at Exhibit C, Tab 2, Schedule 1. Enbridge Gas then selected two pilot projects that were able to meet the pilot project objectives. The Company considered several criteria when selecting the projects, including, but not limited to: i) that the underlying system need pass the binary screening criteria as defined in the IRP Framework, ii) that the pilot project should be expected to materially avoid, defer or reduce the facility requirements to address the system need identified in the Company's Asset Management Plan ("AMP"), iii) that the pilot project should enable effective data collection and measurement of impacts on peak flow, and iv) that the pilot project should have scalability and transferrable learnings for the selected IRP Alternatives ("IRPAs").

3. Throughout the selection process, Enbridge Gas engaged the Technical Working Group ("TWG") to discuss key items such as: objectives of the pilots, pilot project

[1] EB-2020-0091, Decision and Order, July 22, 2021, p. 90.

alternatives, project selection criteria and potential IRPAs to implement within the pilot projects. Consultation with the TWG is an ongoing iterative process, where the discussions and feedback have ultimately guided Enbridge Gas's selection and design of the two pilot projects. This process is described in further detail at Exhibit C, Tab 1, Schedule 2.

4. Through this Application, pursuant to section 36 of the Act, Enbridge Gas is seeking an Order or Orders of the OEB approving the cost consequences of, including to record the associated costs in the IRP costs deferral accounts,[2] for the two proposed multi-year (2023-2027) Pilot Projects (collectively referred to as the "Pilot Projects"). The Pilot Projects will be located in the Town of Parry Sound (the "Parry Sound Pilot Project") and in the City of Sarnia and Town of Plympton-Wyoming (the "Southern Lake Huron Pilot Project").

5. Each Pilot Project will employ a unique mix of supply side and demand side IRPAs in separate geographic areas. This will enable the Company to gather learnings on multiple IRP alternatives as well as gain insights on peak flow reductions resulting from different customer types. The Parry Sound Pilot Project is described in detail at Exhibit D, Tab 1, Schedule 1, and the Southern Lake Huron Pilot Project is described in Exhibit D, Tab 1, Schedule 2.

The Parry Sound Pilot Project will include:

- procurement of market-based supply;
- localized injection of compressed natural gas ("CNG"); and
- Enhanced Targeted Energy Efficiency ("ETEE") programming.

The Southern Lake Huron Pilot Project will include:

- localized injection of CNG;

[2] EB-2020-0091 OEB Decision and Accounting Order (September 2, 2021), Schedule A; Deferral Account No. 179-385 and 179-386.

- ETEE programming; and
- demand response (“DR”) programming.

6. The primary objectives of the Pilot Projects are twofold:

   (i) ***Develop an understanding of how ETEE and DR programs impact peak hour flow/demand –*** This will be investigated for various groups of customers, and for various ETEE and DR program offerings. The learnings gained will help Enbridge Gas to evaluate and estimate the potential impact of such programming on other parts of its distribution system in the future, including to:

   - quantify actual peak hour flow reductions (m^3/hr) resulting from ETEE and DR programming by customer type;
   - compare peak hour flow per customer prior to and after ETEE and DR programming is implemented, by customer type; and
   - evaluate DR event parameters on peak hour flow reductions and the adoption and persistence of customer participation in DR programming over time.

   (ii) ***Develop an understanding of how to design, deploy, and evaluate ETEE and residential DR programs –*** The learnings that Enbridge Gas is seeking to gain in this regard include to:

   - assess the impacts to participant uptake resulting from increased incentives for ETEE programming;
   - assess the effectiveness of various marketing/community engagement tactics to generate awareness and ETEE/DR program participation;
   - understand differences in measure uptake within ETEE programming versus broad-based DSM programming;
   - understand the costs of ETEE programming (incentives, delivery costs, promotion costs, administration costs) versus broad-based DSM programming;
   - gather learnings on customer barriers and contractor installation and service barriers to adoption for all measures and DR to support wider market

deployment in potential future IRP applications;

- gather initial learnings of the impact of electric measures on the local electric grid via engagement with the Local Distribution Company ("LDC") to support future integrated energy planning with the electric sector;
- understand the cost of DR programming (i.e., incentives, delivery, promotion, administration);
- evaluate the effectiveness of DR program design parameters on DR participation levels; and
- understand better any ratepayer equity-related implications of investing in geographic-specific offerings of ETEE and DR programming.

7. Supply-side alternatives, including the procurement of market-based supply and localized CNG Injection, will be used to defer the underlying system needs during the Pilot Projects, enabling Enbridge Gas to realize the primary objectives of the Pilot Projects; to gain learnings from the demand-side IRPAs implemented. Enbridge Gas will also gain learnings on the use of CNG as a longer-term supply-side alternative including the injection and usage of CNG as a peak shaving alternative.

8. The total cost of the Parry Sound Pilot Project is $6.6 M. The total cost of the Southern Lake Huron Pilot Project is $6.5 M. Further detail on Pilot Project costs is provided at Exhibit E, Tab 1, Schedule 1. Through the Pilot Projects, Enbridge Gas expects to gather learnings consistent with the primary objectives outlined above, as well as avoid, delay or reduce the required facilities to address the system needs as defined in the Company's AMP. To note, the objectives and selection of Pilot Projects were centered around gaining learnings on ETEE and DR and not specifically on the cost effectiveness of the proposed IRPA. The OEB encouraged Enbridge Gas to, and it will, use the Pilot Projects as a testing ground for an enhanced DCF+ test; however, due to the timing of the TWG's review of the enhanced test and the timing of the Pilot Project Application filing, the Company will defer presenting a three-stage enhanced

DCF+ until the first IRP Plan application, where Enbridge Gas will seek adjudication of the test. In efforts to still provide a high-level cost benefit analysis, a Stage 1 DCF analysis was completed.

9. Enbridge Gas will provide Pilot Project updates, key learnings and outcomes to the OEB and stakeholders through the annual IRP Report that the Company files as part of its annual Non-Commodity Deferral Account Clearance and Earnings Sharing Mechanism application.[3]

10. In the remainder of this Exhibit, the systems and system constraints/needs that will be targeted through the Pilot Projects in both Parry Sound and Southern Lake Huron are described.

Parry Sound System

11. The Enbridge Gas Parry Sound distribution system supplies natural gas to customers located in the Towns of Parry Sound, Orville and Seguin. The Parry Sound system receives natural gas supply directly from TC Energy ("TCE") via the TCE Mainline near Emsdale, Ontario. There are currently approximately 2,100 customers served by the Parry Sound system.[4]

12. Schematics of the Parry Sound system are shown in Figure 1 and Figure 2 below.

[3] EB-2020-0091 (Appendix A), Integrated Resource Planning Framework for Enbridge Gas p.22 (Monitoring and Reporting)

[4] The customers served by the Parry Sound system are general service customers. There are currently no contract class customers served by the Parry Sound system.

Figure 1 – Schematic of Parry Sound system

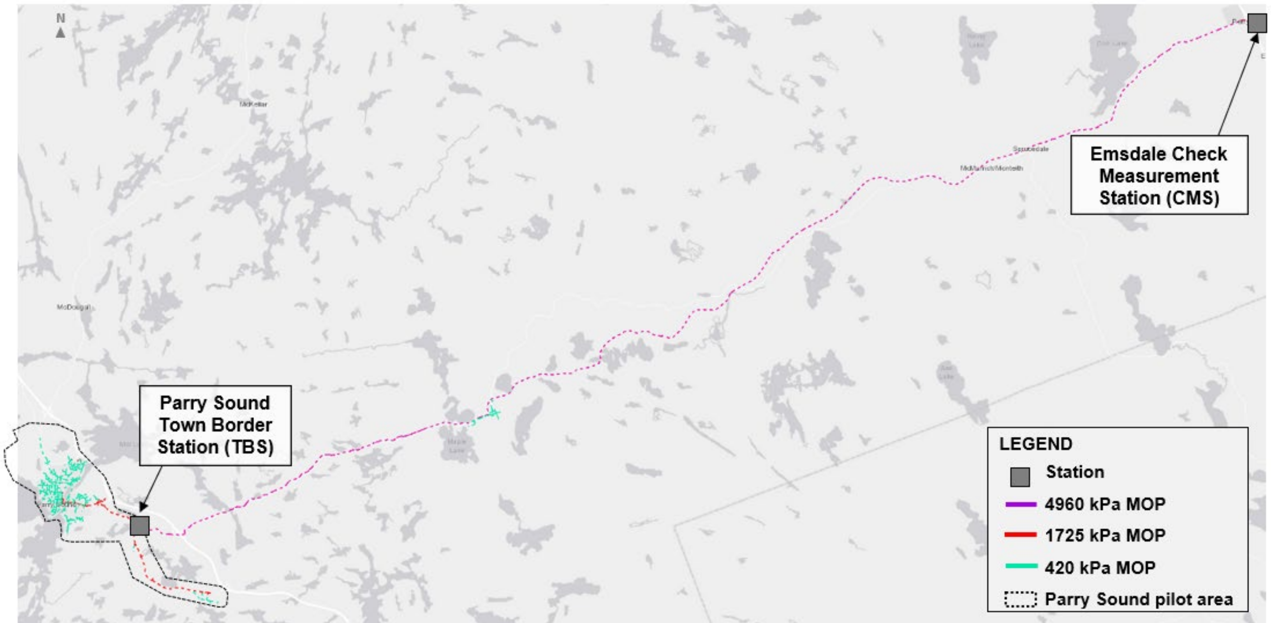
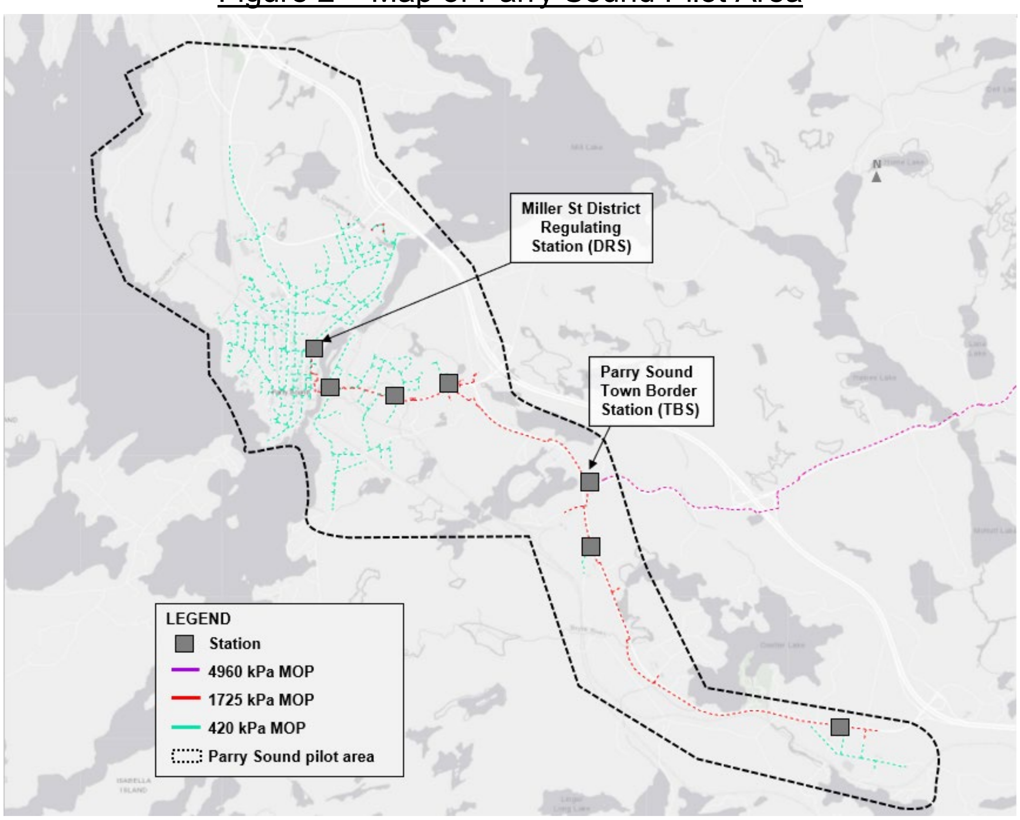


Figure 2 – Map of Parry Sound Pilot Area



13. As noted in Figures 1 and 2, the highest-pressure pipeline(s) serving the Parry Sound system is a 4960 kPa Maximum Operating Pressure ("MOP") system of approximately 11.6 km of Nominal Pipe Size ("NPS") 6 steel ("ST") pipeline and 50.1 km of NPS 4 ST pipeline. This high-pressure pipeline system is the only source of natural gas supply into the Town of Parry Sound. The high-pressure system begins at Emsdale Check Measurement Station ("CMS") and ends at the Parry Sound Town Border Station ("TBS") where pressure is reduced to a 1725 kPa MOP system consisting primarily of NPS 4 and NPS 2 ST pipelines. The 1725 kPa system feeds six smaller pressure-reducing stations in the surrounding area which primarily feeds the Town of Parry Sound. The systems downstream of the 1725 kPa MOP system are 420 kPa MOP and consist primarily of NPS 4 and NPS 2 Polyethylene ("PE") pipelines. Located at the northern end of the 1725 kPa system, the Miller Street District Regulating Station ("DRS") feeds the majority of customers on this system. The Parry Sound system is heat sensitive and the peak/design condition occurs in the winter as most of the customers on this system are residential.

14. Enbridge Gas is currently utilizing a supply-side IRPA consisting of negotiated increased contracted pressure from TCE to avoid a system reinforcement; however, TCE notified Enbridge Gas that the delivery pressures will be returned to their standard tariff pressure of 4,000 kPa for the Winter of 2023/24. As explained further in Exhibit D, Tab 1, Schedule 1, Enbridge Gas has requested a higher-pressure service from TCE to maintain the supply-side IRPA. TCE has agreed to provide the higher-pressure for Winters 2023/24 and 2024/25. At this time Enbridge Gas has estimated the costs associated with the higher-pressure service that TCE will provide.

Parry Sound Project Need

15. The Company's 2023-2032 Asset Management Plan ("AMP") identified a need to address a system need/constraint in Parry Sound, to maintain the minimum inlet pressure, and to support Parry Sound system growth in response to forecasted increased market/customer demand:

> This project was generated as part of Distribution Optimization Engineering's 2021 System Reinforcement Plan (SRP). 8.5 km of NPS 6 steel looping is required on the existing Parry Sound Lateral (4960 kPa) to maintain the minimum inlet into the Parry Sound TBS station and support the forecasted growth in Parry Sound. Without this project, the forecasted growth on the system would increase the likelihood that inlet pressures at Parry Sound TBS would drop below minimum operating limits. [5]

16. In the AMP, the required in-service date to address the identified system need/constraint in the Parry Sound system is 2032.[6] However, that in-service date assumed that TCE would maintain the negotiated increased delivery pressure at Emsdale CMS until that time. As described above, TCE has subsequently notified Enbridge Gas that the delivery pressure at Emsdale CMS will be returned to the standard tariff pressure of 4,000 kPa by November 2023. As a result, system capacity on the Parry Sound system will be reduced and the timing of the need to address the system constraint has advanced relative to the estimate set out in the AMP.

17. A 10-year forecast of residential and commercial attachments for the Parry Sound System can be seen in Table 1:

[5] EB-2022-0200, Exhibit 2, Tab 6, Schedule 2, Appendix A, P. 26

[6] Since the AMP was filed, Enbridge Gas has created a USM (24 hour) model for the Parry Sound system. Using this more detailed modeling approach, the timing of the system constraint (assuming TCE maintains the increased delivery pressure of 4,570 kPa at Emsdale CMS) is 2035.

Table 1: Parry Sound 10-Year Customer Attachment Forecast

Year	Residential Attachments	Commercial Attachments
2022	58	6
2023	55	7
2024	53	6
2025	58	7
2026	54	6
2027	47	6
2028	43	6
2029	40	5
2030	35	5
2031	29	5
2032	24	5

18. As a result of the reduction in pressure at Emsdale CMS in 2025 and considering the anticipated Parry Sound system growth in response to forecasted increased market/customer demand, the minimum inlet pressure is now expected to be reached at the inlet to Parry Sound TBS in 2025 and at the inlet to Miller St DRS Parry Sound Station in 2029. System stations are designed to provide a set delivery pressure when the minimum inlet pressure is met. If the minimum inlets cannot be met, the delivery pressure to the downstream system will decrease. This could jeopardize Enbridge Gas's ability to reliably serve all the customers in this system under all conditions.

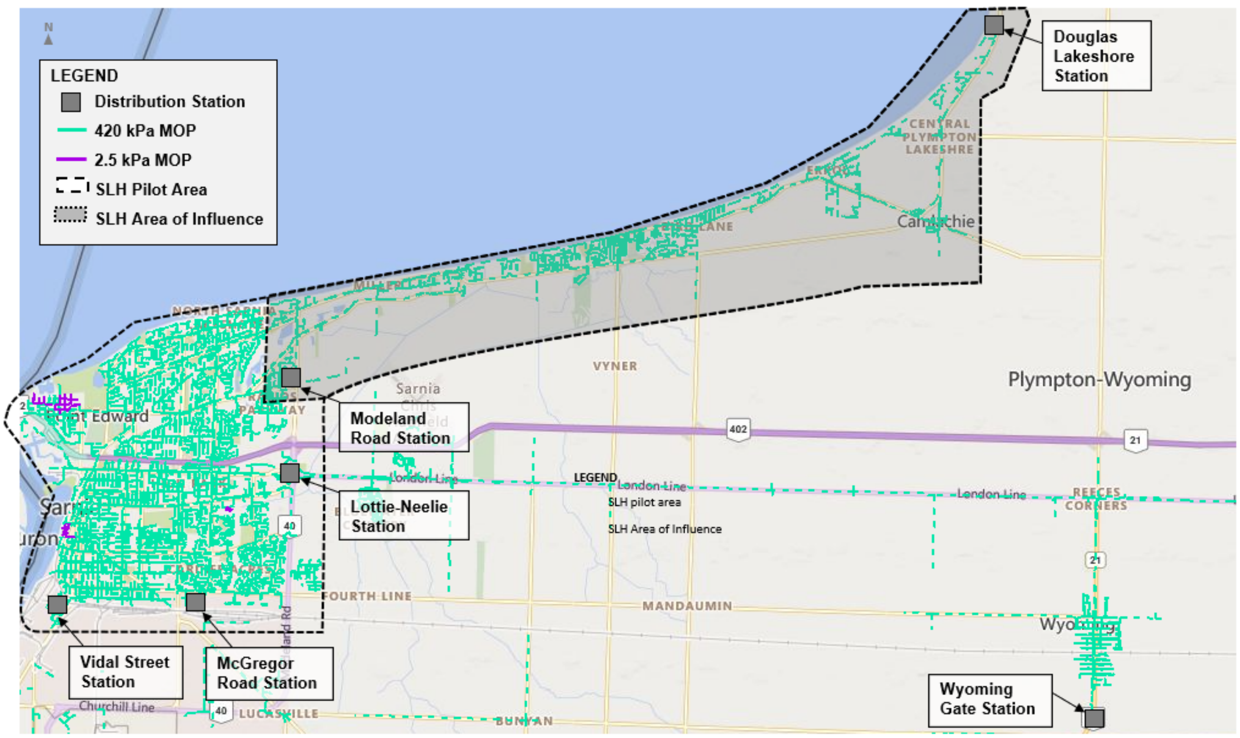
Southern Lake Huron System

19. The Enbridge Gas Southern Lake Huron distribution system supplies natural gas to customers located in the Lambton County area encompassing Sarnia, Plympton-Wyoming and surrounding areas. The Southern Lake Huron system receives gas from upstream higher pressure Enbridge Gas systems including the Sarnia Industrial system, the Petrolia system and the Hensall Transmission system. There are currently

approximately 30,000 customers served by the Southern Lake Huron system.[7]

20. Schematics of the Southern Lake Huron system are shown in Figure 3 below.

Figure 3 – Map of Southern Lake Huron Pilot Area



21. As noted in Figure 3, the green pipeline(s) serving the Southern Lake Huron system is a 420 kPa MOP system of approximately 776 kilometers of pipelines of various sizes ranging from NPS 1-1/4 to NPS 12, supplied by six primary pressure reduction stations shown in grey boxes. There is approximately 7 kilometers of low-pressure pipelines (in purple) fed by the 420 kPa MOP systems. The Southern Lake Huron system is heat sensitive and the peak/design condition occurs in the winter as most of the customers on this system are residential.

[7] The customers served by the Southern Lake Huron system are general service customers. With the exception of 1 interruptible service contract class customer, there are no other contract class customers served by the Southern Lake Huron system.

22. The Southern Lake Huron pilot area has a subregion located in the northeastern region, identified as “Area of Influence”, which corresponds to the area of constraint on the system and where changes in peak hour demand in this area would have impact on the identified facility projects located in this area. The remaining area will be referenced as “greater Southern Lake Huron”, where changes in peak hour demand within this area will not significantly impact any system needs.

Southern Lake Huron Project Need

23. The Company’s AMP identified a growth project to address a system constraint located in Area of Influence, to support Southern Lake Huron system growth in response to forecasted increased market/customer demand:

> A new distribution station off of the existing 1,210 kPa system and a main extension to tie into the 420 kPa system north of Sarnia along the water is required.[8]

24. In the AMP, the required in-service date to address the identified system need/constraint is 2032. However, based on the Company’s current forecast of in-franchise demand growth and increasing peak period demands, the Southern Lake Huron system is expected to require reinforcement by 2025. As a result, the timing of the need to address the system need/constraint has advanced relative to the estimate set out in the AMP.

25. A 10-year forecast of residential and commercial attachments for the Southern Lake Huron system can be seen in Table 2:

[8] EB-2022-0200, Exhibit 2, Tab 6, Schedule 2, Appendix B, P. 83, Investment Code 30560

Table 2: Southern Lake Huron 10-Year Customer Attachment Forecast

Year	Residential Attachments	Commercial Attachments
2022	140	15
2023	139	17
2024	137	16
2025	135	16
2026	132	16
2027	127	15
2028	121	15
2029	115	14
2030	108	14
2031	103	13
2032	93	13

26. The Company's AMP also addressed a secondary system need/constraint in the Area of Influence. This project, "Old Lakeshore Rd", involves the replacement of high-risk steel pipelines installed on or before 1970 as part of the vintage steel main program. The scope of this project includes the replacement of 1350 m of NPS 4 steel and 1090 m of NPS 2 steel distribution mains as well as 95 services.[9] The scope of this project is considered in the pilot as it falls within the Area of Influence.

27. The Company's AMP also highlighted other pipe replacement projects in the greater Southern Lake Huron pilot area. These were reviewed during the Pilot Project selection process but were not considered further, as the review showed that the potential peak hour reductions in the greater Southern Lake Huron pilot area of influence would not impact the project scopes.

[9] EB-2022-0200, Exhibit 2, Tab 6, Schedule 2, Appendix B, P. 83, Investment Code 30313

IRP FRAMEWORK GUIDING PRINCIPLES

1. In the IRP Framework for Enbridge Gas (EB-2020-0091), the OEB in Section 3 outlined guiding principles for IRP and in Section 9 directed Enbridge Gas to discuss how the IRP guiding principles have been addressed within each IRP Plan application. Furthermore, in Section 12, the OEB requested that Enbridge Gas's Pilot Project applications provide similar information and follow a consistent approach as IRP Plan applications.

2. The Board-approved IRP Framework states the following for each principle:
   a. Reliability and Safety

      "In considering IRPAs as part of system planning processes, Enbridge Gas's system design principles cannot be compromised, and the reliable and safe delivery of firm contracted peak period natural gas volumes to Enbridge Gas's customers must remain of paramount importance."[1]

   b. Cost-effectiveness

      IRPAs must be cost-effective (competitive) compared to Facility Alternatives and other IRPAs, including taking into account impacts on Enbridge Gas customers. [2]

   c. Public Policy

      IRP will be considered in a manner to ensure that it is supportive of and aligned with public policy, and in particular the OEB's statutory objectives for the natural gas sector.[3]

   d. Optimized Scoping

      Recognizing that reviewing IRPAs for every forecast infrastructure project would be extremely time intensive, binary screening should be undertaken, to confirm which forecast need(s) should undergo evaluation of IRPAs, and to ensure a focus at the outset on efficient and effective IRPA investment.[4]

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[1] EB-2020-0091, IRP Decision, Appendix A - IRP Framework, Section 3, p.5
[2] EB-2020-0091, IRP Decision, Appendix A - IRP Framework, Section 3, p.5
[3] EB-2020-0091, IRP Decision, Appendix A - IRP Framework, Section 3, p.5
[4] EB-2020-0091, IRP Decision, Appendix A - IRP Framework, Section 3, p.5

e. Risk Management

Economic risks associated with both Facility Alternatives and IRPAs in meeting system needs are evaluated and appropriately mitigated. Risks and rewards are allocated appropriately between Enbridge Gas and its customers.[5]

3. Enbridge Gas's assessment of the IRP guiding principles in the context of the Pilot Projects are described separately for each project below. Enbridge Gas notes that not all IRP guiding principles are relevant to the Pilot Projects, as the primary objectives of the Pilot Projects are unique and differ from a traditional IRP Plan. The primary objectives of the Pilot Projects are described in Exhibit B, Tab 1, Schedule 1.

Parry Sound

4. Reliability and Safety

To ensure that the reliable and safe delivery of natural gas volumes to Parry Sound customers during peak period demand is maintained during the term of the Pilot Projects, Enbridge Gas has incorporated reliable supply-side IRPAs. First, Enbridge Gas has secured a supply-side IRPA that will increase the inlet pressure from TC Energy ("TCE") at the Elmsdale Station. The negotiated increased contracted pressure from TCE will enable Enbridge Gas to meet the peak period demands of the Parry Sound customers until the proposed demand-side IRPAs, as noted at Exhibit D, Tab 1, Schedule 1, are implemented and peak hour consumption in the Pilot Project area is reduced. If the demand-side IRPAs being implemented through the Pilot Projects are unsuccessful in achieving forecasted peak period reductions, Enbridge Gas will request to extend the agreement with TCE. If this is not feasible, Enbridge Gas will install a CNG injection system which will be utilized to ensure no interruptions occur on the Enbridge Gas distribution

[5] EB-2020-0091, IRP Decision, Appendix A - IRP Framework, Section 3, p.5

system.

5. Cost Effectiveness

The cost-effectiveness guiding principle is an important consideration for IRP Plans. Enbridge Gas has collaborated with the TWG in determining components of the DCF+ test; however, at this time the economic test has not been finalized. Enbridge Gas will file a proposed DCF+ test along with the DCF+ Supplemental Guide in the first IRP Plan following the Pilot Projects Application.

Enbridge Gas has completed a DCF+ Phase 1 Test for the Parry Sound Pilot Project, as found at Exhibit E, Tab 1, Schedule 1, Attachment 1. It is important to note that as described in Exhibit B, Tab 1, Schedule 1, the primary objectives of the Parry Sound Pilot Project are to gain and utilize learnings from the Pilot Project, rather than to address an existing system constraint using the most cost-effective alternative. Enbridge Gas will implement learnings from the Parry Sound Pilot Project as they become available in DCF+ tests completed for future IRP Plan applications, which will support increasing the effectiveness of the test.

6. Public Policy

The Parry Sound Pilot Project was considered in a manner that ensures it is supportive of and aligned with public policy, and in particular the OEB's statutory objectives Section 2, subsections 3 and 5 for the natural gas sector which state:[6]

> 3. To facilitate rational expansion of transmission and distribution systems.
>
> 5. To promote energy conservation and energy efficiency in accordance with the policies of the Government of Ontario, including having regard to the consumer's economic circumstances.
>
> 5.1 To facilitate the maintenance of a financially viable gas industry for the transmission, distribution and storage of gas.

[6] Section 2(3) and Section 2(5) of the OEB's statutory objectives for the natural gas section.

The Parry Sound Pilot Projects includes the deployment of a supply-side IRPA which ensures reliable and safe delivery of gas to customers, and ETEE, which leverages existing energy conservation programs that promote energy efficiency.

7. Optimized Scoping
To efficiently assess the potential Pilot Projects, Enbridge reviewed its 2023-2032 Asset Management Plan (EB-2022-0200) and applied the binary screening as directed in the OEB's IRP Decision and Order.[7] Following the binary screening Enbridge Gas reviewed potential projects that:
    a. Could reasonably be expected to either materially or entirely avoid, defer or reduce that same underlying system need/constraint identified in Enbridge Gas's AMP.
    b. Could enable effective data collection and measurement of the impact that IRPA investments have had on peak flow.
    c. Could act as a "proof-of-concept" for as wide a variety of IRPAs as possible with emphasis placed onto IRPAs that have potential for scalability and readily transferrable learnings.

8. The Parry Sound Pilot Project met the criteria above and was selected as a Pilot Project. Please see Exhibit C, Tab 1, Schedule 2 for more details regarding the Pilot Project selection process.

9. Risk Management
The performance of the demand-side IRPAs in the Parry Sound Pilot Project and their impact on the scope of the facility projects described in Exhibit C, Tab 1, Schedule 1, will be monitored and evaluated throughout the duration of the Pilot

[7] EB-2020-0091, IRP Decision, Appendix A, Section 5.2, p.9

Projects and changes to program design and delivery will be undertaken if needed in efforts to maximize results and minimize risks from the Pilot Projects. The learnings from the Parry Sound Pilot Project will enable the Company to better understand the achievable peak demand reduction from ETEE and the other technologies (i.e. electric heat pumps, natural gas heat pumps, hybrid heating, etc.) in the residential and small commercial sectors. The Parry sound project will inform the design of future IRP Plans, including how to minimize the level of economic risk of an IRP Plan should it be unable to deliver the load reduction required to address the system need.

Southern Lake Huron

10. Reliability and Safety

To ensure that the reliable and safe delivery of natural gas volumes to Southern Lake Huron system customers during peak period demand is maintained during the term of the Pilot Projects, Enbridge Gas will implement a reliable supply-side IRPA, CNG injection, in 2025 to meet the peak period demands of the Southern Lake Huron system customers. If the demand-side IRPAs being tested through the Southern Lake Huron Pilot Project are unsuccessful in achieving significant peak period reductions, Enbridge Gas will extend the CNG injection system to ensure no interruptions occur on the Enbridge Gas distribution system.

11. Cost-effectiveness

The cost-effectiveness guiding principle is an important consideration for IRP Plans. Enbridge Gas has collaborated with the TWG in determining components of the DCF+ test; however, at this time the economic test has not been finalized. Enbridge Gas will file a proposed DCF+ test along with the DCF+ Supplemental Guide in the first IRP Plan following the Pilot Projects Application.

Enbridge Gas has completed a DCF+ Phase 1 + Test for the Southern Lake Huron Pilot Project, as found at Exhibit E, Tab 1, Schedule 1, Attachment 3. While the Southern Lake Huron Pilot Project appears not to be cost-effective based on the preliminary analysis, the primary objectives of the Southern Lake Huron Pilot Project are to gain learnings on the effectiveness of demand-side IRPAs (ETEE and Demand Response) to reduce peak hour consumption, rather than to address an existing system constraint using the most cost-effective alternative. Enbridge Gas will implement learnings from the Southern Lake Huron Pilot Project as they become available in DCF+ tests completed for future IRP Plan applications which will support increasing the effectiveness of the test.

12. Public Policy

The Southern Lake Huron Pilot Project was considered in a manner that ensures it is supportive of and aligned with public policy, and in particular the OEB's statutory objectives Section 2, subsections 3 and 5 for the natural gas sector which state:[8]

> 3. To facilitate rational expansion of transmission and distribution systems.
>
> 5. To promote energy conservation and energy efficiency in accordance with the policies of the Government of Ontario, including having regard to the consumer's economic circumstances.
>
> 5.1 To facilitate the maintenance of a financially viable gas industry for the transmission, distribution and storage of gas.

The Southern Lake Huron Pilot Project includes the deployment of a demand response program and ETEE which leverages existing energy conservation programs that promote energy efficiency. In addition, a CNG supply-side IRPA will also be implemented in 2025 which ensures reliable and safe delivery of gas to customers in the Southern Lake Huron Pilot Project area.

[8] Section 2(3) and Section 2(5) of the OEB's statutory objectives for the natural gas section.

13. Optimized Scoping

To efficiently assess the potential Pilot Projects, Enbridge reviewed its 2023-2032 Asset Management Plan (EB-2022-0200) and applied the binary screening as noted in the OEB's IRP Decision and Order.[9] Following the binary screening Enbridge Gas reviewed potential projects that:

a. Could reasonably be expected to either materially or entirely avoid, defer or reduce that same underlying system need/constraint identified in Enbridge Gas's AMP.
b. Could enable effective data collection and measurement of the impact that IRPA investments have had on peak flow.
c. Could act as a "proof-of-concept" for as wide a variety of IRPAs as possible with emphasis placed onto IRPAs that have potential for scalability and readily transferrable learnings.

14. The Southern Lake Huron Pilot Project met the criteria above and was selected as a Pilot Project. Please see Exhibit C, Tab 1, Schedule 2 for a detailed review of how the Pilot Projects were selected.

15. Risk Management

The performance of the demand-side IRPAs in the Southern Lake Huron Pilot Project and their impact to the scope of the facility projects described in Exhibit C, Tab 1, Schedule 1, will be monitored and evaluated throughout the duration the Pilot Projects and changes to program design and delivery will be undertaken if needed in efforts to maximize results from the Pilot Projects. The learnings from the Southern Lake Huron Pilot Project will enable the Company to better understand the achievable peak demand reduction from ETEE and demand response programs in the residential and small commercial sectors and inform

[9] EB-2020-0091, IRP Decision, Appendix A, Section 5.2, p.9

future design of IRP Plans and to minimize the level of economic risk should the IRP Plan be unable to deliver the load reduction required to address the system need.

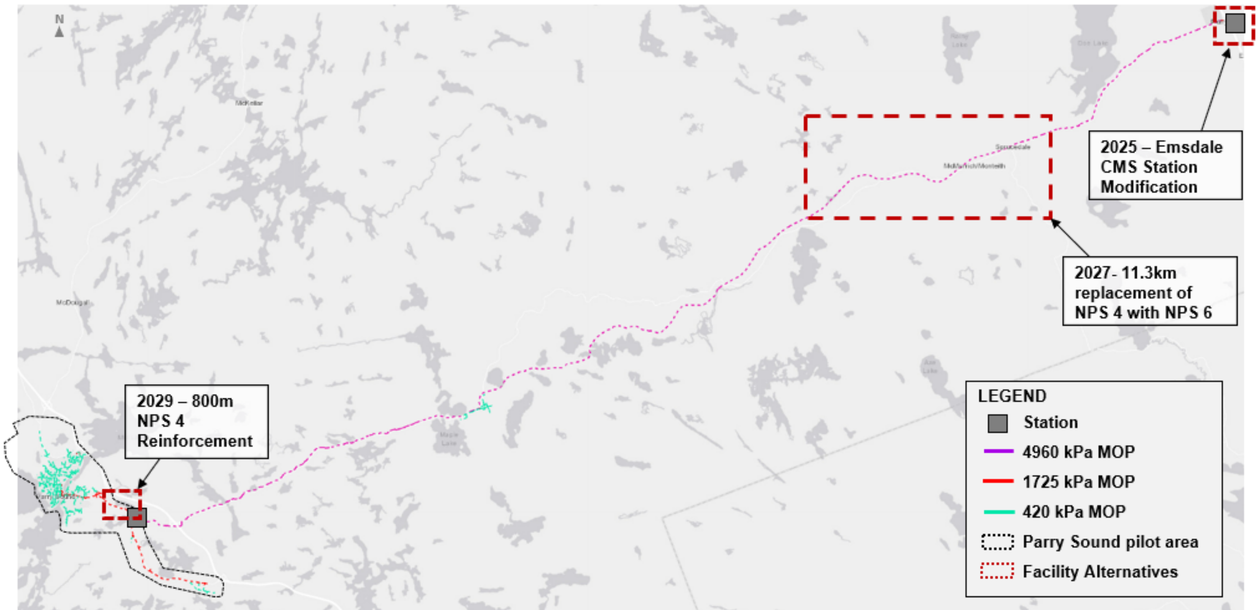
BASELINE FACILITY ALTERNATIVES

1. This section of evidence describes the updated baseline facility alternatives originally identified in the Asset Management Plan that would be required to meet the forecasted system needs as described in Exhibit B, Tab 1, Schedule 1 absent the proposed Pilot Projects. Ultimately, the Pilot Projects will test the effectiveness of ETEE and DR programming investments in terms of their ability to reduce peak natural gas system demands sufficiently to avoid, delay or reduce facilities required to resolve the underlying system need(s)/constraint(s) identified. The potential impact of the Pilots on the scope and timing of these projects are discussed at the end of Exhibit D, Tab 1, Schedules 1 and 2.

Parry Sound

2. The total approximate capital cost for the Parry Sound baseline facility alternative, including a station rebuild and pipe reinforcements, is $28.1 M. The project scopes are detailed below, and the locations of the baseline facility alternatives are shown in Figure 1.

Figure 1 – Parry Sound Baseline Facility Projects



3. Station Modification in 2025: A station modification of the Emsdale CMS will be required in 2025 to allow for the reduction of pressure differential across the station. This allows for a higher outlet pressure from the station that will satisfy the required minimum inlet pressure to Parry Sound TBS. The capital cost of the baseline station modification is approximately $2.0 M.

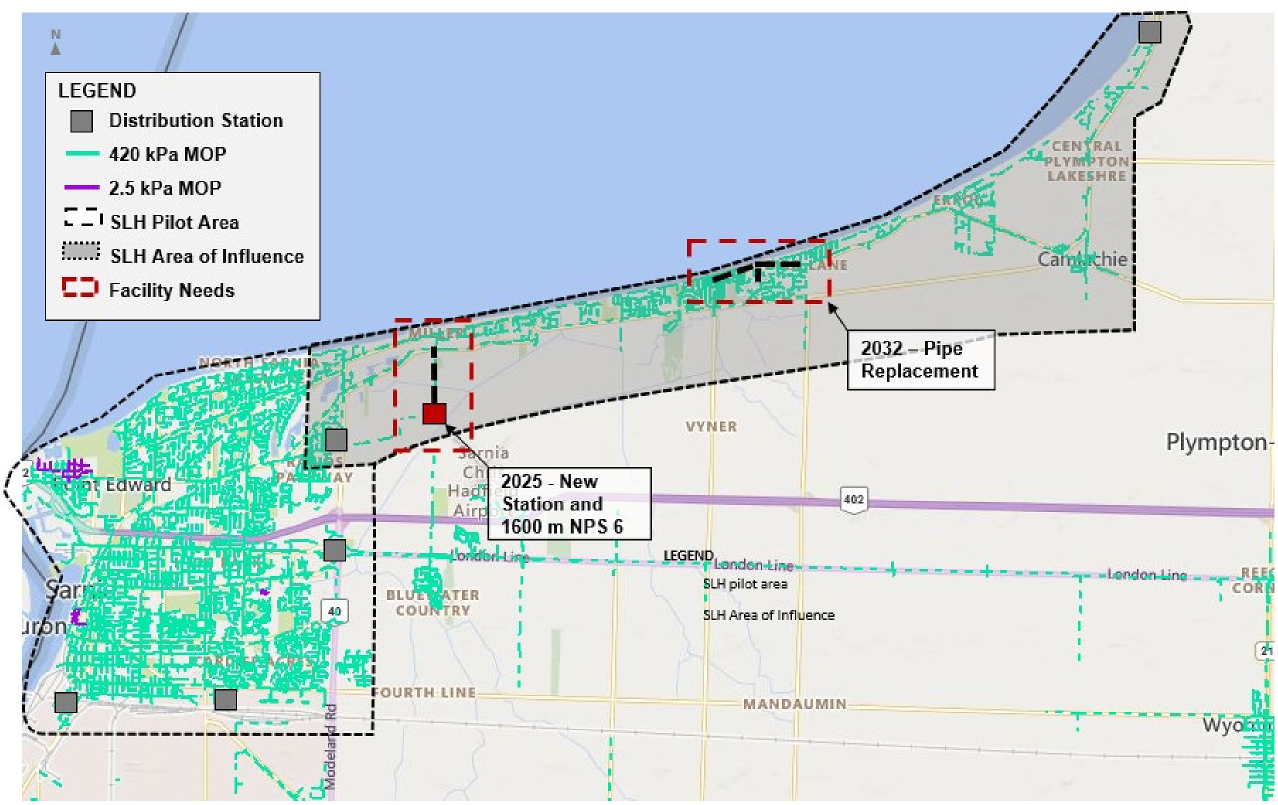
4. Pipeline Reinforcement in 2027: Approximately 11.3 km of NPS 6 steel 4,960 kPa MOP pipeline will be required in 2027 to support Parry Sound system growth in response to forecasted increased market/customer demand. The proposed NPS 6 pipeline would replace and upsize a section of the existing NPS 4 pipeline(s) to provide more capacity commencing at the termination of the existing NPS 6 pipeline(s) and proceeding westward towards the town of Parry Sound. The capital cost of the baseline pipeline reinforcement in 2027 is approximately $23.9 M.

5. Pipeline Reinforcement in 2029: Approximately 800 m of NPS 4 steel 1,725 kPa MOP pipeline will be required in 2029 to support Parry Sound system growth in response to forecasted increased market/customer demand. This proposed NPS 4 pipeline would extend from the outlet of Parry Sound TBS northward. The capital cost of the baseline pipeline reinforcement in 2029 is approximately $2.2 M.

Southern Lake Huron (Area of Influence)

6. The total approximate capital cost for the Southern Lake Huron baseline facility alternatives located within the Area of Influence, including a new station build, pipeline reinforcement and pipeline replacement, is $3.1 M. The project scopes are detailed below, and the locations of the baseline facility projects are shown in Figure 2.

Figure 2 – Southern Lake Huron Baseline Facility Projects



7. New Station Build & Pipeline Reinforcement in 2025: A new pressure reducing station at Michigan Line and Blackwell Sideroad off the upstream 1,210 kPa MOP system as well as approximately 1,600 m of 420 kPa MOP NPS 6 PE pipeline on Blackwell Sideroad from Michigan Line to Lakeshore Road will be required in 2025 to support Southern Lake Huron system growth in response to forecasted increased market/customer demand. The capital cost of the baseline new station and pipeline reinforcement in 2025 is approximately $1.5 M.

8. Pipeline Replacement in 2032: Approximately 2,500 m of NPS 2 & 4 ST 420 kPa MOP will be required in 2032 due to the age and condition of the existing pipelines. The capital cost of the baseline pipeline replacement in 2032 is approximately $1.7 M.

PILOT PROJECT ALTERNATIVES

1. Enbridge Gas reviewed the list of available IRPAs, alone and in combination, to determine potential Pilot Project objectives. It was determined that the Pilot Projects would primarily be focused around exploring the lesser-known demand-side IRPAs, ETEE and DR programs, while leveraging more reliable supply-side opportunities where applicable. As a result, the primary objectives of the Pilot Projects are twofold (outlined in Exhibit B, Tab 1, Schedule 1):
   (i) Develop an understanding of how ETEE and DR programs impact peak hour demand/consumption; and
   (ii) Develop an understanding of how to design, deploy, and evaluate ETEE and residential DR programs.

2. Enbridge Gas broadly considered the following criteria when reviewing the 10-year Asset Management Plan to develop a list of Pilot Project alternatives with a high probability of meeting the objectives set out above:
   - The underlying system need/constraint identified should pass the binary screening assessment set out in the IRP Framework for Enbridge Gas established by the OEB (EB-2020-0091).
   - The potential Pilot Project should reasonably be expected to either materially or entirely avoid, defer or reduce that same underlying system need/constraint identified in Enbridge Gas's AMP.
   - The potential Pilot Project should enable effective data collection and measurement of the impact that IRPA investments have had on peak flow to enable Enbridge Gas's understanding of how this reduction in gas usage can impact future projects, allowing for cost-effective IRPAs to be put forward in the future.
   - The potential Pilot Project should act as a "proof-of-concept" for selected IRPAs and should have potential for scalability and readily transferrable learnings.

- As Enbridge Gas is proposing to implement two Pilot Projects, one Pilot Project should be focused on addressing a single identified system need/constraint, and the other should attempt to address multiple identified system needs/constraints (e.g., reinforcement vs. reinforcement & integrity).

3. The list of Pilot Project alternatives were then evaluated and ranked using a weighted average scoring matrix, where considerations for each criterion are defined below:
   - ***System configuration –*** ability to isolate the system area for the purpose of measuring and quantifying the impacts of IRPA efforts is important for learnings. Considerations include number of feeds, number of system low points, sensitivity of system (i.e. long stretches of pipe).
   - ***Balanced customer mix and potential for scalability*** – having a representative customer mix is important for the scalability and transferability of learnings. Considerations include balanced mix of general service (residential, commercial and low-income), size of customer base, and minimal seasonal customers.
   - ***Peak hourly flow data collection potential*** – ability to measure and quantify the impacts of IRPAs on peak hour is critical to the objective of the pilots. Consideration was given to existing customer hourly measurement, as well as system flow measurement.
   - ***Feasibility of supply-side IRPA implementation in the short term*** – ability to leverage supply-side alternatives as a short-term bridging solution to allow time for implementation of ETEE and DR programs. Considerations include Compressed Natural Gas (CNG) volumes required, and applicability of market-based supply side options.
   - ***Feasibility for ETEE*** – understanding the system and market characteristic to help gauge the potential from implementation an ETEE and DR program. Consideration includes annual growth rate on the system, building vintages and past participation in DSM.

4. Table 1 below outlines the criteria and scoring matrix used to evaluate and rank the potential Pilot Projects, where a score of 1 indicates that a Pilot Project would inadequately satisfy the criterion and 5 indicates a Pilot Project would adequately satisfy the criterion.

Table 1 – Criteria and Scoring Matrix of Pilot Project Alternatives

		Multiple System Needs			Single System Need				
Criteria	Weight	Southern Lake Huron	Ottawa	Brantford	Bayfield	Brooklin	Kemptville	Parry Sound	Southampton
System configuration	15%	3	1	3	4	3	4	5	4
Balanced customer mix & potential for scalability	25%	4	5	4	2	2	3	2	2
Peak hourly flow data collection potential	25%	5	1	2	3	3	3	4	3
Feasibility of supply-side IRPA implementation in the short-term	15%	4	2	3	3	4	5	5	5
Feasibility for ETEE	20%	3	1	2	5	2	3	4	2
Weighted Average	100%	**3.9**	2.2	2.8	3.3	2.7	3.5	**3.8**	3.0

5. The projects under each category that scored highest were selected to be the Pilot Projects, Southern Lake Huron for multiple system needs and Parry Sound for single system need. While the other systems/needs identified were not selected as Pilot Projects, those projects would follow the same IRP assessment process for projects in the AMP and could still be put forward as future IRP plans if the assessment deemed feasible.

6. Throughout the Pilot Project selection process, Enbridge Gas engaged the TWG to present and seek feedback, including objectives of the pilots, pilot project alternatives, project selection criteria, potential IRP alternatives for the projects and rationale for the selection of the two projects through the above decision matrix. This was an iterative process, where the discussions and feedback ultimately guided Enbridge's selection of the two Pilot Projects.

7. While the original intention during the Pilot Project selection process was to have one Pilot Project that addressed a single identified system need/constraint and to have a second Pilot Project that addressed multiple identified system needs/constraints, both systems have been reviewed holistically to identify the potential impacts IRPAs and reduction in peak hour would have on any system needs within the defined Pilot Project areas. Upon review and refinement of system and facility needs, both Pilot Projects address multiple needs and therefore the two selected Pilot Projects no longer fit that initial classification of single versus multiple needs.

Pilot Project 1 - Parry Sound

8. As noted in Table 1, Parry Sound was selected as one of the Pilot Projects, and the rationale for each criteria in the scoring matrix is detailed as follows:
   - ***System configuration –*** Parry Sound is a single-fed system consisting of a single (long-stretched) pipeline main supplied directly from a TC Energy (TCE) mainline tap. This configuration provides an isolated system from which it is optimally possible to observe the impacts of various IRPAs on peak demand/consumption.
   - ***Balanced customer mix and potential for scalability –*** The customer base served by the Parry Sound system consists of a balanced mix of residential, commercial, and industrial customers. This customer mix is expected to foster readily transferable learnings.
   - ***Peak hourly flow data collection potential –*** Existing Parry Sound system station flow measurement is available at Emsdale CMS. While no existing hourly data measurement is available at the individual customer level, flow measurement at the gate station will enable analysis at the system level and can be used in conjunction with the customer level data to determine the cumulative impact of IRPAs.
   - ***Feasibility of supply-side IRPA implementation in the short-term –*** Two supply side options are available in the Parry Sound system to ensure reliability of system supply for the duration of a Pilot Project, CNG and a market-based supply-side

IRPA. CNG is an optimal bridging solution to support the peak demand needs on the Parry Sound system for the duration of a Pilot Project as the CNG injection volumes required are relatively low. As discussed in Exhibit B, Enbridge Gas is also currently utilizing a market-based supply-side IRPA to increase the system feed pressure from TCE at Emsdale CMS in order to defer the need for additional system facilities.

- ***Feasibility for ETEE* –** Review of Parry Sound residential demographics and market characteristics indicates relatively older population and vintages of buildings when compared to provincial averages (see Table 2), suggesting a greater percentage of buildings are built to older efficiency standards, resulting in a greater potential for ETEE programming to impact peak demand/consumption. Commercial demographic and market characteristic data is not available.

Table 2 – Parry Sound Residential Demographics

Demographics [1]	**Parry Sound**	**Ontario**
StatsCanada Geographic Level	Parry Sound, Town [Census Subdivision]	[Province]
Population (2021)	6,879	14,223,942
Average Age	49.4	41.8
Median Age	53.2	41.6
Total Private Dwellings	3,200	5,491,200
Single-Detached House	1,715	2,942,990
% Single-Detached House	54%	54%
Average Household Size	2.0	2.6
Household Characteristics		
Owner	60%	68%
Renter	40%	31%
Median Total Income of Household (2020$)	$62,000	$91,000
Period of Construction		
Before 1960	41%	23%
1961-1980	29%	27%
1981 -1990	11%	13%
1991-2015	17%	31%
2016-2021	3%	7%

[1] Statistics Canada – 2021 Census Profile - https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/details/page.cfm?Lang=E&SearchText=toronto&GENDERlist=1&STATISTIClist=1&DGUIDlist=2021A00053549032,2021A000235&HEADERlist=2,20,9,1,3

9. An additional consideration in the selection of Parry Sound as a pilot is that the system has become very sensitive to small changes in hourly demand, due to the long length of pipe and the reduction in TCE delivery pressures anticipated to take effect in November 2025. The sensitivity of the system suggests that it would be optimal for testing a variety of ETEE offerings, as proposed in Exhibit D, Tab 1, Schedule 1, as any reduction in peak hour could drive more significant impact on the facility needs.

Pilot Project #2 - Southern Lake Huron

10. As noted in Table 1, Southern Lake Huron was selected as the second pilot project and the rationale for each criteria in the scoring matrix is detailed as follows:
    - ***System configuration –*** the Area of Influence in Southern Lake Huron system consists of a distribution system stretched along the shores of Lake Huron between two station feeds. This configuration provides a localized low-point and targeted area of focus, from which it is possible to observe the impacts of various IRPAs on peak demand/consumption.
    - ***Balanced customer mix & potential for scalability –*** the customer base served by the Southern Lake Huron system consists of a balanced mix of residential, commercial, and industrial customers. This customer mix is expected to foster readily transferable learnings.
    - ***Peak hourly flow data collection potential –*** Existing automated meter reader (“AMR”) technology via encoder receive transmitters (“ERT”) are equipped on the majority of residential and smaller commercial customers within this area, enabling the Company to collect and transmit hourly interval data from customer meters and to quantify the impacts of the proposed IRPAs on peak system demand/consumption, significantly reducing the time and costs associated with data collection. Additionally, the availability of existing ERTs in Southern Lake Huron makes it an optimal system to test a residential DR program, as proposed in

Exhibit D, Tab 2, Schedule 1.

- ***Feasibility of supply-side IRPA implementation in the short-term –*** CNG is available to the Southern Lake Huron system to ensure reliability of system supply for the duration of the Pilot Project. CNG is an optimal bridging solution to support the Southern Lake Huron system for the duration of a Pilot Project as the CNG injection volumes required are low.
- ***Feasibility of ETEE and DR –*** Review of the residential demographics and market characteristics indicates Town of Plympton-Wyoming has similar building vintages and City of Sarnia has slightly older homes in comparison to provincial averages (see Table 3, below) and therefore rank evenly against other pilot alternatives. However, a review of 10-year customer attachment forecast indicated the lowest relative growth rate compared to other potential pilot alternatives. Commercial demographic and market characteristic data is not available.

Table 3 – Sothern Lake Huron Residential Demographics

Demographics [2]	**Plympton-Wyoming**	**Sarnia**	**Ontario**
StatsCan Geographic Level	Plympton-Wyoming, Town [Census subdivision]	Sarnia, City (CY) [Census subdivision]	[Province]
Population (2021)	8,308	72,047	14,223,942
Average Age	43	44.8	41.8
Median Age	45.6	46	41.6
Total Private Dwellings	3,175	32,190	5,491,200
Single-Detached House	2,965	21,685	2,942,990
% Single-Detached House	93%	67%	54%
Average Household Size	2.6	2.2	2.6
Household Characteristics			
Owner	88%	68%	68%
Renter	12%	32%	31%
Median Total Income of Household (2020$)	$108,000	$77,500	$91,000
Period of Construction			
Before 1960	24%	36%	23%
1961-1980	32%	35%	27%
1981 -1990	10%	12%	13%
1991-2015	27%	15%	31%
2016-2021	6%	2%	7%

[2] Statistics Canada – 2021 Census Profile https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/details/Page.cfm?Lang=E&SearchText=camlachie&DGUIDlist=2021A00053538035&GENDERlist=1,2,3&STATISTIClist=1&HEADERlist=0

PILOT PROJECT DESCRIPTIONS

Parry Sound Pilot Project Overview

1. The primary objectives of the Parry Sound Pilot Project are to develop an understanding of how ETEE programs impact peak hour flow/demand and to develop an understanding of how to design, deploy, and evaluate ETEE programs, as detailed at Exhibit B, Tab 1, Schedule 1.

2. The Parry Sound Pilot Project will include:
    - Procurement of market-based supply;
    - Localized injection of compressed natural gas ("CNG"); and
    - Enhanced Targeted Energy Efficiency ("ETEE") programming.

3. Two reliable supply-side IRPAs have been incorporated as part of the Parry Sound Pilot Project: (i) a negotiated increased contracted pressure from TCE, and (ii) CNG injection, to defer the system need during the Pilot Project term. The increased contracted pressure from TCE and the use of CNG injection will ensure that Enbridge Gas can reliably meet the system demand requirements (peak hour) while demand-side IRPAs are being tested.

4. The primary focus of the Parry Sound Pilot Project will be on the implementation of ETEE programming. The suite of ETEE offerings for residential (including affordable housing), commercial and industrial customers in the Town of Parry Sound will include:
    - Enhancement of existing DSM offerings (for all market sectors), which includes a Limited Electric Measure ETEE offering (for residential only)
    - Advanced Technology ETEE offering.

5. It is noted that while the IRP Framework does not allow for funding of electric IRPAs, the Company believes the Pilot Project is an isolated environment in which electrification measures' potential future applicability and/or feasibility under IRP can be evaluated. Consideration for broader implementation of electrification measures would require an update to the IRP Framework and further coordinated energy planning with the electric sector to ensure a holistic assessment of the impact these types of measures have on the respective grid and system.

6. As there will be overlap between the ETEE programs and the existing programs offered by the Company's broad-based DSM programs, consideration for an attribution approach to the funding and results is required. As there is currently no established approach to attribution between ETEE and DSM programs, a simplified approach where all incentives contributed by Enbridge Gas through the Pilots Project's ETEE program will be funded by the Pilot Project and not by DSM. It should be noted that a general policy on the approach to DSM-IRP attribution is anticipated to be considered as part of the next IRP Plan filed by the Company.

7. The geographic scope for the Parry Sound Pilot Project ETEE programming will be Enbridge Gas customers (eligible Residential, Commercial, and Industrial general service customers) located within the Project Area as set out in Exhibit A, Tab 2, Schedule 1, Attachment 1.

8. The Parry Sound Pilot Project has a proposed term of 2023 to 2027. A timeline of major activities associated with the Pilot Project are shown in Table 1. The Company will require at least four months, from the date that the OEB issues its Decision and Order approving the Pilot Projects, to implement ETEE programming in market.

Table 1 – Parry Sound Pilot Project Timeline

PARRY SOUND PILOT PROJECT	2023			2024				2025				2026				2027		
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Regulatory																		
File Application	■																	
OEB Decision (Estimated)			■															
Data Collection																		
ERT/Hourly Measurement Installation	■	■	■															
Collection of Hourly Data			■	■	■	■	■	■	■	■	■	■	■	■	■	■		
TC Energy																		
Service Contract for Pressure Increase			■	■	■	■	■	■	■	■								
Compressed Natural Gas (CNG)																		
CNG Set up										■	■							
CNG Truck in Place											■	■			■	■		
Enhanced Targeted Energy Efficiency (ETEE) [1]																		
Finalize and Setup Programming			■	■														
Deliver Programming				■	■	■	■	■	■	■	■	■	■	■	■			
Evaluate and Refine Program Design								■	■	■		■	■	■				
Monitoring & Evaluation																		
Analyze Baseline Data					■	■			■	■			■	■			■	■
Analyze Post Implementation Data									■	■			■	■			■	■
Reporting																		
Pilot Updates in Annual Report					■	■			■	■			■	■				
Pilot Report																	■	■

Notes:

[1] Timing subject to date of OEB approval. At least four months after OEB approval is required.

Parry Sound Pilot Project IRPAs

Supply Side IRPA – TCE Pressure Contract

9. As noted in Exhibit B, Tab 1, Schedule 1 Enbridge Gas is currently utilizing a supply-side IRPA consisting of negotiated increased contracted pressure from TC Energy (TCE) to avoid a system reinforcement. TCE notified Enbridge Gas that the delivery pressures will be returned to their standard tariff pressure of 4,000 kPa for the Winter of 2023/24. Enbridge Gas requested TCE to develop a service with a rate or tariff so Enbridge Gas could use the increased pressure as an IRPA for the Parry Sound Pilot Project which would allow Enbridge Gas time to implement demand side IRPAs to reduce peak hour demands. TCE has agreed to reinstate the higher-pressure service for two years up to the Winter of 2025/26, where this higher-pressure service acts as a supply-side IRPA that provides reliable service to meeting Enbridge Gas' customers' demands during peak periods. TCE stated they would develop a pressure service, but the expected timing would be later in 2023. Therefore, Enbridge Gas currently does not know the costs of the higher-pressure service that TCE is developing but expects there will be cost associated and has allocated placeholder costs as noted in Exhibit E, Tab 1, Schedule 1.

10. Enbridge Gas will continue to work with TCE on the development of a higher-pressure service with the intent of extending the contract beyond Winter 2024/25. If TCE cannot provide the higher-pressure service in the future, Enbridge Gas will install and implement a CNG supply-side IRPA as described below to continue to meet the peak demands of our customers.

Supply Side IRPA - CNG Injection

11. As noted above, Enbridge Gas will implement a CNG injection IRPA to meet the peak demands of its customers should TCE be unable to provide the higher-pressure service beyond Winter 2025/26. CNG will be used to "peak shave" and will not be the primary source of gas for the system. Peak shaving means that the CNG

will only be flowing when minimum pressures cannot be maintained by the existing pipe and station facilities. This will limit the peak hour flow and total volume of CNG required.

12. CNG tube trailers are specialized trailers designed to transport CNG in large quantities. These trailers are designed to be durable, safe and efficient, and come in various sizes and capacities. CNG Pressure Reduction System ("PRS") equipment, also referred to as decanting trailers, is remotely monitored via technology to allow delivery of high-pressure gas from CNG tube trailers at specific temperatures and pressures to meet Enbridge Gas specifications. The PRS are equipped with natural gas boilers that pre-heat the gas before passing through the regulators which help to avoid the risk of freeze-offs.

13. Approximately 340 m^3/h of CNG would be required to be injected at the low point in 2025 on a design day. Depending on the CNG injection location, this volume could vary slightly. To serve the required CNG volumes, two CNG tube trailers with two smaller decanting trailers will be on-site, where one trailer serves as the primary and the second as a backup. Each trailer would have adequate supply to support peak demand on its own. A third trailer will be brought in if the system flows enough gas to deplete one of the two trailers. Trailer volumes, pressures and decanting of trailers is remotely monitored 24/7 to ensure safe and reliable operations.

14. Through the Pilot Project, Enbridge Gas will also gain learnings on the use of CNG as a longer-term supply-side alternative including the injection and usage of CNG as a peak shaving alternative.

<u>Demand Side IRPA - ETEE</u>

15. A suite of ETEE offerings for residential (including affordable housing) and commercial/industrial customer sectors will be implemented in the Pilot Project area. Pilot Project offerings will leverage existing DSM programming approved by the OEB

as part of Enbridge Gas's Application for Multi-Year Natural Gas Demand Side Management Plan 2022-2027 (the "2023-2025 DSM Plan Decision") (EB-2021-0002) where applicable, and will supplement the same with additional incentives, engagement, and/or marketing efforts to meet the specific objectives of the Pilot Project. Regardless of whether a Pilot Project ETEE offering aligns with an existing DSM program, customers in the Pilot Project area will continue to have full access to all other existing DSM programming. For example, the residential Smart Home offering is not in scope of the Pilot Project ETEE programming, but residential customers will continue to have access to this offering.

16. Although DSM programming would be leveraged for IRP ETEE programming in the Pilot Project, there are key differences between the two. The objectives of the DSM framework and IRP framework are distinct from each other. As per the IRP Decision, "DSM is aimed at reducing annual natural gas usage, and IRP is aimed at reducing peak demand in specific geographic areas to replace infrastructure investment with an IRPA investment".[1] Furthermore, traditional DSM is focused on ensuring broad participation in the Company's service area, whereas ETEE is focused on programs that achieve a high penetration in a specific geography to reduce peak period system demands corresponding to an identified system constraint/need. This fundamental difference will lead to ETEE requiring greater levels of funding per unit of energy savings targeted when compared to what traditional DSM would otherwise necessarily expend in the Pilot Project area.[2]

17. For both residential and commercial customers, the Pilot Project ETEE programming will include three 'advanced technologies', including: natural gas heat pumps, simultaneous hybrid heating and thermal energy storage. These advanced technologies are not currently part of the 2023-2025 DSM Plan as they are not yet

[1] EB-2020-0091, July 22, 2021, Decision and Order, P. 56
[2] EB-2020-0091, October 15, 2020, Exhibit B, p.28

commercialized or have only recently been commercialized. The advanced technologies are anticipated to be commercially ready for market adoption in 2023 and 2024.

18. Enbridge Gas has included these additional advanced technologies within the Pilot Project ETEE programming as they offer potential peak gas reductions as shown in Table 11 below. By including these advanced technologies, Enbridge Gas can gain a better understanding of their peak gas reduction potential, as well as the applicability or feasibility of incorporating these technologies more broadly as ETEE measures in the future.

Market Analysis

19. The delivery of energy efficiency programming is generally implemented on a customer sector basis (residential, commercial, multi-residential, and industrial). Enbridge Gas intends to implement its Pilot Project ETEE programming using this same customer sector approach. A customer sector breakdown for the Parry Sound Pilot Project area can be found in Table 2.

Table 2 – Parry Sound Pilot Area Customer Sector Breakdown

Sector	Number of Customers	Number of Customers (%)	% of 2022 Weather Normalized Annual m^3 Load
Residential	1,654	78.8%	39.4%
Commercial	271	12.9%	51.4%
Multi-Residential	165	7.9%	4.1%
Industrial	9	0.4%	5.1%
Total	2,099	100%	100%

20. In the commercial and industrial sectors, most customers (98.1%) are relatively small natural gas consumers with estimated weather normalized consumptions below 100,000 m^3 annually, as shown in Table 3. Based on Enbridge Gas's broad-based energy efficiency experience, commercial and industrial customers with an

annual consumption below 100,000 m^3 have lower energy efficiency participation levels and smaller saving opportunities per project. Therefore, in areas like Parry Sound with a high percentage of commercial and industrial customers with a lower annual load, more direct engagement effort and marketing will be required to achieve the results required to impact peak demands.

21. Within the large natural gas consumer segment (greater than 100,000 m^3 annual consumption), there is one institutional customer that accounts for a significant percentage of the system load in the region. Variations in energy demands from these types of consumers can be main drivers to system need requirements. From Enbridge Gas's experience, energy efficiency projects with large consumers typically provide the highest potential savings opportunity per project compared to small consumers. As such, special consideration for this institutional customer in the form of assistance from qualified Enbridge staff will be given due to the potential impact this customer has on this distribution system.

Table 3 – Parry Sound Commercial and Industrial Sector Breakdown

Commercial / Industrial	Number of Customers	Number of Customers (%)	% of 2022 Weather Normalized Annual m^3 Load
Small (<25K $m^{3)}$	231	87%	25%
Medium (25K>100K m^3)	28	11%	26%
Large (>100k m^3)	5	2%	49%
Total	**264**	**100%**	**100%**

IRP ETEE Pilot Project Offerings of Existing Programming

22. Existing 2023-2025 DSM Plan programming has been effective in delivering broad-based energy savings across Enbridge Gas' franchise area. Leveraging existing offerings with enhanced offers specific to the geographic scope of the Pilot Project is expected to result in an overall reduction in ETEE programming costs relative to if net new ETEE offerings had to be developed. Further to this, this ETEE

programming approach can build on the existing market awareness of DSM programming. The benefits of this approach will be examined as part of the Pilot Project. As explained further below, the broad-based DSM programs expected to have the greatest impact on peak demand reduction are those that have been considered for additional IRP ETEE incentive. These expectations will also be examined as part of the Pilot Project. The approach to the Pilot Project ETEE offerings, including attribution of costs and savings between the IRP Pilot Project and existing broad-based DSM Programs, for each of the major customer sectors are discussed in the following sections.

Attribution Approach for the Pilot Projects

23. In many cases, the measures offered by the Pilot Project's ETEE program will overlap existing measures offered by the Company's broad-based DSM programs, albeit with potentially adjusted incentive levels reflecting the differing objectives/considerations for ETEE programs (to reduce peak period/design demand in a specific geographic location) compared to DSM programs (to generate broad-based energy savings).[3] As such, an approach to the attribution of funding and results between the Pilot Project's ETEE program and the Company's DSM programs is required and should be established in advance of the Pilot Project's implementation. There is currently no established approach to attribution between ETEE and DSM programs. As per the OEB's 2023-2025 DSM Plan Decision, "the details of the overlap and any implications will be reviewed by the OEB as part of the IRP Plan application made by Enbridge Gas".[4]

24. Enbridge Gas is proposing that all incentives contributed by Enbridge Gas through the Pilot Project's ETEE program (i.e. within the Pilot Project area) will be funded by

[3] EB-2020-0091, Decision and Order, July 22, 2021, P. 56: "DSM is aimed at reducing annual natural gas usage, and IRP is aimed at reducing peak demand in specific geographic areas to replace infrastructure investment with an IRPA investment"
[4] EB-2021-0002, Decision and Order, November 15, 2022, P. 87

the Pilot Project and not by DSM programs. Accordingly, all results attributed to Enbridge Gas from the Pilot Project's ETEE program will be entirely attributed to the Pilot Project's ETEE program and not to DSM programs.

25. At this time, the approach explained below is applicable to the two Pilot Projects only. A general policy on the approach to DSM-IRP attribution is anticipated to be considered as part of the next IRP Plan filed by the Company.

26. For the purposes of illustrating the attribution approach for the Pilot Project program, Table 4 demonstrates a scenario of how attribution is currently managed without the implementation of the Pilot Project program, while Table 5 demonstrates the same scenario but inclusive of the implementation of the Pilot Project Program. The example refers to the Company's Home Efficiency Rebate Plus ("HER+") offering within its DSM program portfolio. The HER+ offering is a joint program in partnership with NRCan's Canada's Greener Homes Grant initiative. Attribution between NRCAN and Enbridge Gas has been established as part of the Collaboration Agreement ("CA") and later approved in the OEB's 2023-2025 DSM Plan Decision,[5] and generally follows an approach based on "percentage of total incentive dollars spent".

27. The illustrative examples in Tables 4 and 5 consists of the attic insulation measure, where insulation is increased from less than R12 to at least R50.[6] Without the implementation of the Pilot Projects, the incentives funded by NRCAN and DSM are $1,800 and $550, respectively, for a total maximum customer incentive of $2,350. This results in an attribution split of approximately 77% to NRCAN and 23% to the Company's DSM programs.

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[5] EB-2021-0002, Decision and Order, November 15, 2022, P. 87

[6] The R-value is a measurement of insulation effectiveness. The higher the R-value, the greater reduction in energy loss for a building.

Table 4: Illustrative Attribution Example – HER+ Offering without Pilot Projects

Source of Funding	Customer Incentive	Customer Incentive Contribution %	Results Attribution
NRCan	$1,800	77%	77%
DSM (Enbridge Gas)	$550	23%	23%
Pilot Project (Enbridge Gas)	N/A	N/A	N/A
Total	**$2,350**	**100%**	**100%**

28. With the implementation of the Pilot Projects an additional $550 will be provided by Enbridge Gas for this measure, for a total of $1,100.

Table 5: Illustrative Attribution Example – HER+ Offering with Pilot Projects

Source of Funding	Customer Incentive	Customer Incentive Contribution %	Results Attribution
NRCan	$1,800	62%	62%
DSM (Enbridge Gas)	$0	0%	0%
Pilot Project (Enbridge Gas)	$1,100	38%	38%
Total	**$2,900**	**100%**	**100%**

29. As stated previously, there is an overlap of energy efficiency measures between DSM and ETEE programming. Not all measures that are included with DSM programs and offerings in the 2023-2025 DSM Plan are in scope for the Pilot Projects. The Pilot Projects will only stack additional incentives upon the specific 2023-2025 DSM Plan programs and offerings indicated in Table 6 below. The selection of DSM offerings that would receive stacked IRP ETEE incentive was based on measures that are expected to have the greatest impact on peak hour demand in each targeted sector. Providing an additional incentive for these DSM programs will also help Enbridge Gas determine the impact of enriched incentives (up until 100% of the project cost) on the incremental take up of the measures. The 2023-2025 DSM Plan programs and offerings that are not in scope for the Pilot

Projects will continue to be available to customers within the Pilot Project area and will be funded through the DSM Plan budget.

Table 6 – Summary of DSM Offerings with IRP ETEE incentives

2023-2025 DSM Plan Program and Offerings	Pilot Project ETEE Customer Incentive Funding
Residential Program	**Yes**
Residential Whole Home	Yes
Residential Single Measure	No
Residential Smart Home	No
Low Income Program	**No**
Home Winterproofing	No
Affordable Housing Multi-Residential	No
Commercial Program	**Yes**
Commercial Custom	Yes
Prescriptive Downstream	Yes
Direct Install	Yes
Prescriptive Midstream	No
Industrial Program	**Yes**
Industrial Custom	Yes
Large Volume Program	**No**
Energy Performance Program	**No**
Building Beyond Code Program	**No**

Residential Sector

30. Enbridge Gas and the Natural Resources Canada (“NRCan”) have partnered to jointly fund an enhanced energy efficiency program for residential customers in Ontario through the Home Efficiency Rebate Plus (HER+) offering. It is an offering that is designed to educate and encourage residential homeowners to apply an energy efficiency lens to all their home renovation projects thereby leading to deep savings. The Company proposes to leverage this existing residential program funding and program design and provide additional incentives for selected residential measures within the Pilot Project area. The Company’s focus on this sector is in part driven by the expectation that residential space heating is a

significant contributor to peak period/design demands, as well that there exists a significant potential to affect this load through the specific residential measures being targeted.

31. More specifically, as part of the Pilot Project ETEE HER+ offering, the following residential measures have been selected for enhanced incentives for the Pilot Project due to their potential to impact peak hour demands through space heating load reductions. Under DSM, these measures are the current cost-effective building envelope measures that impact space heating loads.
    - Attic insulation
    - Wall insulation
    - Basement insulation
    - Exposed Floor insulation
    - Air sealing

32. As noted above, the ETEE incentives will be available to residential customers within the Pilot Project area and will be delivered through the same channels as the existing HER+ offering in the DSM programming portfolio as approved in the 2023-2025 DSM Plan Decision. The proposed enhanced incentives will only be available for select piloted measures as provided in Table 7.

33. Enbridge Gas proposes to provide an ETEE incentive for the measures outlined in Table 7 that doubles (i.e.100% increase) the OEB-approved DSM measure incentive amount.[7] Doubling the DSM measure incentive amount results in a 23% to 27% increase over the total combined NRCan and OEB-approved DSM measure incentive amounts, depending on the measure. The total incentive amount available to each customer is capped at 100% of the cost of the measure. In addition, the

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[7] EB-2021-0002, Decision and Order, November 15, 2022, Schedule B.

maximum total incentive available to participants in the ETEE-version of the HER+ offering is $15,000. The proposed enhanced incentives may be changed throughout the duration of the Pilot Project as a result of changes in the incentive structure of the base HER+ offering or Pilot Project program design decisions. Changes to the incentive structure will be discussed with the IRP Technical Working Group and reported on the IRP Annual Report.

34. Targeted engagement and marketing activities within the Pilot Project area for residential customers will be undertaken to encourage increased awareness and offering uptake. Given the smaller residential market size in Parry Sound, there is an opportunity to target customers directly to drive participation in the ETEE program. Therefore, Enbridge Gas will explore the effectiveness of not only highly geo-targeted marketing spend for the Pilot Projects, but also grass-roots direct-to-customer marketing. Additionally, there is an opportunity to increase awareness and participation among local contractor networks, through the development of sales support materials. To optimize marketing effectiveness, a variety of creative imagery, messaging, tactics, and channels will be applied and evaluated based on driving interest and program participation. Campaigns will be optimized over time based on learnings. All marketing materials will direct prospects to a program-specific landing page on the Enbridge Gas website, which will serve as the central location for information about ETEE in Parry Sound.

Table 7 – Summary of HER+ Measures with Enhanced IRP Incentive

Pilot Project HER+ Measures	NRCan Incentive (A)	EGI DSM Plan Incentive (B)	HER+ Program Maximum Incentive (C = A + B)	EGI Pilot Project Additional Incentive (D)	Pilot Project HER+ Maximum Incentive (E = C + D)	EGI Pilot Project Funded Incentive (F = B + D)
Attic/Cathedral Insulation						
Increase attic insulation to at least R50 from less than R12	$1,800	$550	$2,350	$550	$2,900	$1,100
Increase attic insulation to at least R50 from greater than R12 up to R25	$600	$200	$800	$200	$1,000	$400
Increase attic insulation to at least R50 from greater than R25 up to R35	$250	$75	$325	$75	$400	$150
Increase cathedral/flat roof insulation to at least R-28 from R12 or less	$600	$200	$800	$200	$1,000	$400
Increase cathedral/flat roof insulation to at least R-28 from greater than R12 up to R25	$250	$75	$325	$75	$400	$150
Upgrade uninsulated cathedral ceiling/flat roof to at least R20 from R12 or less	$600	$200	$800	$200	$1,000	$400
Exterior Wall Insulation						
For adding insulation value of at least greater than R20 for 100% of building	$5,000	$1,750	$6,750	$1,750	$8,500	$3,500
For adding insulation value greater than R12 up to R20 to 100% of the building	$3,800	$1,200	$5,000	$1,200	$6,200	$2,400
For adding insultation value greater than R7.5 up to R12 for 100% of building	$3,300	$1,200	$4,500	$1,200	$5,700	$2,400
Exposed Floor Insulation						
For adding insulation value of at least R20 for entire exposed area (minimum area of 11 square meters or 120 square feet)	$350	$100	$450	$100	$550	$200
Basement Insulation						
For sealing and insulating at least 80% of basement header to a minimum R20	$240	$85	$325	$85	$410	$170
For sealing and insulating at least 50% of the entire basement slab by a minimum of R3.5	$400	$150	$550	$150	$700	$300
For adding insulation value greater than R22 to 100% of basement	$1,500	$500	$2,000	$500	$2,500	$1,000
For adding insulation value of R10 to R22 to 100% of basement	$1,050	$350	$1,400	$350	$1,750	$700
For adding insulation value of R10 to R22 to 100% of exterior crawl space wall area, including header	$1,300	$400	$1,700	$400	$2,100	$800
For adding insulation value of R10 to R22 to 100% of exterior crawl space wall area, including header	$1,040	$360	$1,400	$360	$1,760	$720
For adding insulation value greater than R24 to 100% of crawl space ceiling	$800	$250	$1,050	$250	$1,300	$500
Air Sealing						
Achieve base target	$550	$175	$725	$175	$900	$350
Achieve 10% or more above base target	$810	$240	$1,050	$240	$1,290	$480
Achieve 20% or more above base target	$1,000	$300	$1,300	$300	$1,600	$600

Commercial and Industrial Sector

35. The commercial and industrial sectors are generally more diverse when compared to the residential sector, and as such, approaches to the commercial and industrial sectors encompass a variety of offerings. Enbridge Gas is proposing to leverage its existing DSM Plan offerings for the commercial and industrial market sectors, with the addition of a localized/enhanced approach.

36. Participation from small and medium-sized commercial and industrial customers will be important to the success of the Pilot Project in Parry Sound, given their contribution to the demand within the Pilot Project area. Accordingly, ETEE programming in this sector must provide additional support for these customers to overcome the participation barriers typically experienced, which generally include: a lack of capital for improvements, and a lack of time/expertise to assess energy options using in-house resources. These barriers can be addressed by stacking upon the existing DSM commercial and industrial direct install offering, with additional enhancements. The direct install offering is a “turnkey” solution whereby contracted service providers proactively engage with targeted customers and provide technical expertise and installation of eligible prescriptive measures. Furthermore, service providers deduct the financial incentive Enbridge Gas provides from the final project cost, and customers only pay the balance. The Pilot Project ETEE-version of the direct install offering for commercial and industrial customers will also leverage the existing downstream prescriptive offering for customers that are not interested in the direct install approach.

37. Energy efficiency solutions for commercial and industrial customers can vary significantly in terms of complexity and types of measures. For the more standard smaller customers noted above, the simpler prescriptive measure approach can be utilized, but for the typically larger complex buildings, more customized solutions may exist. As such, the Pilot Project will also leverage Enbridge Gas’s existing DSM commercial and industrial custom offering, with the addition of enhanced incentives.

38. Similar to its proposed approach to residential ETEE, the Company's focus on commercial and industrial customers is in part driven by the expectation that space heating is a significant contributor to peak period/design demands, as well that there exists a significant potential to affect this load through the specific measures being targeted.

39. As part of the ETEE programming for the commercial and industrial direct install and prescriptive offerings, the following measures will be initially included in the Pilot Project:

- Air curtains – shipping door
- Air curtains – pedestrian
- Dock door seals
- Destratification fans
- Ozone laundry
- Condensing makeup air unit
- Demand control kitchen ventilation (DCKV)
- Demand control ventilation (DCV)
- Energy recovery ventilators (incl. multi-residential in-suite)
- Heat recovery ventilators (incl. multi-residential in-suite)

40. As part of the ETEE programming for the commercial and industrial custom offering, measures with the potential to impact peak hour demands will be targeted for Pilot Project, including:

- Measures with space heating end-use loads, and measures that can significantly reduce peak hours loads of system (generally winter morning periods).
- Other end-uses that could significantly impact peak hour loads may be explored.

41. For the Pilot Project, small-medium-sized commercial and industrial customers will be classified as customers below 50,000 m^3 annualized gas consumption. Establishing this threshold will not restrict ETEE programming but will help guide effective targeting of programming for commercial and industrial customers. The target ETEE offerings for this segment will be focused on the existing direct install offering where the current in-market offering includes an incentive to cover a portion of both the equipment and installation costs of the participant project. For the Pilot Project targeted measures, the proposed ETEE-version of the direct install offering will cover up to 100% of the project costs (including the equipment and installation costs of the project). Full cost coverage of the energy efficiency projects seeks to address the identified barrier of a lack of capital known to impact the participation levels of this target market segment.

42. The cost coverage of the existing offering and the proposed enhanced Pilot Project ETEE offering for each of the piloted measures is provided in Table 8.

43. One of the delivery and engagement approaches the Company would seek to deploy in this ETEE-version of the direct install offering would be to have a more involved connection with local contractors and secure their interest and support to participate in the ETEE's promotion and delivery. Local contractors are typically more trusted by local businesses and residents, where these contractors are a known entity and likely have built relationships among the community that can support the promotion and uptake of the ETEE offerings. The approach for this small-medium segment will also include consultation and engagement with community-based organizations that understand the needs of businesses in the area and can support building program awareness. These are some of the delivery approaches the Company will be considering in advance of moving forward into a more formalized planning phase.

Table 8 – Summary of Existing C/I DSM Measures with Enhanced IRP Incentive

Measure Name	Eligible Sectors	% of Cost Covered in Existing Direct Install Offer [1]	Estimated % of Cost Covered for the Pilot Project ETEE Offering
Air Curtain Shipping Door (Dock In): 8x8 to 10x10	All	Up to 90%	Up to 100%
Air Curtain Shipping Door (Drive Thru): 10x10 to 20x20	All	Up to 90%	Up to 100%
Dock Door Seals - Compression & Shelter: 8x8 8x10 10x10	All	Up to 100%	Up to 100%
Air Curtain Pedestrian Doors: Single, Double & w/Vestibule	All	N/A[2]	Up to 100%
Destratification Fans: 20 & 24 Ft Fans	All	N/A[2]	Up to 100%
Demand Control Kitchen Ventilation	All Commercial Kitchens	Up to ~85%	Up to 100%
Ozone Laundry	All Comm Laundry	N/A[2]	Up to 100%
Condensing Makeup Air (Constant, 2 speed & VFD)	All except Retail	N/A[2]	Up to 100%
Demand Control Ventilation	Office, Retail, select spaces in Hotel / Motel and Entertainment	N/A[2]	Up to 100%
Energy Recovery Ventilator	All including in-suite MURB	N/A[2]	Up to 100%
Heat Recovery Ventilator	All including in-suite	N/A[2]	Up to 100%

[1] Values as currently offered in market through DSM offerings. Values presented to provide an illustration of incentive enhancements proposals and subject to change.

[2] Measure is not currently available in Direct Install offer.

44. For the Pilot Project, large-sized commercial and industrial customers will be classified as customers above 50,000 m^3 annualized gas consumption. The ETEE programming for the large commercial and industrial segment will be focused on the existing custom offering that has been primarily delivered by Enbridge Gas energy solution advisors (“ESAs”). For the Pilot Project targeted measures, the ETEE-version of the custom offering proposes to provide enhanced incentives up to twice that of the existing DSM offering (up to 50-75% of the full project costs including equipment and installation costs of the project) as described in Table 9. The delivery

approach of this ETEE offering would require local ESAs employing customized marketing outreach and customer engagement strategies. The proposed enhanced incentives for the commercial and industrial ETEE programming may be changed at the discretion of Enbridge Gas throughout the duration of the Pilot Project as a result of changes in the incentive structure of the existing commercial and industrial DSM offerings or Pilot Project program design decisions.

Table 9 – Summary of Existing C/I DSM Custom Offer with Enhanced IRP Incentives

Category	Current DSM Custom Offering [1]	Current DSM Custom Offering Incentive Maximum [1]	Pilot Project ETEE Custom Offering [2]	Pilot Project ETEE Custom Offering Incentive Maximum [2]
Custom - Commercial	$0.25 / m^3	50% of the Energy Efficiency Upgrade Costs or $100,000 per Project	$0.50 / m^3	50-75% of the Total Project Cost or $150,000 per Project
Custom - Industrial	$0.20 / m^3 for the up to 50K m3 saved; $0.10 / m^3 above 50K m^3 saved	50% of the Energy Efficiency Upgrade Costs or $200,000 per Project	$0.40 / m^3 for the up to 50K m3 saved; $0.20 / m^3 above 50K m^3 saved	50-75% of the Total Project Cost or $200,000 per Project
Energy Assessments	$1,500-$10,000 Varies by Previous Year Consumption	50% of Audit Costs	Maximum Incentive of $3,000-$20,000 (Double Current Offer)	75% of Audit Costs

[1] Values as currently offered in market through DSM offerings. Values presented to provide an illustration of incentive enhancements proposals and subject to change.
[2] Pilot Project ETEE Custom offering values are subject to change pending finalization of in-market delivery approach at the time of implementation.

45. The ETEE-version of the prescriptive offering will provide enhanced incentives up to twice that of the existing DSM offering. While it is anticipated that most commercial and industrial customers would take advantage of the ETEE direct install offering and the associated incentive levels since many of the measures under the existing DSM downstream prescriptive offering are captured under the ETEE-version of the direct install offering (as shown in Table 9), the inclusion of an ETEE prescriptive downstream offering allows for flexibility and choice for customers. The delivery of

the ETEE-version of the prescriptive downstream offering would be covered by the delivery approaches described previously under the ETEE-version of the direct install and custom offerings.

46. Targeted engagement and marketing activities within the Pilot Project area for commercial and industrial customers will be undertaken to encourage increased awareness and offering uptake. With the small number of commercial and industrial customers located in Parry Sound, the optimal marketing opportunity is to target businesses through direct to customer communications outreach efforts. In addition, Enbridge Gas will consider generating program awareness and participation among local contractors and trade networks through targeted communication tactics. Different marketing tactics, design concepts, and channels will be tested between Parry Sound and Southern Lake Huron to determine their relative effectiveness in driving program participation. Over time, campaigns will be optimized based on learnings to leverage the most successful tactics. All marketing materials will direct prospects to program specific landing pages on the Enbridge Gas website, which will serve as the central location for information about direct install, prescriptive and custom offerings.

Affordable Housing Sector

47. Enbridge Gas energy efficiency offerings for the affordable housing market segment have historically experienced high levels of participation and success. The existing DSM affordable housing offerings under the 2023-2025 DSM Plan portfolio already provides no-cost programming for qualified Enbridge Gas customers located in the Pilot Project area. Affordable housing program offerings under the 2023-2025 DSM Plan portfolio will continue to be available and will remain funded through DSM. As such, the Company is not proposing to provide additional incentives to customers as part of ETEE for affordable housing programming as these programs are already no-cost to customers.

48. However, improved targeted engagement efforts will be pursued in this sector as part of the Pilot Projects. Enbridge Gas will consider geographically targeting this area with direct to customer communication tactics and marketing through various customer engagement activities. Furthermore, Enbridge Gas will explore opportunities to cross-promote Residential and Affordable Housing programs as applicable.

Limited Electric Measures ETEE Offering

49. On a limited participant basis, the Company proposes to offer additional incentives for cold climate air source heat pumps (“ccASHP”) and ground source heat pumps (“GSHP”) in the Pilot Project ETEE-version of the HER+ offering for Parry Sound. While the IRP Framework does not allow for incremental funding for electric IRPAs, the Company believes the Pilot Project is an isolated environment in which electrification measures’ potential future applicability and/or feasibility under IRP can be evaluated. Consideration of a broader implementation of electrification measures would require an update to the IRP Framework. It would also require integrated energy planning, including discussion and engagement between Enbridge Gas and the electric sector, to ensure a holistic assessment of the impact of these types of measures on the respective grid and system. To support such future works, and to maximize the potential learnings resulting from the Pilot Projects, Enbridge Gas is proposing to include incentives for ccASHP and GSHP in conjunction with its ETEE-version of the HER+ offering.

50. The additional incentives for ccASHP and GSHP will be capped at 20 participants and 10 participants, respectively. It is expected the additional electrical load demand from these limited number of measures would not have a material impact to the local grid.

51. This limited ETEE offering will follow the same approach described in the Residential Sector Approach under the ETEE-version of the HER+ offering with the additional

maximum measure incentive levels detailed in Table 10. The Company also proposes to work closely with participants taking up this offering and the equipment installation contractors to better understand the experience with installing these systems in homes (e.g. upgrading electrical panel, comfort/reliability during very cold days, cost considerations etc.).

Table 10 – Summary of HER+ Electric Measures with Enhanced IRP Incentive

Pilot Project HER+ Measures	NRCan Incentive (A)	EGI DSM Plan Incentive (B)	HER+ Program Maximum Incentive (C = A + B)	EGI Pilot Project Additional Incentive (D)	Pilot Project HER+ Maximum Incentive (E = C + D)	EGI Pilot Project Funded Incentive (F = B + D)
Space Heating Heat Pump						
Install a ground source heat pump – full system.	$5,000	$1,500	$6,500	$3,500	$10,000	$5,000
Replace a ground source heat pump – heat pump unit only.	$3,000	$1,000	$4,000	$2,000	$6,000	$3,000
Install a complete ENERGY STAR certified new or replacement air source heat pump (ASHP) system or a variable capacity cold climate air source heat pump (ccASHP) system. The system must be intended to service the entire home.	$2,500	$750	$3,250	$1,750	$5,000	$2,500
Install a complete new or replacement variable capacity cold climate air source heat pump (ccASHP) system, intended to service the entire home.	$5,000	$1,500	$6,500	$3,500	$10,000	$5,000

Advanced Technologies ETEE Offering

52. As part of the ETEE programming, Enbridge Gas proposes to incentivize three technologies through an advanced technology ETEE offering within the Pilot Project:
    - Simultaneous hybrid heating
    - Natural gas heat pump
    - Thermal energy storage

53. The three advanced technologies have been evaluated against the following criteria in order to be included in the ETEE offering:

- Can reduce system peak load
- Can lower energy costs for customers
- Can benefit a large number of customers
- Are already or will be commercially available in Ontario before 2024 heating season
- Offer additional benefits such as resiliency, customer choice, and alignment with net-zero transition

54. In addition to helping Enbridge Gas achieve the Pilot Project objectives described in Exhibit B, Tab 1, Schedule 1, the inclusion of advanced technologies in the Pilot Project is intended to build further learnings to support wider market deployment in potential future IRP applications, through contractor installation and service experiences for these advanced technologies. Key benefits of each technology are further described below.

55. For the 3 advanced technologies, Enbridge Gas is proposing to offer incentives up to 60% of the project costs (including equipment and installation costs of the project), utilizing a direct install delivery model for the region. The direct install delivery model is a turnkey solution whereby contracted service providers would engage with target customers, quote, and install an efficiency measure in their buildings where a financial incentive is paid directly to the contracted service provider. The key considerations for this incentive level include:
    - There has been minimum or no market awareness for these technologies, and the average household income in the Pilot Project area is lower than provincial average, making affordability a high priority for program design.
    - The historical adoption rate of energy efficiency measures in Parry Sound are lower than provincial average, indicating that higher incentives are likely required to reach the market adoption rate sought.

56. The forecasted peak reduction possible through implementation of the advanced technologies as part of Pilot Project ETEE programming are included in Table 11.

Table 11 – Summary of Advanced Technology Forecasted Peak Hour Reductions

Technology	Approx. Peak Reduction	Approx. Consumption Reduction
Hybrid Heating	Up to 50%	20-30%
Natural Gas Heat Pump	20-25%	30-40%
Thermal Energy Storage	20%	Minimal

57. To maximize the potential learnings resulting from the Pilot Projects, Enbridge Gas is proposing to include incentives Natural Heat Pumps, Hybrid Heating, and Thermal Energy Storage in conjunction with its ETEE-version of the HER+ offering. Incentives have been derived similarly for each technology – with the approach of providing incentives such that the cost to homeowners for upgrading to one of these more advanced systems is comparable to the cost of replacement of their existing system (using a furnace and gas water heater as the baseline).

Simultaneous Hybrid Heating

58. Traditional hybrid heating systems use both gas heating equipment (i.e. air handling unit and water heater), electric heating equipment (i.e. ASHP) and a controller that switches between the two heating sources. Simultaneous hybrid heating uses a smart controller to optimize the operation of both gas equipment and electric equipment simultaneously, providing impactful reductions in energy consumption as well as emissions and cost.

59. With the integration of a smart controller with a high efficiency gas equipment and an appropriately sized electric equipment, the simultaneous hybrid heating system can reduce peak demand up to 50% and save up to 30% in energy consumption and associated cost. The peak gas demand savings are a result of programming the controller to run electric ASHP at full capacity during peak heating hours (and not

during peak electric hours), and utilizing a new high efficiency gas heating system to provide supplementary (top up) heating to meet the load requirements.

60. Hybrid heating systems are already being adopted across the province, and simultaneous hybrid heating systems have an opportunity to also be scalable. Hybrid heating systems are fully available in the market, but there remains room for ongoing innovation with smart controllers and optimizing operational efficiencies.

61. Similar to the Limited Electric Measures ETEE Offering hybrid heating systems would be switching heating load from gas to electric, and while the IRP Framework does not allow for incremental funding for electric IRPAs, the Company believes the Pilot Project would be an isolated environment in which electrification measures with respect to their potential future applicability and/or feasibility under IRP can be evaluated.

62. For the Parry Sound Pilot Project, Enbridge Gas is proposing to include hybrid heating Systems in the ETEE offerings for the residential sector only.

Natural Gas Heat Pump

63. A natural gas heat pump (“GHP”) is an air source heat pump powered by natural gas that can provide building space heating, cooling and domestic hot water (“DHW”) heating. 3 types of GHPs are most common:
    - Gas engine driven vapor compression
    - Absorption
    - Thermal compression

64. GHPs operate at greater than 100% efficiency. With the total delivered energy in the 120–160% efficiency range, GHPs can provide impactful reductions in energy consumption, hence significantly lowering GHG emissions as compared to conventional heating and cooling equipment. For residential homes, switching from a

traditional natural gas furnace and hot water heater to a GHP can save approximately 30-40% on annual energy costs for homeowners. For commercial applications, gas heat pumps can replace boilers or integrate with rooftop unit to provide high efficiency space heating and cooling, saving up to 50% of energy.

65. Additionally, gas heat pump can help to reduce peak demand for building space and DHW heating in comparison to furnace and boilers, since the gas utilization efficiency of GHPs is expected to remain above 100% up to -30 degrees Celsius outdoor air temperature. Depending on the types of GHPs, peak demand can be lowered by up to 25%. Furthermore, these reduction in demand through efficiency improvement will not shift gas load to another fuel source.

66. GHPs are scalable across the province. As the technology gains market share, replacing more traditional furnaces, boilers and water heaters in residential homes and commercial buildings, the potential peak hour demand reduction as well as annual system demand reduction could be sizeable. Additionally, GHPs operate using environmentally friendly refrigerants such as ammonia that have no global warming effect, in alignment with the transition to net-zero by 2050.

67. Commercial GHPs are already commercialized, and residential models are expected to be commercially available in late 2023.

68. As GHPs are relatively new to Canada, the initial costs are relatively high compared to natural gas furnaces and water heaters for residential homes. Incentives provided through the Pilot Project will help to offset the upfront cost of GHPs for customers enabling them to benefit from the GHP in early stages of market availability. With economies of scale, the equipment costs are expected to decline over time and market adoption is expected to increase.

69. For the Parry Sound Pilot Project, Enbridge Gas proposes to include GHPs for both residential and commercial sectors.

Thermal Energy Storage

70. Thermal energy storage ("TES") uses a phase change material ("PCM") as the storage medium to store thermal energy that can be used later during peak gas demand. Since TES uses PCM as the storage medium, the units are much smaller than traditional water heater tanks that hold a similar amount of energy

71. Depending on the size of the unit, TES can reduce peak demand by up to 20% (the entire water heating load) by charging the storage medium with both hydronic gas equipment (boiler or tankless water heater) and off-peak electricity (pending approval of electric charging for TES via a smart controller similar to hybrid heating), and then dispatching that energy to offset domestic water heating. Participants can expect to see lower energy costs as a result of efficiency gains from the TES unit compared to traditional water heaters. When electric charging of TES is available, participants can also expect to see additional energy cost reductions as the smart controller can optimize charging of the system during off-peak times when energy is less expensive.

72. TES is currently commercially ready for residential applications and can be programmed to achieve peak gas shaving without impacting the comfort of customers. The TES also doesn't require electricity to run any pumps and can therefore be used for water heating in the event of a power grid outage.

73. Enbridge Gas is proposing to include TES in the ETEE offerings for the residential sector.

Impact of Pilot Projects on Baseline Facility Alternatives

74. Based on the proposed ETEE programming described herein, forecasted participation levels and corresponding estimated peak hour savings are set out in Table 12. The ETEE budgeted participation levels were developed by analyzing the customers in the Parry Sound Pilot Project area and setting target ETEE programming uptake levels for the relevant sectors based on the proposed ETEE delivery approaches and experience in the energy efficiency market. The peak hour reductions were estimated as a function of the participation levels, annual energy efficiency percentage savings by sector assuming a 1:1 annual to peak percentage conversion where applicable, and peak design loads per customer by sector in this Pilot Project Area.

Table 12 – Summary of Estimated Peak Hour Savings by ETEE Program

	2024	**2025**	**2026**
ETEE - Enhanced DSM			
Budgeted Number of Participants	63	61	65
Estimated Peak Reduction - Cumulative (m3/hr)	38.4	72.0	110.6
ETEE - Air Source Heat Pump & Ground Source Heat Pump			
Budgeted Number of Participants		20	
Estimated Peak Reduction - Cumulative (m3/hr)		30.9	
ETEE - Advanced Technology - Gas Heat Pump			
Budgeted Number of Participants	11	19	19
Estimated Peak Reduction - Cumulative (m3/hr)	8.9	19.8	30.8
ETEE - Advanced Technology - Simultaneous Hybrid Heating			
Budgeted Number of Participants	8	16	16
Estimated Peak Reduction - Cumulative (m3/hr)	3.8	11.4	19.1
ETEE - Advanced Technology - Thermal Energy Storage			
Budgeted Number of Participants	8	16	16
Estimated Peak Reduction - Cumulative (m3/hr)	2.1	6.2	10.3

75. Based on the estimated peak hour reductions resulting from the proposed ETEE programming, Enbridge Gas expects that the scope and timing of the baseline facility projects designed to address the underlying system need/constraint (as described in Exhibit C, Tab 1, Schedule 1) will be reduced and deferred. Accordingly, the following reduced facilities are expected to be required at the

conclusion of the Pilot Project, at a total cost of $23.2 M. To note, since both the participant levels and the estimated peak hour reductions are being studied as part of this application, the estimated reductions are likely to change, and project timing and scopes will be reassessed throughout the project as required.

76. Station Modification in 2027: A station modification of the Emsdale CMS in 2027 is required to allow for the reduction of pressure differential across the station. This allows for a higher outlet pressure from the station that will satisfy the required minimum inlet pressure to Parry Sound TBS. The capital cost of the station modification is $2.1 M.

77. Pipeline Reinforcement in 2030: Approximately 7.8 km of NPS 6 4,960 kPa MOP will be required in 2030 to meet Parry Sound system demand. The NPS 6 pipeline will replace a section of the existing NPS 4 pipeline starting at the termination of the existing NPS 6 on the Parry Sound system and proceeding westward towards the town of Parry Sound. The capital cost of the pipeline replacement in 2030 is $19.3M.

78. Pipeline Reinforcement in 2031: Approximately 600 m of NPS 4 1,725 kPa MOP will be required in 2031 to meet the Parry Sound system demand. This pipeline would extend from the outlet of Parry Sound TBS to the north. The capital cost of the pipeline reinforcement in 2031 is $1.9 M.

79. It should be noted that the specific location of the load reductions from the customers that participate in the ETEE program could result in some variability in the impact to the facility projects. However, it is expected that there should be minimal impact on this set of projects, as the majority of customers in the Pilot area are downstream of the reinforcement projects.

80. Upon conclusion of the pilot, Enbridge Gas will reassess the system needs/constraint to determine if the peak hour reduction in combination with any

hydraulic system modifications, changes to customer demands or changes to the growth forecast, have modified the need for a facility project. Where a facility project is required, it will be reviewed in combination with all available IRPAs, including market-based supply, CNG injection or the continuation of ETEE, to determine the preferred alternative. Additional details on reporting and results can be found in Exhibit D, Tab 1, Schedule 3.

PROJECT ALTERNATIVES

Southern Lake Huron Pilot Project Overview

1. The primary objectives of the Southern Lake Huron Pilot Project are to develop an understanding of how ETEE and DR programs impact peak hour flow/demand and to develop an understanding of how to design, deploy, and evaluate ETEE and DR programs, as detailed at Exhibit B, Tab 1, Schedule 1.

2. The Southern Lake Huron Pilot Project will include:
    - Localized injection of compressed natural gas ("CNG");
    - Enhanced Targeted Energy Efficiency ("ETEE") programming; and
    - Demand Response ("DR") programming.

3. Enbridge Gas has incorporated a supply-side IRPA as part of the Southern Lake Huron Pilot Project, where CNG injection will be leveraged in order to defer the system need during the Pilot Project term. The use of CNG injection will ensure that Enbridge Gas can reliably meet the system demand requirements while the impacts to peak hour demand through demand-side IRPAs are being tested.

4. The primary focus of the Southern Lake Huron Pilot Project will be on the implementation of ETEE programming and DR. The suite of ETEE and DR offerings for residential (including affordable housing), commercial and industrial customers in the Town of Parry Sound will include:
    - Enhancement of existing DSM offerings within the Area of Influence for all market sectors.
    - Enhancement of existing DSM offerings within the greater Southern Lake Huron area for commercial and industrial for greater learnings in this market sector.
    - DR program within the entire Southern Lake Huron pilot project area for residential.

5. Similar to the Parry Sound Pilot Project, as there will be an overlap between the ETEE programs and the existing programs offered by the Company's broad-based DSM programs, consideration for an attribution approach to the funding and results is required. As noted in greater detail in Exhibit D, Tab 1, Schedule 1, a simplified approach where all incentives contributed by Enbridge Gas through the Pilots Project's ETEE program will be funded by the Pilot Project and not DSM. It should be noted that a general policy on the approach to DSM-IRP attribution is anticipated to be considered as part of the next IRP Plan filed by the Company.

6. The geographic scope for the Southern Lake Huron Pilot Project ETEE programming will be Enbridge Gas customers in the City of Sarnia and the Town of Plympton-Wyoming in the County of Lambton. Please see Exhibit A, Tab 2, Schedule 1, Attachment 1 for a map of the Southern Lake Huron Pilot Project Area. Certain aspects of the ETEE programming (i.e., ETEE offerings for residential customers) will only be offered in the Area of Influence as indicated in Exhibit A, Tab 2, Schedule 1, Attachment 1.

7. Due to the small number of commercial and industrial customers in the Area of Influence, the customers in these sectors, along with the greater Southern Lake Huron Pilot Project area, will have access to the commercial and industrial ETEE offerings with the goal of collecting data on a larger sample size for increased potential learnings. As noted in Exhibit B, Tab 1, Schedule 1, changes in peak hour demand within the greater Southern Lake Huron area will not significantly impact any system needs.

8. The Southern Lake Huron Pilot Project has a proposed term of 2023 to 2027. A timeline of major activities associated with the Pilot Project are shown in Table 1. The Company notes that it will require at least four months from OEB approval to implementation of ETEE and DR programming in the market.

Table 1 – Southern Lake Huron Pilot Project Timeline

SOUTHERN LAKE HURON PILOT PROJECT	2023			2024				2025				2026				2027		
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Regulatory																		
File Application	■																	
OEB Decision (Estimated)		■	■															
Data Collection																		
Hourly Measurement Installation (Residential)		■	■															
Hourly Measurement Installation (C/I)					■	■												
Collection of Hourly Data	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
Compressed Natural Gas (CNG)																		
CNG Set up										■	■							
CNG Truck in Place											■	■			■	■		
Enhanced Targeted Energy Efficiency (ETEE) [1]																		
Finalize and Setup Programming			■	■														
Deliver Residential ETEE				■	■	■	■	■	■	■	■	■	■	■	■			
Deliver Commercial / Industrial ETEE									■	■	■	■	■	■	■			
Evaluate and Refine Program Design								■	■	■		■	■	■				
Demand Response (DR) [1]																		
Finalize and Setup Programming			■	■														
Recruit Participants				■	■	■	■	■	■	■	■	■	■	■	■			
Call DR Events							■	■			■	■			■	■		
Evaluate and Refine Program Design								■	■	■		■	■	■				
Monitoring & Evaluation																		
Analyze Baseline Data					■	■			■	■			■	■			■	■
Analyze Post Implementation Data									■	■			■	■			■	■
Reporting																		
Pilot Updates in Annual Report					■	■			■	■			■	■				
Pilot Report																	■	■

Notes:
[1] Timing subject to date of OEB approval. At least four months after OEB approval is required.

<u>Supply Side IRPA - CNG Injection</u>

9. Similar to the Parry Sound Pilot Project, CNG will be used to “peak shave” and will not be the primary source of gas for the system. Please see Exhibit D, Tab 1, Schedule 1, for additional information on CNG Injection for the Pilot Projects.

10. Approximately 100 m3/h of CNG would be required to be injected at the low point in 2024 on a design day. Depending on the CNG injection location, this volume could vary slightly. To serve the required CNG volumes, two CNG tube trailers with two smaller decanting trailers will be on-site, where one trailer serves as the primary and the second as a backup. Each trailer would have adequate supply to support peak demand on its own. A third trailer will be brought in if the system flows enough gas to deplete one of the two trailers. Trailer volumes, pressures and decanting of trailers is remotely monitored 24/7 to ensure safe and reliable operations.

11. Through the Pilot Project, Enbridge Gas will also gain learnings on the use of CNG as a longer-term supply-side alternative including the injection and usage of CNG as a peak shaving alternative.

<u>Demand Side IRPA – ETEE</u>

12. The ETEE offerings applicable to the various customer sectors of the Southern Lake Huron Pilot Project are identical in those described for the Parry Sound Pilot Project in Exhibit D, Tab 1, Schedule 1 subject to minor differences explained in the following sections.

Market Analysis

13. As stated previously in Exhibit D, Tab 1, Schedule 1, the delivery of energy efficiency programming is generally implemented on a sector basis and a summary of the Enbridge Gas customers in the Area of Influence is shown in Table 2. The majority of the gas consumption load in this area is from residential customers with a relatively low number of commercial and industrial customers.

Table 2 – Southern Lake Huron (Area of Influence) Customer Sector Breakdown

Sector	Number of Customers	Number of Customers (%)	% of 2022 Weather Normalized Annual System m^3 Load
Residential	4,086	97.2%	91.7%
Commercial	70	1.7%	5.5%
Multi-Residential	34	0.8%	0.3%
Industrial	11	0.3%	2.5%
Total	4,201	100%	100%

14. A summary of the Enbridge Gas customers of the entire Southern Lake Huron Pilot Project area is shown in Table 3. There is a much larger number of commercial and industrial customers on a customer count and percentage load basis in the greater Pilot Project region.

Table 3 - Southern Lake Huron (Entire Pilot Area) Customer Sector Breakdown

Sector	**Number of Customers**	**Number of Customers (%)**	**% of 2022 Weather Normalized Annual System m^3 Load**
Residential	27,392	91.4%	64.7%
Commercial	1,921	6.4%	26.9%
Multi-Residential	565	1.9%	6.7%
Industrial	77	0.3%	1.7%
Total	**29,955**	**100%**	**100%**

IRP ETEE Pilot Project Offerings of Existing Programming

15. As discussed in Exhibit D, Tab 1, Schedule 1, the existing DSM Plan programming will be leveraged for ETEE offerings in the Southern Lake Huron Pilot Project. The parameters and approaches unique to the Southern Lake Huron Pilot Project in comparison to the Parry Sound Pilot Project are described in the following sections.

Residential Sector

16. The ETEE approach to the residential market sector for the Southern Lake Huron Pilot Project area is proposed to be the same as described under the Parry Sound Pilot Project with the exclusion of the Limited Electric Programming from the

Southern Lake Huron Pilot Project. The ETEE residential offering for the Southern Lake Huron Pilot Project will be limited to the Area of Influence. Some engagement and marketing activities may vary between the Southern Lake Huron Pilot Project and Parry Sound Pilot Project. For example, marketing initiatives for the ETEE residential offering will be geographically targeted to the Area of Influence with a smaller sub-group of residential customers. Enbridge Gas will explore direct communications to this targeted customer segment. Additionally, there is an opportunity to promote the program to local service organizations and contractors through the development of targeted communications. Marketing tactics, design concepts, and channels will be evaluated and adapted over time to optimize overall performance of initiatives in driving participation.

Commercial and Industrial Sector

17. The ETEE approach to the commercial and industrial market sectors in the Southern Lake Huron Pilot Project is proposed to be the same as described under the Parry Sound Pilot Project. The commercial and industrial ETEE offerings will be available to all general service commercial and industrial customers in the Southern Lake Huron Pilot Project area (not limited to the Area of Influence). Due to the expected timing of commercial and industrial hourly data measurement installation in the area, ETEE programming for the commercial and industrial market sectors is not expected to be rolled out in the Southern Lake Huron Pilot Project until 2025. Additional details around the hourly measurement requirements can be found in Exhibit D, Tab 1, Schedule 3.

18. Some engagement and marketing activities may vary between the Southern Lake Huron Pilot Project and Parry Sound Pilot Project as the former has a larger group of commercial and industrial customers relative to Parry Sound, impacting the associated cost for outreach initiatives. Given the larger amount of diverse commercial and industrial customers, Enbridge Gas will leverage business intelligence data to target and tailor campaign messaging to specific business types

to test impact on driving results. Campaigns will be optimized over time based on learnings. Marketing efforts will target small and large commercial and industrial customers as well as contractors and trade networks.

Affordable Housing Sector

19. The ETEE approach to the affordable housing market sectors in the Southern Lake Huron Pilot Project is proposed to be the same as described under the Parry Sound Pilot Project at Exhibit D, Tab 1, Schedule 1. As described in Exhibit D, Tab 1, Schedule 1, the Company is not proposing to offer enriched incentives to customers as part of ETEE for the affordable housing programming, but enhanced marketing activities for existing energy efficiency program offerings may be provided to evaluate direct marketing strategies. Marketing objectives for the Affordable Housing customers in Southern Lake Huron will focus on increasing local participation in the Home Winterproofing (“HWP”) program. Enbridge Gas will consider geotargeting this area with direct to customer communications tactics. Furthermore, Enbridge Gas will explore opportunities to cross promote Residential and Affordable Housing programs as applicable.

Advanced Technologies ETEE Offering

20. The Advanced Technologies ETEE offering described in Exhibit D, Tab 1, Schedule 1, is not proposed to be included in the Southern Lake Huron Pilot Project.

Demand Side IRPA - Demand Response

21. For the Southern Lake Huron Pilot Project, Enbridge Gas is proposing to offer a residential demand response (“DR”) program in the Pilot Project area given that the majority of residential customers in this area are equipped with existing hourly measurement devices known as encoder receiver transmitters “ERTs”. The DR program will seek to understand the impact that shifting hourly gas loads during peak demand periods has on the distribution system. The program is targeting residential customers in the Pilot Project area with natural gas central heating

systems controlled by an eligible Wi-Fi-connected smart thermostat with DR capabilities (including devices manufactured by Ecobee, Google Nest, Emerson Sensi, and Honeywell). The program will apply a bring-your-own-device ("BYOD") approach, leveraging the existing smart thermostats of customers. Customers will be financially incented to enroll in the DR program in exchange for allowing Enbridge Gas to control their smart thermostat during the winter heating season; specifically, during peak demand response events.

22. The geographic scope of the DR offering will include entire Southern Lake Huron Pilot Project area. This Pilot Project area includes the City of Sarnia and the Town of Plympton-Wyoming in the County of Lambton as outlined in Exhibit A, Tab 2, Schedule 1, Attachment 1.

23. In addition to the market analysis of targeted customers located within the Pilot Project area (where the DR offering will be made available), as presented in Exhibit C, Tab 1, Schedule 2, it was also critical that the Company develop an understanding of the number of existing natural gas customers/services situated within the Pilot Project area with existing smart thermostats in order to accurately assess the potential number of DR program participants. Accordingly, the Company developed an estimate of existing customers in the Pilot Project area with smart thermostats of 16% (see Table 4) using region-specific summarized data provided by thermostat manufacturers in 2022 (i.e., Google Nest, Ecobee, and Emerson Sensi).

24. To verify the reasonability of its estimate, the Company compared it to recent public statements made by the IESO and the province of Ontario,[1] which claim that there are approximately 600,000 smart thermostats in use in buildings across the province and nearly three-quarters (~75%) of those buildings are single family homes. Considering that the number of single-family homes (single detached, semi-detached, and row) in Ontario is 3,750,000[2], the average number of single-family homes equipped with a smart thermostat is 12%.[3]

Table 4 – Summary of Estimated Smart Thermostats in Pilot Area

Area	Number of Single-Family Residential Customers	% Customers in Areas of the Total Customers in the Pilot Project Area	Estimated Number of Smart Thermostats	% Smart Thermostats Per Customers in Area
Area of Influence	4,090	15%	800	20%
Greater Southern Lake Huron Area	23,310	85%	3,500	15%
Total	**27,400**	**100%**	**4,300**	**16%**

25. For the first year of the DR offering, an up-front enrollment incentive of $55 will be provided to customers that enroll to participate in the program. For every heating season the participant remains enrolled in the program and meets eligibility requirements (including participation in at least 50% of DR event hours each heating season), they will receive an additional $25 incentive. Enbridge Gas expects to call 5 to 15 total DR events during the program's first heating season (2023/2024).

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[1] Ontario.ca - https://news.ontario.ca/en/backgrounder/1002356/ontario-to-provide-new-and-expanded-energy-efficiency-programs; The Energy Mix - https://www.theenergymix.com/2022/10/06/ontario-opens-new-programs-to-shave-peak-electricity-use/#:~:text=The%20IESO%20estimates%20there%20are,Energy%20Mix%20in%20an%20email

[2] Stats Canada - https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/details/page.cfm?Lang=E&SearchText=ontario&DGUIDlist=2021A00053538035,2021A00053538030,2021A000235&GENDERlist=1&STATISTIClist=1&HEADERlist=0

[3] (600,000 × 75%) ÷ 3,750,000 = 12%

Registered participants who choose to consistently opt-out of DR events (e.g., by manually overriding temperature setbacks during DR event hours, or taking their thermostats offline during DR event hours) may be subject to removal from the offering. As the Company undertakes the DR offering and learns more about the market for gas demand response programming, there may be a need to adjust incentive levels to optimize uptake. The proposed Pilot Project budget accounts for such incentive flexibility to account for increased uptake over budgeted participation and incentive level adjustments. Changes to the incentive levels will be discussed with the IRP Technical Working Group and reported on the IRP Annual Report.

26. DR events typically occur between November 1 and April 1, which aligns with the standard winter heating season for the Enbridge Gas distribution system. DR events for the DR offering are expected to take place at varying temperatures during the heating season which will support the establishment of a correlation between outdoor temperature and reheat from setback times. On days when DR events occur, the smart thermostat setpoint temperatures will be controlled (i.e., set at a specified setpoint) between midnight and noon and can be changed by up to 2 degrees Celsius more than once during the event by customers. For example, a DR event may involve a 2-degree Celsius setback of the smart thermostat temperature for a duration of 3 hours between the hours of 7-10 a.m. in the morning.

27. A distributed energy resource management system (“DERMS”) service provider will be contracted to support the delivery of this offering. For the purposes for demand response programming, a DERMS service provider is a firm that provides software services to optimize the management and coordination of smart thermostats to ensure the effectiveness of DR events.

28. Enbridge Gas understands that the IESO plans to roll out their residential BYOD demand response program province-wide in 2023. The IESO Residential DR program will target the summer electric peak cooling seasons whereas the Enbridge

Gas DR program will target the winter gas peak heating seasons. Potential collaboration discussions are on-going between Enbridge Gas and the IESO including the using the same DERMS service provider. Synergies may include DERMS provider system cost savings and aligned approach to customers in overlapped targeted areas leading to increased shared participant uptake.

29. Most of the DR program marketing activities are likely to be handled by the DERMS service providers and/or using the smart thermostat manufacturer user interface platforms (i.e., thermostat mobile apps). The DR offering may also be promoted by Enbridge Gas through traditional marketing activities within Pilot Project area and taking into account the effectiveness of promotional initiatives undertaken in Parry Sound. Marketing initiatives for this area may explore omnichannel mass media approaches. Marketing tactics, design concepts, and channels will be evaluated and adapted over time to optimize overall performance of initiatives in driving interest and participation.

30. To drive increased DR program participation and retention levels, Enbridge Gas may also consider implementing loyalty marketing initiatives (e.g., focused on recognizing and rewarding program participants).

<u>Impact of Pilot Projects on Baseline Facility Alternatives</u>

31. Based on the proposed ETEE and DR programming in the Area of Influence, the budgeted number of participants and corresponding estimated peak hour savings are summarized in Table 5. The ETEE budgeted participation levels were developed by analyzing the customers in the Area of Influence and setting target ETEE programming uptake levels for the relevant sectors based on the proposed ETEE delivery approaches and experience in the energy efficiency market. The ETEE peak hour reductions were estimated as a function of the participation levels, annual energy efficiency percentage savings by sector assuming a 1:1 annual to peak percentage conversion where applicable, and peak design loads per customer by

sector in the Pilot Project area. The DR budgeted participation levels were developed by analyzing the customers in the Area of Influence along with the estimated number of smart thermostats in the area. The DR peak hour reductions were estimated based on values from jurisdictional scans adapted and applied to the customers in Pilot Project area.

Table 5

	2024	2025	2026
ETEE - Enhanced DSM			
Budgeted Number of Participants	101	109	109
Estimated Peak Reduction - Cumulative (m3/hr)	19.5	47.6	74.3
Demand Response			
Budgeted Number of Participants	61	81	30
Estimated Peak Reduction - Cumulative (m3/hr)	14.5	33.7	40.8

32. Based on the above estimated peak hour reductions from the proposed ETEE and DR programming, Enbridge Gas expects the timing for some of the baseline facility projects designed to address the underlying system need/constraint (as described in Exhibit C, Tab 1, Schedule 1) will be deferred. Accordingly, the following facilities are expected to be required at the conclusion of the Pilot Project, for a total facility cost of $3.25 M. While the projected scope of these facility projects is not expected to change at the conclusion of the pilot, it's important to note that since both the participant levels and the estimated peak hour reductions are being studied as part of this application, the estimated values are likely to change. This deferral, therefore, provides the opportunity to understand how changes in the forecasted participant levels and peak hour reductions, how future hydraulic system modifications, changes to existing customer demands, and the impact of Ontario's energy transition on Enbridge Gas's demand forecast could impact each project's future timing and scope. The project timing and scopes will be reassessed throughout the project to understand whether the project can be further deferred.

33. New Station Build and Pipeline Reinforcement in 2027: There is no change in scope to this baseline facility. However, the timing of the project has been deferred until 2027. The capital cost of the baseline new station and pipeline reinforcement in 2027 is approximately $1.60 M.

34. Pipeline Replacement in 2032: There is no change in scope or timing to this baseline facility project. The capital cost of the baseline pipeline replacement in 2032 is approximately $1.65 M.

35. Upon conclusion of the Pilot Project, Enbridge Gas will reassess the system needs/constraint to determine if the peak hour reduction have modified the need for a facility project. Where a facility project is required, it will be reviewed in combination with all available IRPAs, including CNG injection or the continuation of ETEE, to determine the preferred alternative. Additional details on evaluation, monitoring and reporting of the Pilot Projects results can be found in Exhibit D, Tab 1, Schedule 3.

EVALUATION AND MONITORING

1. To inform on the objectives of the Pilot Projects, as defined in Exhibit B, Tab 1, Schedule 1, the following section details the required data collection and evaluation plans for each objective.

Objective #1 – Develop an understanding of how ETEE and DR programs impact peak hour flow/demand.

2. To support the peak hour impact evaluation of ETEE, Enbridge Gas is proposing hourly flow measurement be installed on all customers in the Pilot Project areas, where data will be collected for the duration of the Pilot Projects. Customers will be grouped by type and their peak hour flows will be estimated at the beginning and the end of the Pilot Project. The average flow change in customers that did not participate in ETEE (baseline) will be compared with the change in those that did participate. This difference will be the net impact of ETEE.

3. To support the peak hour impact evaluation of DR, the same flow measurement will be used to create hourly flow estimates at various temperatures. For customers participating in DR these estimates will be compared with the actual flow data on event days. The difference between estimated flows and actual flows for a group of participants will be the net impact of DR.

4. The data collection and monitoring details as well as data evaluation process, for ETEE and DR are respectively outlined below.

Data Collection and Monitoring – ETEE

5. In order to evaluate the impact of ETEE on peak hour flow, hourly flow measurement and data from customers in the Pilot Project areas is a critical component. Currently, actual flow data for individual customers is collected on a bi-monthly interval for billing purposes which typically results in 6 readings per year. Enbridge Gas is proposing that

the Pilot Projects have complete coverage of hourly flow measurement in both Pilot Project areas to ensure the largest possible sample size of customers is attained within specific groupings of customers. This will support the analysis of trends by customer type and allow for a more representative sample size that can be more easily extrapolated to Enbridge Gas's total franchise area. Having full coverage for baseline data will also ensure any customers that participate in ETEE program will have a full range of data to be analysed before and after implementation. Additionally, hourly customer flow data provides greater granularity of customer consumption at specific times of day, whereas bi-monthly data would average and trend customer habits over a wide range of degree days. Acquiring more frequent hourly data closer to the design day heating degree day, will provide more data allowing for higher confidence and better forecasted flow during colder temperatures.

6. Currently at a system level, daily to peak hour conversion factors and profiles are recalculated annually using actual hourly gate station flows. This unique non-dimensional profile represents all of the customers downstream of the gate stations combined. While this is a good representation of the entire customer group downstream of the gate station on systems, granularity at a customer level and their change in usage is unavailable. Further, new customers are added to the system each year and existing system customer's usage changes. This presents further challenges to the Company in its attempt to understand individualized trends when looking at overall system trends absent individual hourly metering.

7. In lieu of the typical bimonthly readings, hourly data from customer meters can be made available through either: i) Automated meter reading ("AMR") technology via encoder receiver transmitters ("ERTs"), which is primarily compatable with residential and smaller commercial metersets, and/or ii) more advanced metering technology, which is ideal for larger commercial or industrial metersets. The data can be collected through receivers placed in vehicles that drive the meter routes, which will result in

more frequent meter reading to download the additional data from ERTs, or via existing telecom infrastructure to allow for remote access.

8. In the Parry Sound Pilot Project area, there are no existing hourly measurement devices; therefore, installation of approximately 2,000 hourly measurement devices is required. The associated costs for Parry Sound hourly measurement is shown in Exhibit E, Tab 1, Schedule 1.

9. In the Southern Lake Huron Pilot Project area, most residential and small commercial customers are equipped with existing ERTs. These existing ERTs were previously only read at the same bi-monthly frequency, but have presently been configured to start recording hourly data. Within the Area of Inlfuence, an additional installation of approximately 940 residential ERTs is required. In the remaining Sarnia area, additional installation of approximately 360 hourly measurement devices is required, primarily for the larger commercial and industrial customers. The associated costs for Southern Lake Huron hourly measurement is shown in Exhibit E, Tab 1, Schedule 1.

10. To note, there are known supply chain issues with the procurement of hourly measurement devices, specifically longer leads times associated with equipment for larger commercial and industrial meter sets. As a result, additional time has been factored into the Pilot Project timelines to accommodate for the procurement and installation of hourly measurement. The anticipated start of the ETEE programming for commercial and industrial sector in the Southern Lake Huron Pilot Project is expected to begin in 2025 to ensure data collection and baseline data can be collected in 2024 prior to launching ETEE programming for this market segment.

11. Measurement should be in place the year prior to the implementation of ETEE to allow for baseline consumption levels to be established, and subsequently allow for a comparison against post implementation consumption levels to determine the change.

12. Customer hourly flow data will be continuously collected and recorded throughout the years to allow for the analysis of seasonality in flow changes. In the Parry Sound Pilot Project area, the entire system hourly flow data is available at Emsdale CMS through existing SCADA measurement. This can be utilized as a check for the total system flow with all hourly customer devices and to correlate specific customer peak reductions to overall system peak hour flow.

13. Weather data, including temperature and windspeed, will be utilized and matched against hourly customer flow to isolate the impact of weather on flows.

<u>Data Analysis and Evaluation Plan - ETEE</u>

14. Evaluation of the peak hourly flow reductions in the Pilot Project area will be split into two parts: i) an assessment of each customer’s peak hourly forecasted design day flow before and after ETEE implementation, and ii) evaluation of how the peak hourly flow by customer grouping was impacted by ETEE. This evaluation will compare the change in flows of customers that did not participate in ETEE with the change in flows of customers that did participate.

Assessment of Peak Hourly Flow

15. Distribution systems are designed to provide safe and reliable service under peak hourly flow conditions that typically is associated with an extreme cold day that has been previously experienced. This is considered a design day heating degree day. The degree day calculation also requires the determination of the base temperature (temperature at which space heating starts), and the effect of wind speed on heat loss. Since this design condition occurs infrequently, customer consumption data is not typically available at this specific condition and their raw data cannot be used for hydraulic design without additional analysis. Extrapolation of customer flow data to the

local design day heating degree day is required to estimate total flows under this design condition.

16. A detailed hourly flow analysis will be performed on the customers profile, to determine base temperature (temperature at which space heating starts), the base flow (estimated flow when heating is not required), and the heating flow per degree day. This allows for an estimation of the peak hour flows that can be used for hydraulic modeling at any Degree Day. This analysis will be performed on customer data before and after implementation of ETEE programming.

17. Through review of the customer’s peak hour flow profile over the duration of the Pilot Project term, noise and trends in individual customer gas usage will be identified where possible (short term variations in customer flow, examples being: customer being on vacation, business failing, temporary change in habits, etc.).

Analysis of ETEE impacts to Peak Hourly Flow

18. Peak hourly flow estimates as well as other data (including customer type, weather information, participation information for ETEE programming, etc.) will be used to perform an analysis on the impact of ETEE on peak hourly flow for customer groupings and measures type.

19. Customers that elect not to participate in ETEE programming in the Pilot Project area will form a control group for each customer type to determine changes to customer flow occurring from factors external to the Pilot Project ETEE programming. Examples of factors that could influence customer flow in the medium-long term include commodity pricing, changes in occupancy, customer habits, equipment and building changes not related to ETEE programming. ETEE programming will replace select broad based DSM programs in the Pilot Project areas (see Exhibit D, Tab 1, Schedule 1) and participants of the remaining broad based DSM programs during the Pilot

Project timeframe will be excluded from the control group, which will ensure that changes to peak hourly flow in the control group are not a result of broad based DSM programs.

20. For customers that participate in ETEE in the Pilot Project area, their calculated peak hourly consumption after ETEE will be compared to the base peak hourly consumption before ETEE. This information will be analyzed by groups of customers in each customer type. The average change will be compared with the control group to determine the averaged net impact.

21. Additional analysis can be completed on specific measures and groupings of measures and a consultant may be engaged depending on number of participants and the complexity.

<u>Data Collection and Monitoring - DR</u>

22. Similar to ETEE, customer hourly flow data and corresponding weather data is required in order to determine the impact of DR program on individual customer impacts relative to others on the system and on their combined peak hour usage. Unique to the DR program, thermostat data will also be collected from the relevant manufacturers.

<u>Data Analysis & Evaluation Plan - DR</u>

23. The DR evaluation will use the same analysis as ETEE which will be performed on customer flow data to determine the base temperature (temperature at which space heating starts), the base flow (estimate flow when heating is not required), and the heating flow per degree day. This allows for an estimation of their typical hourly gas usage based on the actual weather conditions be compared with their actual consumption during DR events. DR events involve the adjustment of the smart

thermostat temperature setpoint as discussed in Exhibit D, Tab 1, Schedule 2. The difference between these two values is the impact of DR on their flow at this degree day.

24. Data from the thermostat manufacturers (such as runtime, set points, heating stage etc) will be layered on top of hourly customer flow data to isolate and quantify base versus heating flow, and to more fully understand the impact of DR on total gas usage.

25. DR event data at various temperatures will be used to assess the relationship between outdoor temperature and reheat time required from setback temperature. This relationship is important to understand in order to help extrapolate the results to the design day heating degree day. Where a relationship exists, customers with different building sizes and vintages will be compared to look for trends that can be used to predict non-participant smart thermostat users behaviour.

26. Participants will be grouped together to evaluate the combined effect of staggering the initiation time of reheat from setback and how it can effect the morning peak system flows. Using event results from varying temperatures, an extrapolated prediction of design day heating degree day benefits will be assessed.

Objective #2 – Develop an understanding of how to design, deploy, and evaluate ETEE and residential DR programs

27. To support the programming evaluation of ETEE and DR, the evaluation plan will include process and outcome evaluation approaches. These approaches will include conducting surveys and interviews along with data analysis of financial and participation results.

Monitoring and Evaluation Plan - ETEE

28. From a process evaluation perspective, ETEE participants will be engaged via market research to better understand participant perspectives on ETEE program design, including but not limited to the program participant journey and effectiveness of marketing initiatives. Interviews with key service providers, contractors, pilot-engaged internal staff, and other key stakeholders (e.g. municipal staff) may be conducted to assess the program delivery implementation.

29. From an outcome evaluation perspective, financial spending and participation in ETEE programming will be tracked and assessed against the financial budgets and participation forecasts in this application for the respective Pilot Projects. These ETEE values will also be assessed against broad-based DSM programming in the respective years during the duration of the Pilot Projects.

30. The ETEE evaluation plan for the second objective will follow the schedule presented in Table 1 of Exhibit D, Tab 1, Schedule 1 for the Parry Sound Pilot Project and Table 1 of Exhibit D, Tab 1, Schedule 2 for the Southern Lake Huron Pilot Project.

Monitoring and Evaluation Plan – DR

31. From a process evaluation perspective, program participants will be engaged via surveys upon registration to better understand initial participant perspectives on DR program design including but not limited to participant characteristics, participation behaviours during events, and effectiveness of marketing initiatives. Program participants will also be surveyed at the end of each heating season windows to gauge participant satisfaction levels and gain insights for improvements. Interviews with the DERMS service providers, pilot-engaged internal staff, and other key partners (e.g. IESO, municipalities) may be conducted to assess the program delivery implementation.

32. From an outcome evaluation perspective, DR program spending and participant levels will be tracked and assessed against the financial budgets and participation forecasts in this application for the DR programming. The incentives and program parameters may change through the duration of the Pilot Project and assessing the impact of these changes relating to program spends and participation levels.

33. The DR evaluation plan for the second objective will follow the schedule presented in Table 1 of Exhibit D, Tab 1, Schedule 2 for the Southern Lake Huron Pilot Project.

Reporting and Results

34. Enbridge Gas will provide Pilot Project updates and key learnings to the OEB and stakeholders through the IRP Annual Report that the Company files as part of its annual Non-Commodity Deferral Account Clearance and Earnings Sharing Mechanism application.[1]

35. As results become available on the primary objectives of the Pilot Project (understanding impact on peak hour flows, and understanding of how to design, deploy and evaluate ETEE and DR programs), these results will be reported to the OEB and stakeholders and subsequently integrated into future IRP plans. This will reduce the risk of these future IRP plans by ensuring program design and measures implemented will deliver a more consistent known peak hour savings, and the resultant impact on future facility need can be more closely estimated. Results will also inform better estimates on the costs of ETEE programing.

36. Based on the evaluation methods outlined above, where conclusions can be drawn on the Pilot Projects' impact on peak hour flow of specific customers groups, the need for

[1] EB-2020-0091 (Appendix A), Integrated Resource Planning Framework for Enbridge Gas p.22 (Monitoring and Reporting)

detailed monitoring of individual customer hourly consumption data may not be required in future IRP Plans. This will provide cost savings on future IRP plans by reducing the amount of metrology required on those customers. In instances where the results are inconclusive, detailed monitoring of individual customer hourly consumption data may be required on a go-forward basis.

37. Upon conclusion of the Pilot Project term, the results from the Pilot Projects evaluation will be reviewed to determine next steps. Based on the total achieved peak hour flow reduction through the Pilot Projects, as well as any hydraulic system modifications, changes to customer demands, and updates to growth forecast, the baseline facility needs will be reassessed. Where a facility project is required, IRPAs will be reviewed in combination against the updated baseline facility project to determine the preferred alternative, at which time an application may be put forward to the OEB, either an LTC (if required for the facility project) or an IRP Plan Application (if required based on cost thresholds).

STAKEHOLDER ENGAGEMENT

Overview

1. Within Enbridge Gas's IRP Proposal, Enbridge Gas requested approval of its three-component stakeholder engagement process including project-specific targeted consultation and engagement initiatives for IRPAs or IRP Plans.[1] The targeted engagement proposal included stakeholders from the specific geographic area relevant to the IRPA. This Exhibit outlines targeted engagement conducted specific to the Pilot Projects.

Stakeholder Engagement

2. Prior to the Pilot Project selection process, Enbridge Gas presented the preliminary Pilot Project information to the Technical Working Group ("TWG") [2], where Enbridge Gas defined the objectives and general criteria that it would use to guide the Pilot Project selection process. The selection criteria described in Exhibit C, Tab 1, Schedule 2, then formed the basis for a 'Pilot Evaluation Criteria and Scoring Matrix' that was applied to potential Pilot Project options.

3. Enbridge Gas also conducted initial stakeholder engagement sessions with the local municipalities, local electric distribution companies ("LDC"), Hydro One and the Independent Electricity System Operator ("IESO"). Within these engagement sessions, Enbridge Gas provided an overview of the Pilot Projects and sought input that helped confirm the forecasted system needs were appropriate. In addition, Enbridge Gas held one-on-one sessions with the municipalities and LDCs to discuss system constraints and the potential for program coordination on IRPAs. Further details regarding Enridge Gas's stakeholder engagement for each Pilot Project are provided below.

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[1] EB-2020-0091, Decision and Order, July 22, 2021, P. 63
[2] Natural Gas Integrated Resource Planning (IRP) | Engage with Us (oeb.ca)

4. During Pilot Project implementation, Enbridge Gas plans to conduct community-level targeted engagement with residents, businesses and interested community members in the Parry Sound and Southern Lake Huron areas. The various IRPA programs may be refined if required based on input received from stakeholders.

Parry Sound Stakeholder Engagement:

5. Enbridge Gas held a meeting on December 15, 2022, with representatives from the Municipality of Parry Sound, Lakeland Power Distribution, IESO, and Hydro One. The objective of this meeting was to provide a description of the Parry Sound Pilot Project, introduce key concepts and personnel, and ensure Enbridge Gas was connecting with the appropriate individuals in each organization. After a presentation from Enbridge Gas, discussion topics included confirmation of Enbridge Gas's regional needs and growth projects for the area. Initial feedback suggested that Enbridge Gas's customer addition forecasts are aligned with other regional planners.

6. Follow-up meetings were held on February 22 and March 8, 2023, with smaller, more focused groups that included IESO, Hydro One, Parry Sound municipal staff and Lakeland Power to continue the review and discuss Enbridge Gas's Parry Sound system demand forecast and the associated system needs. Municipal staff indicated that based on historical trends, approximately 50 homes and 6 commercial additions are forecasted per year over the next 10 year horizon, with a declining trend over that timeframe. However, they also noted there has been an observed increase in growth and development within past two years that exceeds the historical growth trends. This aligned with Enbridge Gas's forecast and recent observed growth in the area.

7. There was general support for the Pilot Project in the region. These more focused groups allowed for a more detailed discussion on system needs, potential impacts on electric load, new residential developments, and community engagement, and securing letters of support from Council.

8. Enbridge Gas has also already begun stakeholder engagement initiatives to engage the local Parry Sound community. An open house session was held on May 10, 2023 at the Charles W Stockey Centre & Bobby Orr Hall of Fame in Parry Sound. During this open house event Enbridge Gas had ten attendees from the Town of Parry Sound, an environmental conservation and ecological organization and private citizens. Feedback received ranged from concern over natural gas supply and capacity issues and how growth plans submitted by the municipality are factored into the forecast, to opportunities to promote more energy efficiency, interest in the IRP offers and concern over energy affordability.

9. Enbridge Gas has developed a Parry Sound pilot specific web page[3] to provide members of the community access to information and updates on the Pilot Project, and a forum to provide comments through a “Have your say” function. The open house materials are also available on the webpage. All future stakeholder engagement initiatives, such as a potential webinar including dates and times, will be published on the Pilot Projects’ web pages,[4] these events will be promoted locally using channels such as digital ads on social media and online news publications, and at local arenas.

10. By taking a variety of approaches to engagement sessions and outreach efforts, the Company expects it will learn which approaches (i.e., in-person, project materials available on web site, webinar, or a combination of) are most effective at reaching audiences. Learnings may also indicate that all types of engagement sessions and outreach efforts are required, as they may target and reach different demographics.

<u>Southern Lake Huron Stakeholder Engagement:</u>

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[3] Parry Sound Pilot Project - Regional Planning & Engagement | Enbridge Gas
[4] Parry Sound Pilot Project - Regional Planning & Engagement | Enbridge Gas

11. Enbridge Gas held a meeting on January 16, 2023, with representatives from the Municipalities of the City of Sarnia, County of Lambton and the Town of Plympton – Wyoming, and the IESO. The objective of this initial meeting was to provide a description of the Southern Lake Huron Pilot Project, introduce key concepts and personnel, and ensure Enbridge Gas was connecting with the appropriate individuals in each organization. After a presentation from Enbridge Gas, discussion topics included confirmation of Enbridge Gas's regional needs and growth projects for the area. Initial feedback suggested that Enbridge Gas's customer addition forecasts are aligned with other regional planners.

12. Follow-up meetings were held on February 15, 22 and 23, with additional staff from the Town of Plympton – Wyoming, City of Sarnia, and Bluewater Power (the local LDC serving the region), IESO and Hydro One to continue the review and discuss Enbridge Gas's Southern Lake Huron system demand forecast and the associated system needs. Municipal staff indicated that historical trends forecasted approximately 20-30 residenital homes per year. However, they also noted there has been an observed increase in growth and development since COVID which have significantly exceeded the historical growth trends. This aligned with Enbridge Gas's forecast and recent observed growth in the area.

13. There was general support for the Pilot Project in the region. These more focused groups allowed for a more detailed discussion on system needs, potential impacts on electric load, new residential developments, and community engagement, and securing letters of support from Council

14. Enbridge Gas has also already begun stakeholder engagement initiatives to engage the local communities of the City of Sarnia, the County of Lambton, and the Town of Plympton – Wyoming. An open house session was held on May 17, 2023 at the Camlachie Community Center in Camlachie. During the South Huron Lakes open

house event Enbridge Gas had six attendees from the municipality, business organization and private citizens. Feedback and conversations from this event centered around the IRPA program offerings and general interest in demand side management programs available to agriculture customers.

15. Enbridge Gas has developed a South Huron Lake pilot specific web page[5] to provide members of the community access to information and updates on the Pilot Project, and a forum to provide comments through a "Have your say" function. The open house materials are also available on the webpage. Any future stakeholder engagement initiatives such as a potential webinar, including dates and times, will be published on the Pilot Projects' web pages[6], and events will be promoted using digital ads on social media channels and online news publications, and at local arenas.

16. Similarly to the Parry Sound Pilot project Enbridge Gas anticipates that by taking a variety of approaches to engagement sessions and outreach efforts, the Company expects it will learn which approaches (i.e., in-person, project materials available on web site, webinar, or a combination of) are most effective at reaching audiences. Learnings may also indicate that all types of engagement sessions and outreach efforts are required, as they may target and reach different demographics.

<u>Regional Planning Website:</u>

17. Throughout the term of the Pilot Projects, Enbridge Gas will maintain a presence on its Regional Planning Web Pages where stakeholders interested in the Parry Sound and Southern Lake Huron Pilot Projects can log on to check on the status of the Projects, view any updates, and/or submit comments. When stakeholders register for updates, they will be notified of updates via email. Links to the Regional Planning Web Pages can be found below:

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[5] Southern Lake Huron Pilot Project - Regional Planning & Engagement | Enbridge Gas
[6] Southern Lake Huron Pilot Project - Regional Planning & Engagement | Enbridge Gas

- Parry Sound Project: https://www.enbridgegas.com/sustainability/regional-planning-engagement/parry-sound-project
- Southern Lake Huron Project: https://www.enbridgegas.com/sustainability/regional-planning-engagement/southern-lake-huron-project

1. STAKEHOLDERING – INDIGENOUS CONSULTATION

1. In Enbridge Gas's opinion, the current decision before the OEB to approve the cost consequences of the Pilot Projects does not trigger the duty to consult. However, consistent with Enbridge Gas's Indigenous Peoples Policy and commitment to engagement with Indigenous groups, Enbridge Gas sent email notification of the IRP pilot areas to Indigenous groups located within ten kilometers of the pilot areas. Accordingly, notifications were sent to Aamjiwnaang First Nation, Chippewas of Kettle and Stony Point First Nation and Wasauksing First Nation. Attachment 1 to this Exhibit contains a log of correspondence and associated attachments for the Pilot Projects.

2. In addition, Enbridge Gas also notified Indigenous groups in all operating regions of the Regional Engagement sessions held in April and May 2023 which included both the Northern and Southwest Regions where these pilot projects are located.

Enbridge Gas Indigenous Engagement Log

Log updated as of May 31, 2023

Line Item	Date	Method	Summary of Enbridge Gas Inc. ("Enbridge Gas") Engagement Activity	Summary of Community's Engagement Activity	Issues or Concerns raised and how addressed by Enbridge Gas including any substantive Attachments
Aamjiwnaang First Nation (AFN)					
1.1	April 4, 2023	Email	An Enbridge Gas representative emailed the Aamjiwnaang First Nation (AFN) representative to advise of the Integrated Resource Plan pilot occurring within the City of Sarnia and Municipality of Plympton-Wyoming. The email contained a link directing AFN to the Enbridge Gas website for more information.		
Chippewas of Kettle and Stony Point First Nation (CKSPFN)					
2.1	March 14, 2023	Email	An Enbridge Gas representative emailed the Chippewas of Kettle and Stony Point (CKSPFN) representative to advise of the Integrated Resource Plan pilot occurring within the City of Sarnia and Municipality of Plympton-Wyoming. The email contained a link directing CKSPFN to the Enbridge Gas website for more information.		
Wasauksing First Nation (WFN)					
3.1	March 14, 2023	Email	An Enbridge Gas representative emailed the Wasauksing First Nation (WFN) representative to advise of the Integrated Resource Plan pilot occurring within the Town of Parry Sound. The email contained a link directing WFN to the Enbridge Gas website for more information.		

From: Lauren Whitwham
To: Matt Stone
Subject: Enbridge IRP: Southern Lake Huron
Date: Monday, April 3, 2023 12:11:08 PM

Hi Matt,

I'm not sure who would be interested in this at Aamjiwnaang but I wanted to pass it along.

Enbridge Gas is looking to develop an understanding of how to design, deploy and evaluate enhanced targeted energy efficiency (ETEE) and demand response (DR) programs and to recognize how ETEE & DR impacts peak hour demands.
This pilot project is located within the City of Sarnia and Municipality of Plympton-Wyoming.
Information on the pilot project can be found here:
https://www.enbridgegas.com/sustainability/regional-planning-engagement/southern-lake-huron-project
I just noticed the map of this project looks like it is within Aamjiwnaang First Nation and this is not the case. This is an error on Enbridge's part. The pilot does not extend past Churchill and we will work on making adjustments to correct.
Enbridge Gas is required (as directed in the EB-2020-0091 IRP Framework Proceeding) to apply to the OEB for approval of the IRP pilot Projects. Enbridge Gas currently plans to file the application to the OEB on May 15.

If you are interested in learning more or having a meeting to discuss the pilot project further, please let me know.

Thanks,
Lauren

Lauren Whitwham
Senior Advisor, Community & Indigenous Engagement, Eastern Region

Public Affairs, Communications & Sustainability

From: Lauren Whitwham
To: Consultation
Cc: Emily Ferguson
Subject: Enbridge IRP: Southern Lake Huron
Date: Tuesday, March 14, 2023 8:43:54 AM

Hi there,

I wanted to make you aware of an Integrated Resource Planning alternative that is being proposed by Enbridge Gas.

Enbridge Gas is looking to develop an understanding of how to design, deploy and evaluate enhanced targeted energy efficiency (ETEE) and demand response (DR) programs and to recognize how ETEE & DR impacts peak hour demands.
This pilot project is located within the City of Sarnia and Municipality of Plympton-Wyoming.
Information on the pilot project can be found here:
https://www.enbridgegas.com/sustainability/regional-planning-engagement/southern-lake-huron-project
Enbridge Gas is required (as directed in the EB-2020-0091 IRP Framework Proceeding) to apply to the OEB for approval of the IRP pilot Projects. Enbridge Gas currently plans to file the application to the OEB on May 15.

If you are interested in learning more or having a meeting to discuss the pilot project further, please let me know.

Thanks,
Lauren

Lauren Whitwham
Senior Advisor, Community & Indigenous Engagement, Eastern Region

Public Affairs, Communications & Sustainability

From: Sarah Crowell
To: lands@wasauksing.ca
Cc: council5@wasauksing.ca
Subject: Parry Sound, pilot project
Date: Tuesday, March 14, 2023 10:45:12 AM

Hi there,

I wanted to make you aware of an Integrated Resource Planning alternative that is being proposed by Enbridge Gas.
This pilot project will cover the homes and businesses of Enbridge Gas customers in the Town of Parry Sound. Information on the pilot can be found at:
https://www.enbridgegas.com/sustainability/regional-planning-engagement/parry-sound-project
Enbridge Gas is looking to develop an understanding of how to design, deploy and evaluate enhanced targeted energy efficiency (ETEE) and demand response (DR) programs and to recognize how ETEE & DR impacts peak hour demands.

Enbridge Gas is required (as directed in the EB-2020-0091 IRP Framework Proceeding) to apply to the OEB for approval of the IRP pilot Projects. Enbridge Gas currently plans to file the application to the OEB on May 15.

If you are interested in learning more or having a meeting to discuss the pilot project further, please let me know.

Miigwetch,
Sarah

Sarah O'Donnell Crowell
Senior Advisor, Community & Indigenous Engagement, Northern Ontario

Public Affairs, Communications & Sustainability
Enbridge Inc.

Cell: 705-507-3980 | sarah.crowell@enbridge.com
1211 Amber Drive, Thunder Bay, Ontario P7B 6M4
Safety. Integrity. Respect. Inclusion.

PILOT PROJECT COSTS & ECONOMICS

1. This Exhibit provides a detailed overview of the Pilot Project costs and economic analysis that was completed. To note, the objectives and selection of Pilot Projects were centered around gaining learnings on ETEE and DR and not on the cost effectiveness of the proposed IRP alternatives. The OEB encouraged Enbridge Gas to use the Pilot Projects as a testing ground for an enhanced DCF+ test[1]; however, due to the timing of the TWG's review of the enhanced test and the timing of the Pilot Project Application filing, the Company will defer presenting a three-stage enhanced DCF+ until the first IRP Plan application, where Enbridge Gas will seek adjudication of the test. In efforts to still provide a high level cost benefit analysis, a Stage 1 DCF analysis was completed.

2. The total cost for the Pilot Projects (Parry Sound Pilot Project and Southern Lake Huron Pilot Project) over their proposed term of 2023-2027 is estimated to be $13.1 M. The total cost of the Parry Sound Pilot Project of $6.6 M and the total cost for the Southern Lake Huron Pilot Project of $6.5 M, outlined below in Table 2 and Table 11. A further breakdown of the costs between operating and maintenance (O&M) and capital expense for the Pilot Projects are provided at Exhibit E, Tab 1, Schedule 1, Attachments 1 and 2. Amounts included in Total Direct O&M and Capital Costs on Attachments 1 and 2 (lines 8/18 and 2/7, respectively) represent the costs impacting the Stage 1 DCF economic evaluation. As discussed below, amounts below the line have been excluded from the economics.

Parry Sound Project Costs

3. The total cost of the Baseline Parry Sound Facility Project is estimated to be $28.1 M as set out in Table 1 below.

[1] EB-2020-0091, July 22, 2021, Appendix A, P. 24.

Table 1 - Summary of Parry Sound Baseline Facility Costs

Timing	Facility	Description	Facility Cost ($)
2025	Station	Modifications at Emsdale Station to reduce pressure differential	$2.0 M
2027	Pipe	11.3 km of NPS 6 4960 kPa MOP	$23.9 M
2029	Pipe	800 m of NPS 4 1725 kPa MOP	$2.2 M

4. By contrast, the total cost of the Parry Sound IRP Plan is $29.8 M. This includes the costs associated with this IRP Pilot Project application (including the IRPAs and Pilot Learnings costs), as well as the estimated required facility costs at the conclusion of the pilot in 2027. These costs are further detailed below.

5. The total cost for the Parry Sound Pilot Project, as set out in Table 2, is estimated to be $6.6 M, excluding overheads[2]. The costs are subdivided into:
   i) IRPA Costs: costs associated specifically with the IRPAs implemented as part of the Parry Sound Pilot Project, and are included in the project economics; and
   ii) Pilot Learnings Costs: costs associated with obtaining learnings critical to fulfilling the pilot project objectives, as outlined in Exhibit B, Tab 1, Schedule 1. These learnings / fulfilling the pilot project objectives are not only critical to the Pilot Projects but also to all future non-pilot IRP plans. As such, these incremental costs are excluded from the project economics.

[2] Overheads associated with Pilot Project costs can be found Exhibit E, Tab 1, Schedule 1, Attachment 2

Table 2 – Summary of Parry Sound Pilot Project Budget

Description	2023	2024	2025	2026	2027	Total
IRPA Costs						
Supply Side IRPA (O&M)	150,000	150,000	177,000	177,000	177,000	831,000
Supply Side IRPA (Capital)	0	0	70,000	0	0	70,000
Demand Side IRPA (O&M)	0	1,285,000	1,257,300	1,222,200	0	3,764,500
Other Costs (O&M)	55,000	187,500	187,500	187,500	187,500	805,000
Total IRPA Costs	**$205,000**	**$1,622,500**	**$1,691,800**	**$1,586,700**	**$364,500**	**$5,470,500**
Pilot Learnings Costs						
Other Cost (O&M)	6,000	88,500	58,500	58,500	58,500	270,000
Other Cost (Capital)	878,000	0	0	0	0	878,000
Total Pilot Learnings Costs	**$884,000**	**$88,500**	**$58,500**	**$58,500**	**$58,500**	**$1,148,000**
Total Pilot	**$1,089,000**	**$1,711,000**	**$1,750,300**	**$1,645,200**	**$423,000**	**$6,618,500**

IRPA Costs

6. The total IRPA cost for the Parry Sound Pilot Project is $5.47 M, and is summarized in Table 3. Additional details and breakdown of the proposed budget for each category are provided below.

Table 3 - Breakdown of Parry Sound Pilot IRPA Budget

Description[3]	2023	2024	2025	2026	2027	Total
Supply Side IRPA						
TCE	$150,000	$150,000	$0	$0	$0	$300,000
CNG	$0	$0	$177,000	$177,000	$177,000	$531,000
CNG (Capital)	$0	$0	$70,000	$0	$0	$70,000
Total Supply Side IRPA	**$150,000**	**$150,000**	**$247,000**	**$177,000**	**$177,000**	**$901,000**
Demand Side IRPA						
ETEE – Enhanced DSM	$0	$708,600	$640,700	$605,600	$0	$1,954,900
ETEE – Advanced Technology	$0	$406,400	$616,600	$616,600	$0	$1,639,600
ETEE – ASHP & GSHP	$0	$170,000	$0	$0	$0	$170,000
Total Demand Side IRPA	**$0**	**$1,285,000**	**$1,257,300**	**$1,222,200**	**$0**	**$3,764,500**
Other						
Stakeholdering	$12,500	$0	$0	$0	$0	$12,500
Administrative / Legal	$42,500	$0	$0	$0	$0	$42,500
Incremental FTE	$0	$187,500	$187,500	$187,500	$187,500	$750,000
Total Other	**$55,000**	**$187,500**	**$187,500**	**$187,500**	**$187,500**	**$805,000**
Total Parry Sound IRPA	**$205,000**	**$1,622,500**	**$1,691,800**	**$1,586,700**	**$364,500**	**$5,470,500**

7. *Supply-side IRPA* costs include the proposed budget for TCE and CNG:
   (i) TCE – Enbridge Gas has provided estimated costs as a placeholder for any potential service agreement with TCE to provide higher pressures into the Parry Sound system. Additional explanation supporting the budget components can be found in Exhibit D, Tab 1, Schedule 1.
   (ii) CNG – this includes costs associated with rental of CNG trailer, procurement of temporary land and capital cost associated with tie-ins to the existing system. Additional explanation supporting the budget components can be found in Exhibit D, Tab 1, Schedule 1.

8. *Demand-side IRPA* costs include the proposed budget for various ETEE programming. Table 4 provides a breakdown of the budgets by ETEE program, and is further categorized by incentive, promotion & delivery, and administrative costs.

[3] All costs are O&M unless otherwise noted.

Explanation supporting the budget components can be found in Exhibit D, Tab 1, Schedule 1.

Table 4 - Breakdown of ETEE Budget by Program

	2024	2025	2026	Total
ETEE - Enhanced DSM				
Incentive Cost	$200,000	$189,000	$205,000	$594,000
Promotion & Delivery	$488,000	$433,000	$383,000	$1,304,000
Admin Cost	$20,600	$18,700	$17,600	$56,900
Total Enhanced DSM	**$708,600**	**$640,700**	**$605,600**	**$1,954,900**
ETEE - Advanced Technology				
Incentive Cost	$294,000	$498,000	$498,000	$1,290,000
Promotion & Delivery	$100,600	$100,600	$100,600	$301,800
Admin Cost	$11,800	$18,000	$18,000	$47,800
Total Advanced Technology	**$406,400**	**$616,600**	**$616,600**	**$1,639,600**
ETEE - ccASHP & GSHP				
Incentive Cost	$150,000	$0	$0	$150,000
Promotion & Delivery	$20,000	$0	$0	$20,000
Admin Cost	$0	$0	$0	$0
Total ccASHP & GSHP	**$170,000**	**$0**	**$0**	**$170,000**
Total ETEE	**$1,285,000**	**$1,257,300**	**$1,222,200**	**$3,764,500**

9. To illustrate a high-level cost for the ETEE offering, a comparison of the cost per estimated peak hour reduction for each offering is summarized in Table 5. To note, both costs and peak hour reductions are being studied as part of this Pilot Project and the calculated values below are based on initial estimates.It is expected there may be higher costs associated with the Advanced Technology offerings in comparison to Enhanced DSM offerings, as they are net new measures and in the early stages of market adoption. Explanation supporting the budgets and estimated savings can be found in Exhibit D, Tab 1, Schedule 1.

10. For the Limited Electric Measures ETEE Offering, the corresponding cost per estimated peak hour reduction is calculated at $5,501 per m3/hr. It should be noted

that this cost does not take into consideration or reflect the impact on the electric grid and associated costs, and therefore not a true representation of the cost per peak hour reduction. Further coordinated energy planning and discussion with the electric sector would be required.

Table 5 - Comparison of Cost ($) per Estimated Peak Hour Reduction (m3/hr)

ETEE Offering	**$ per m3 Peak reduction ($/m3/hr)** [4]
ETEE - Enhanced DSM [5]	$17,682
ETEE - Advanced Technology - Gas Heat Pump	$26,365
ETEE - Advanced Technology - Simultaneous Hybrid Heating	$28,585
ETEE - Advanced Technology - Thermal Energy Storage	$22,889

11. *Other* costs include include the following:
    (i) *Stakeholdering* - costs associated with community engagement and stakeholdering to support the application process. Additional explanation to support this budget item can be found in Exhibit F, Tab 1, Schedule 1.
    (ii) *Administrative / Legal* – costs associated with third-party/external support in the OEB Application and approval process.
    (iii) *Incremental FTE* – costs associated with incremental full time employees required to support the implementation, monitoring and/or data analysis of the Pilot Project across the duration of the Pilot Project term.

Pilot Learnings Costs

12. Pilot Learnings costs include the proposed budget for incremental items that directly support obtaining learnings that are critical to not only achieving the Pilot Project objectives, but also to all future non-pilot IRP Plans. As such, these incremental costs have been excluded from the economic analysis. It should be noted that these types of

[4] Values presented are cumulative budgets of ETEE offerings and based on estimated peak hour reduction at the end of the Pilot Project time frame.
[5] Enhanced DSM HER+ measures do not capture the incentive costs provided by NRCan.

learning specific costs may be required in future non-pilot IRP Plans, and Enbridge Gas hopes to gain a better understanding of the magnitude of what these future required costs might be through these Pilot Projects.

13. Total Pilot Learnings O&M costs for the Parry Sound Pilot Project are $0.27 M, as summarized in Table 6. This includes the following:
    (i) *Data Collection & Analysis* – Data collection costs include hourly data collection via increased frequency in meter reads, as well as deployment of market research surveys. Data analysis costs include any associated required external/third-party consultant costs with a placeholer estimate for consultant support in completing the hourly data analysis. This incremental effort would support the initial development of the methodology and process for completing analysis on peak hour impact from ETEE and can be leveraged in future IRP Plans. Additional explanation supporting this budget item can be found in Exhibit D, Tab 1, Schedule 3.

Table 6 - Breakdown of Parry Sound Pilot Learnings O&M Budget

Pilot Learnings - O&M	**2023**	**2024**	**2025**	**2026**	**2027**	**Total**
Data Collection & Analysis	$6,000	$88,500	$58,500	$58,500	$58,500	$270,000
Total Pilot Learnings O&M	**$6,000**	**$88,500**	**$58,500**	**$58,500**	**$58,500**	**$270,000**

14. The total Pilot Learnings Capital costs for the Parry Sound Pilot Project are $0.9 M as summarized in Table 7. This includes the following:
    (i) *Hourly Metering Costs & Installs* – capital costs associated with procurement of hourly metering equipment and installation of equipment onto customer metersets within the pilot area. To support the objectives of the Pilot Project, full coverage of hourly flow measurement has been proposed within the pilot area to ensure largest possible sample size of customers can be obtained. The learnings from the Pilot Projects will help to inform meterology requirements going forward. Additional explanation supporting this budget item can be found in Exhibit D, Tab 1, Schedule

Table 7 – Breakdown of Parry Sound Pilot Learnings Capital Budget

Pilot Learnings - Capital	2023	2024	2025	2026	2027	Total
Hourly Metering Costs & Installs	$878,000	$0	$0	$0	$0	$878,000
Total Pilot Learnings Capital	**$878,000**	**$0**	**$0**	**$0**	**$0**	**$878,000**

Estimated Future Facility Costs Post-Pilot

15. Based on the estimated peak hour reductions from the proposed ETEE program, the scope and the timing of the baseline facility projects will be reduced and deferred. The facilities required and their associated timing and costs following the conclusion of the Pilot Project program are estimated to be $23.2 M as set out in Table 8 below.

16. The facility scope reduction and deferment is a benefit to ratepayers, as the IRP alternative costs are lower over the next three years versus forecast facility costs. In addition, to the extent there are changes in foreasted peak hour consumption, the deferral would enable these to be accounted for in the assessment of future facility requirements. However, the deferment of the facility project does come with risks, such as in the event that the IRP alternatives have limited success and/or the needs of the customers increase significantly from forecast and/or the forecast facility costs increase more than the inflation used within the economic forecast.

Table 8 - Summary of Parry Sound's Required Future Facility Costs Post-Pilot

Timing	Facility	Description	Facility Cost ($)
2027	Station	Modifications at Emsdale Station to reduce pressure differential	$2.1 M
2030	Pipe	7.8 km of NPS 6 4960 kPa MOP	$19.3 M
2031	Pipe	600 m of NPS 4 1725 kPa MOP	$1.9 M

Parry Sound Project Economics

17. The purpose of this section of evidence is to discuss the Stage 1 DCF economic analysis of the Parry Sound alternatives.[6] The OEB encouraged Enbridge Gas to, and it will, use the Pilot Projects as a testing ground for an enhanced DCF+ test[7]; however, due to the timing of the TWG's review of the enhanced test and the timing of the Pilot Project Application filing, the Company will defer presenting a three-stage enhanced DCF+ until the first IRP Plan application, where Enbridge Gas will seek adjudication of the Test.

18. Stage 1 consists of a DCF analysis specific to Enbridge Gas, which assesses the economic benefits and costs from the utility perspective, and indicates whether the project is likely to result in future increases to utility rates. All incremental cash inflows and outflows resulting from the Project are identified. A NPV is calculated for both the IRP Plan, which consists of both the Pilot Project IRPA costs and the future required facilities, and the Facility Alternative. The Stage 1 results for both the IRP Plan and the Facility Alternative are compared to the "status quo" or "do nothing" scenario to determine the economic feasibility based on approved rates, and the results are then compared to one another to determine which alternative is optimal.

Stage 1 – Project Specific Discounted Cash Flow Analysis

19. The Stage 1 DCF analysis for the Project can be found at Exhibit E, Tab 1, Schedule 1, Attachment 3 for the Facility Alternative and Attachment 4 for the IRP Plan. Summarized in Table 9 below, this schedule indicates the following Stage 1 NPVs for the Parry Sound Project alternatives:

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[6] Enbridge Gas is currently developing of an enhanced DCF test to be applied to IRPA project evaluations. The proposed enhancements will be presented to the OEB as part of the first non-pilot IRP application by way of an IRP DCF+ Supplemental Guide.
[7] EB-2020-0091, July 22, 2021, Appendix A, P. 24.

Table 9

Stage 1 NPV Calculation

Line No.	Particulars ($ millions)	Stage 1 NPV
1	**Parry Sound Alternatives**	
2	Facility Alternative	$ (21.3)
3	IRP Plan	$ (18.0)

20. A summary of the key input parameters, values and assumptions used in the Stage 1 DCF analysis can be found at Exhibit E, Tab 1, Schedule 1, Attachment 7.

21. Incremental cash outflows include all estimated incremental Project costs. Total costs included in the analysis can be found on Line 8 of Attachment 1 for O&M and Line 2 of Attachment 2 for capital. As outlined in Attachment 2, indirect overhead is not included within cash outflows.

Southern Lake Huron Project Costs

22. The total cost of the Baseline Southern Lake Huron Facility Project is estimated to be $3.1 M as set out in Table 10 below.

Table 10 - Summary of Southern Lake Huron Baseline Facility Costs

Timing	Facility	Description	Facility Cost ($)
2025	Pipe	1600m NPS 6 420kpa MOP	$0.9 M
2025	Station	New Station at Michigan Line	$0.6 M
2032	Pipe	Replacement of 2.5km NPS 2 and 4 420kPa MOP	$1.7 M

23. By contrast, the total cost of the Southern Lake Huron IRP Plan is $9.7 M. This

includes the costs associated with this IRP Pilot Project application (including the IRPAs and Pilot Learnings costs), as well as the estimated required facility costs at the conclusion of the pilot in 2027. These costs are further detailed below.

24. The total cost for the Southern Lake Huron Pilot Project, as set out in Table 11, is estimated to be $6.5 M, excluding overheads[8]. The costs are subdivided into:
    i) IRPA Costs: costs associated specifically with the IRPAs implemented as part of the Southern Lake Huron Pilot Project, and are included in the project economics; and
    ii) Pilot Learnings Costs: costs associated with obtaining learnings critical to fulfilling the pilot project objectives, as outlined in Exhibit B, Tab 1, Schedule 1. These learnings / fulfilling the pilot project objectives is critical to the Pilot Projects and also to all future non-pilot IRP plans. This includes, within the greater Southern Lake Huron area, an ETEE offering targeting the commercial and industrial segment and a residential DR program for the purpose of gaining additional learnings within these market segment. As indicated in Exhibit B, Tab 1, Schedule 1, changes in peak hour demand as a result of these two offerings will not impact the system constraint/need, as they're being offered outside of the Area of Influence. However, because some hourly metering exists, extending these two offerings just beyond the Area of Influence will provide valuable learnings for future non-pilot IRP Plans. As such, the costs associate with targeting this area are excluded from the project economics.

Table 11 - Summary of Southern Lake Huron Pilot Project Budget

Description	2023	2024	2025	2026	2027	Total
IRPA Costs (Area of Influence)						
Supply Side IRPA (O&M)	$0	$167,000	$167,000	$167,000	$0	$501,000
Supply Side IRPA (Capital)	$0	$70,000	$0	$0	$0	$70,000

[8] Overheads associated with Pilot Project costs can be found Exhibit E, Tab 1, Schedule 1, Attachment 2

Demand Side IRPA (O&M)	$0	$551,500	$595,100	$540,500	$6,200	$1,693,300
Other Costs (O&M)	$55,000	$187,500	$187,500	$187,500	$187,500	$805,000
Total IRPA Costs	**$55,000**	**$976,000**	**$949,600**	**$895,000**	**$193,700**	**$3,069,300**
Pilot Learnings Costs						
Demand Side IRPA (O&M)	$0	$222,800	$886,100	$855,000	$35,800	$1,999,700
Other Cost (O&M)	$42,000	$112,500	$82,500	$82,500	$82,500	$402,000
Other Cost (Capital)	$382,000	$598,200	$0	$0	$0	$980,200
Total Pilot Learnings Costs	**$424,000**	**$933,500**	**$968,600**	**$937,500**	**$118,300**	**$3,381,900**
Total Pilot Costs	**$479,000**	**$1,909,500**	**$1,918,200**	**$1,832,500**	**$312,000**	**$6,451,200**

IRPA Costs

25. The total IRPA costs for the Southern Lake Huron Pilot Project is $ 3.07 M, and is summarized in Table 12. Additional details and breakdown of the proposed budget for each category are provided below.

Table 12 - Breakdown of Southern Lake Huron IRPA Budget

Description [9]	**2023**	**2024**	**2025**	**2026**	**2027**	**Total**
Supply Side IRPA						
CNG	$0	$167,000	$167,000	$167,000	$0	$501,000
CNG (Capital)	$0	$70,000	$0	$0	$0	$70,000
Total Supply Side IRPA	**$0**	**$237,000**	**$167,000**	**$167,000**	**$0**	**$571,000**
Demand Side IRPA - Area of Influence						
ETEE - Enhanced DSM	$0	$407,900	$472,700	$444,400	$0	$1,325,000
DR	$0	$143,600	$122,400	$96,100	$6,200	$368,300
Total Demand Side IRPA	**$0**	**$551,500**	**$595,100**	**$540,500**	**$6,200**	**$1,693,300**
Other						
Stakeholdering	$12,500	$0	$0	$0	$0	$12,500
Administrative / Legal	$42,500	$0	$0	$0	$0	$42,500
Incremental FTE	$0	$187,500	$187,500	$187,500	$187,500	$750,000
Total Other	**$55,000**	**$187,500**	**$187,500**	**$187,500**	**$187,500**	**$805,000**
Total Southern Lake Huron IRPA	**$55,000**	**$976,000**	**$949,600**	**$895,000**	**$193,700**	**$3,069,300**

26. *Supply-side IRPA* costs include the proposed budget for CNG, which includes rental of CNG trailers, procurement of temporary land and capital cost associated with tie-ins to

[9] All costs are O&M unless otherwise noted.

the existing system. Additional explanation supporting the budget components can be found in Exhibit D, Tab 2, Schedule 1.

27. *Demand-side IRPA* costs include the proposed budget for ETEE and DR programming. Table 13 provides a breakdown of the ETEE and DR program budgets within the Area of Influence, and is further categorized by incentive, promotion & delivery, and administrative costs. Explanation supporting the budget components can be found in Exhibit D, Tab 2, Schedule 1.

Table 13 - Breakdown of ETEE and DR Budget in Area of Influence

	2024	2025	2026	2027	Total
ETEE – Enhanced DSM					
Incentive Cost	$272,700	$295,000	$291,700	$0	$859,400
Promotion & Delivery	$135,200	$177,700	$152,700	$0	$465,600
Admin Cost [10]	$0	$0	$0	$0	$0
Total ETEE	**$407,900**	**$472,700**	**$444,400**	**$0**	**$1,325,000**
DR					
Incentive Cost	$5,100	$8,900	$7,600	$6,200	$27,800
Promotion & Delivery	$138,500	$113,500	$88,500	$0	$340,500
Admin Cost [10]	$0	$0	$0	$0	$0
Total DR	**$143,600**	**$122,400**	**$96,100**	**$6,200**	**$368,300**
Total ETEE & DR	**$551,500**	**$595,100**	**$540,500**	**$6,200**	**$1,693,300**

28. To illustrate a high-level cost for the ETEE and DR offering, a comparison of the cost per estimated peak hour reduction is summarized in Table 14. To note, both costs and peak hour reductions are being studied as part of this Pilot Project and the calculated values below are based on initial estimates. Explanation supporting the budgets and estimated savings can be found in Exhibit D, Tab 2, Schedule 1.

[10] Admin costs are captured as part of the broader ETEE and DR programs for the greater Southern Lake Huron for simplicity.

Table 14 - Comparison of Cost ($) per Estimated Peak Hour Reduction (m3/hr)

Demand Side IRPA Programs in Area of Influence	**$ per m3 Peak reduction ($/$m^3$/hr)** [11]
ETEE - Enhanced DSM	$18,376
DR	$9,030 [12]

29. *Other* costs include include the following:
    (i) *Stakeholdering* - costs associated with community engagement and stakeholdering to support the application process. Additional explanation to support this budget item can be found in Exhibit F, Tab 1, Schedule 1.
    (ii) *Administrative / Legal* – costs associated with third-party/external support in the OEB Application and approval process.
    (iii) *Incremental FTE* – costs associated with incremental full time employees required to support the implementation, monitoring and/or data analysis of the Pilot Project across the duration of the Pilot Project term.

Pilot Learnings Costs

30. Pilot Learnings costs include the proposed budget for incremental items that directly support obtaining learnings that are critical to not only achieving the Pilot Project objectives, but also to all future non-pilot IRP Plans. As such, these incremental costs have been excluded from the economic analysis. It should be noted that these types of learning specific costs may be required in future non-pilot IRP Plans, and Enbridge

[11] Values presented are cumulative budgets of ETEE or DR programs and based on estimated peak hour reduction at the end of the Pilot Project time frame.
[12] Values presented for Demand Response programming may not reflect the true costs of this alternative as costs and peak reductions do no persist for multiple years in the same way energy efficiency measures do and require on-going DR programming.

Gas hopes to gain a better understanding of the magnitude of what these future required costs might be through these Pilot Projects.

31. The total Pilot Learnings O&M Costs for the Southern Lake Huron Pilot Project are $2.4 M, as summarized in Table 15.

Table 15 – Summary of Pilot Learnings O&M Budget for the Greater Southern Lake Huron area

Pilot Learnings– O&M	**2023**	**2024**	**2025**	**2026**	**2027**	**Total**
Demand Side IRPA (Greater SLH)						
ETEE - Commercial/Industrial	$0	$15,200	$681,100	$683,500	$0	$1,379,800
DR	$0	$207,600	$205,000	$171,500	$35,800	$619,900
Total Demand Side IRPA	**$0**	**$222,800**	**$886,100**	**$855,000**	**$35,800**	**$1,999,700**
Other Costs						
Data Collection & Analysis	$42,000	$112,500	$82,500	$82,500	$82,500	$402,000
Total Other Costs	**$42,000**	**$112,500**	**$82,500**	**$82,500**	**$82,500**	**$402,000**
Total Pilot Learnings Costs (O&M)	**$42,000**	**$335,300**	**$968,600**	**$937,500**	**$118,300**	**$2,401,700**

32. The Pilot Learnings O&M Costs for the Southern Lake Huron Pilot Project include the following:

(i) *Demand Side IRPA* – costs associated with ETEE and DR programs offered in the greater Southern Lake Huron area, outside the Area of Influence, for additional learnings, where changes in peak hour demand in this area will not impact any system needs. Table 16 provides a further breakdown of the ETEE and DR budgets, categorized by incentive, promotion & delivery, and administrative costs. Explanation supporting the budget components can be found in Exhibit D, Tab 1, Schedule 2.

Table 16 - Breakdown of Pilot Learnings ETEE and DR O&M Budget for Greater Southern Lake Huron

	2024	2025	2026	2027	Total
ETEE (C/I)					
Incentive Cost	$0	$302,000	$319,400	$0	$621,400
Promotion & Delivery	$15,000	$369,000	$354,000	$0	$738,000
Admin Cost	$200	$10,100	$10,100	$0	$20,400
Total ETEE	**$15,200**	**$681,100**	**$683,500**	**$0**	**$1,379,800**
DR					
Incentive Cost	$29,100	$51,500	$44,000	$35,800	$160,400
Promotion & Delivery	$172,500	$147,500	$122,500	$0	$442,500
Admin Cost	$6,000	$6,000	$5,000	$0	$17,000
Total DR	**$207,600**	**$205,000**	**$171,500**	**$35,800**	**$619,900**
Total Pilot Learnigs Demand Side IRPA	**$222,800**	**$886,100**	**$855,000**	**$35,800**	**$1,999,700**

(ii) *Data Collection & Analysis* – Data collection costs include hourly data collection via increased frequency in meter reads, as well as deployment of market research surveys. Data analysis costs include any associated required external/third-party consultant costs with a placeholer estimate for consultant support in completing the hourly data analysis. This incremental effort would support the initial development of the methodology and process for completing analysis on peak hour impact from ETEE and can be leveraged in future IRP Plans. Additional explanation supporting this budget item can be found in Exhibit D, Tab 1, Schedule 3.

33. The total Pilot Learnings Capital Costs for the Southern Lake Huron Pilot Project is $1.0 M, as summarized in Table 17. This includes the following:

(i) *Hourly Metering Costs & Installs* – capital costs associated with procurement of hourly metering equipment and installation of equipment onto customer metersets within the pilot area. To support the objectives of the Pilot Project, full coverage of hourly flow measurement has been proposed within the entire pilot area to ensure largest possible sample size of customers can be obtained. The learnings from the

Pilot Project will help to inform meterology requirements going forward. Additional explanation supporting this budget item can be found in Exhibit D, Tab 1, Schedule 3.

Table 17 - Breakdown of Southern Lake Huron Pilot Learnings Capital Budget

Pilot Learnings - Capital	2023	2024	2025	2026	2027	Total
Hourly Metering Costs & Installs	$382,000	$598,200	$0	$0	$0	$980,200
Total Pilot Learnings Costs (Capital)	**$382,000**	**$598,200**	**$0**	**$0**	**$0**	**$980,200**

Estimated Future Facility Costs Post-Pilot

34. Based on the estimated peak hour reductions from the proposed ETEE and DR program, the timing of the baseline facility projects will be deferred. The facilities required and their associated timing and costs following the conclusion of the Pilot Project program area estimated to be $3.3 M as set out in Table 18 below. The deferment is a benefit to ratepayers as the IRP alternative costs are lower over the next three years versus forecast facility costs. In addition, to the extent there are changes in foreasted peak hour consumption, the deferral would enable these to be accounted for in the assessment of future facility requirements. However, the deferment of the facility project does come with risks, such as in the event that the IRP alternatives have limited success and/or the needs of the customers increase significantly from forecast and/or the forecast facility costs increase more than the inflation used within the economic forecast.

35. The deferment is a benefit to ratepayers as the IRP alternative costs are lower over the next three years versus forecast facility costs. In addition, to the extent there are changes in foreasted peak hour consumption, the deferral would enable these to be accounted for in the assessment of future facility requirements. However, the deferment of the facility project does come with risks, such as in the event that the IRP alternatives have limited success and/or the needs of the customers increase

significantly from forecast and/or the forecast facility costs increase more than the inflation used within the economic forecast.

Table 18 - Summary of Southern Lake Huron Required Future Facility Costs Post-Pilot

Timing	Facility	Description	Facility Cost ($)
2027	Pipe	1600m NPS 6 420kpa MOP	$0.9 M
2027	Station	New Station at Michigan Line	$0.7 M
2032	Pipe	Replacement of 2.5km NPS 2 and 4 420kPa MOP	$1.7 M

Southern Lake Huron Project Economics

36. The purpose of this section of evidence is to discuss the Stage 1 economic analysis of the Southern Lake Huron alternatives.[13]

> Stage 1 consists of a DCF analysis specific to Enbridge Gas. All incremental cash inflows and outflows resulting from the Project are identified. A NPV is calculated for each the IRPA and Facility alternative. The Stage 1 results for each the IRPA and the Facility alternative are compared to the "status quo" or "do nothing" scenario to determine the economic feasibility based on approved rates, and the results are then compared to one another to determine which alternative is optima

Stage 1 – Project Specific Discounted Cash Flow Analysis

37. The Stage 1 DCF analysis for the Project can be found at Exhibit E, Tab 1, Schedule 1, Attachment 5 for the Facility Alternative and Attachment 6 for the IRPA. Summarized in Table 19 below, this schedule indicates the following Stage 1 NPVs for the Southern Lake Huron Project alternatives:

[13] Enbridge Gas is currently developing an enhanced DCF test to be applied to IRPA project evaluations. The proposed enhancements will be presented to the OEB as part of the first non-pilot IRP application by way of an IRP DCF+ Supplmenetal Guide.

Table 19

Stage 1 NPV Calculation

Line No.	Particulars ($ millions)	Stage 1 NPV
1	**Southern Lake Huron Alternatives**	
2	Facility Alternative	$ (1.3)
3	IRP Plan	$ (3.2)

38. A summary of the key input parameters, values and assumptions used in the Stage 1 DCF analysis can be found at Exhibit E, Tab 1, Schedule 1, Attachment 7.

39. Incremental cash outflows include all estimated incremental Project costs. Total costs included in the analysis can be found on Line 18 of Attachment 1 for O&M and Line 7 of Attachment 2 for capital. As outlined in Attachment 2, indirect overhead is not included within cash outflows.

Operating & Maintenance Costs

Line No.	Particulars ($000)	2023	2024	2025	2026	2027	Total
	Parry Sound IRPA						
	Supply Side Alternative						
1	CNG	-	-	177.0	177.0	177.0	531.0
	Demand Side Alternatives						
2	ETEE - Enhanced DSM	-	708.6	640.7	605.6	-	1,954.9
3	ETEE – Advanced Technology	-	406.4	616.6	616.6	-	1,639.6
4	ETEE – ASHP & GSHP	-	170.0	-	-	-	170.0
	Other O&M Costs						
5	Stakeholdering	12.5	-	-	-	-	12.5
6	Administrative / Legal	42.5	-	-	-	-	42.5
7	Incremental FTE	-	187.5	187.5	187.5	187.5	750.0
8	Total Direct O&M Costs	55.0	1,472.5	1,621.8	1,586.7	364.5	5,100.5
	Supply Side Alternative						
9	TC Energy	150.0	150.0	-	-	-	300.0
	Pilot Learnings O&M Costs						
10	Data Collection & Analysis	6.0	88.5	58.5	58.5	58.5	270.0
11	Total Parry Sound O&M Costs	$ 211.0	$ 1,711.0	$ 1,680.3	$ 1,645.2	$ 423.0	$ 5,670.5
	Southern Lake Huron IRPA						
	Supply Side Alternative						
12	CNG	-	167.0	167.0	167.0	-	501.0
	Demand Side Alternative						
13	ETEE - Enhanced DSM (Area of Influence)	-	407.9	472.7	444.4	-	1,325.0
14	Demand Response (Area of Influence)	-	143.6	122.4	96.1	6.2	368.3
	Other O&M Costs						
15	Stakeholdering	12.5	-	-	-	-	12.5
16	Administrative / Legal	42.5	-	-	-	-	42.5
17	Incremental FTE	-	187.5	187.5	187.5	187.5	750.0
18	Total Direct O&M Costs	55.0	906.0	949.6	895.0	193.7	2,999.3
	Demand Side Alternative						
19	ETEE - Commercial/Industrial (Greater SLH - C/I)	-	15.2	681.1	683.5	-	1,379.8
20	Demand Response (Greater SLH)	-	207.6	205.0	171.5	35.8	619.9
	Pilot Learnings O&M Costs						
21	Data Collection & Analysis	42.0	112.5	82.5	82.5	82.5	402.0
22	Total Southern Lake Huron O&M Costs	$ 97.0	$ 1,241.3	$ 1,918.2	$ 1,832.5	$ 312.0	$ 5,401.0
23	Total IRP Pilot O&M Costs	$ 308.0	$ 2,952.3	$ 3,598.5	$ 3,477.7	$ 735.0	$ 11,071.5

Capital Costs

Line No.	Particulars ($000)	2023	2024	2025	2026	2027	Total
	Parry Sound IRPA						
	Supply Side Alternative						
1	CNG	-	-	70.0	-	-	70.0
2	Total Direct Capital Costs	-	-	70.0	-	-	70.0
	Pilot Learnings Capital Costs						
3	Hourly Metering Costs & Installs	878.0	-	-	-	-	878.0
4	Indirect Overheads	230.0	-	17.0	-	-	247.0
5	Total Parry Sound Capital Costs	$ 1,108.0	$ -	$ 87.0	$ -	$ -	$ 1,195.0
	Southern Lake Huron IRPA						
	Supply Side Alternative						
6	CNG	-	70.0	-	-	-	70.0
7	Total Direct Capital Costs	-	70.0	-	-	-	70.0
	Pilot Learnings Capital Costs						
8	Hourly Metering Costs & Installs	382.0	598.2	-	-	-	980.2
9	Indirect Overheads	100.0	166.0	-	-	-	266.0
10	Total Southern Lake Huron Capital Costs	$ 482.0	$ 834.2	$ -	$ -	$ -	$ 1,316.2
11	Total IRP Pilot Capital Costs	$ 1,590.0	$ 834.2	$ 87.0	$ -	$ -	$ 2,511.2

Parry Sound - IRP Pilot - Facility
DCF Analysis
InService Date: Nov 1, 2025

Project Year ($000's)	Project Total	1	2	3	4	5	6	7	8	9	10
Operating Cash Flow											
Revenue:	8,444	-	-	10	37	70	100	128	153	174	193
Expenses:											
O & M Expense	(2,323)	-	-	(5)	(14)	(23)	(31)	(38)	(44)	(50)	(55)
Municipal Tax	(1,689)	-	-	(1)	(3)	(9)	(44)	(47)	(47)	(47)	(47)
Income Tax	(1,050)	-	2	10	15	70	(4)	(3)	(16)	(21)	(24)
Net Operating Cash Flow	3,381	-	2	14	35	107	21	40	45	57	67
Capital											
Incremental Capital	(32,028)	-	(492)	(3,013)	(4,118)	(18,424)	(2,290)	(1,991)	(387)	(339)	(298)
Change in Working Capital	(3)	-	-	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Total Capital	(32,031)	-	(492)	(3,013)	(4,119)	(18,425)	(2,291)	(1,991)	(388)	(339)	(298)
CCA Tax Shield											
CCA Tax Shield	7,666	-	-	36	117	398	392	403	397	379	361
Net Present Value											
PV of Operating Cash Flow	1,192	-	2	12	29	86	16	29	31	38	42
PV of Capital	(26,221)	-	(468)	(2,729)	(3,551)	(15,115)	(1,788)	(1,480)	(274)	(228)	(191)
PV of CCA Tax Shield	3,734	-	-	32	98	319	299	292	274	249	226
Total NPV by Year	(21,295)	-	(467)	(2,685)	(3,423)	(14,711)	(1,474)	(1,159)	31	58	77

Project NPV **(21,295)**

Parry Sound - IRP Pilot - Facility
DCF Analysis
InService Date: Nov 1, 2025

Project Year ($000's)	Project Total	11	12	13	14	15	16	17	18	19	20
Operating Cash Flow											
Revenue:	8,444	209	224	235	238	238	238	238	238	238	238
Expenses:											
O & M Expense	(2,323)	(59)	(63)	(65)	(65)	(65)	(65)	(65)	(65)	(65)	(65)
Municipal Tax	(1,689)	(46)	(46)	(46)	(45)	(45)	(45)	(45)	(45)	(45)	(45)
Income Tax	(1,050)	(28)	(30)	(33)	(34)	(34)	(34)	(34)	(34)	(34)	(34)
Net Operating Cash Flow	3,381	76	84	92	95	95	95	95	95	95	95
Capital											
Incremental Capital	(32,028)	(275)	(272)	(128)	-	-	-	-	-	-	-
Change in Working Capital	(3)	(0)	(0)	(0)	-	-	-	-	-	-	-
Total Capital	(32,031)	(275)	(272)	(128)	-	-	-	-	-	-	-
CCA Tax Shield											
CCA Tax Shield	7,666	344	328	311	294	276	260	244	229	216	203
Net Present Value											
PV of Operating Cash Flow	1,192	45	48	49	48	46	44	42	40	38	36
PV of Capital	(26,221)	(168)	(158)	(71)	-	-	-	-	-	-	-
PV of CCA Tax Shield	3,734	205	186	168	151	135	121	108	96	86	77
Total NPV by Year	(21,295)	82	76	146	199	181	164	150	136	124	113

Project NPV **(21,295)**

Parry Sound - IRP Pilot - Facility
DCF Analysis
InService Date: Nov 1, 2025

Project Year ($000's)	Project Total	21	22	23	24	25	26	27	28	29	30
Operating Cash Flow											
Revenue:	8,444	238	238	238	238	238	238	238	238	238	238
Expenses:											
O & M Expense	(2,323)	(65)	(65)	(65)	(65)	(65)	(65)	(65)	(65)	(65)	(65)
Municipal Tax	(1,689)	(45)	(45)	(45)	(45)	(45)	(45)	(45)	(45)	(45)	(45)
Income Tax	(1,050)	(34)	(34)	(34)	(34)	(34)	(34)	(34)	(34)	(34)	(34)
Net Operating Cash Flow	3,381	95	95	95	95	95	95	95	95	95	95
Capital											
Incremental Capital	(32,028)	-	-	-	-	-	-	-	-	-	-
Change in Working Capital	(3)	-	-	-	-	-	-	-	-	-	-
Total Capital	(32,031)	-	-	-	-	-	-	-	-	-	-
CCA Tax Shield											
CCA Tax Shield	7,666	190	179	168	158	149	140	131	124	116	109
Net Present Value											
PV of Operating Cash Flow	1,192	34	33	31	30	28	27	25	24	23	22
PV of Capital	(26,221)	-	-	-	-	-	-	-	-	-	-
PV of CCA Tax Shield	3,734	69	62	55	49	44	40	35	32	28	25
Total NPV by Year	(21,295)	103	94	86	79	72	66	61	56	51	47

Project NPV **(21,295)**

Parry Sound - IRP Pilot - Facility
DCF Analysis
InService Date: Nov 1, 2025

Project Year ($000's)	Project Total	31	32	33	34	35	36	37	38	39	40	41	42
Operating Cash Flow													
Revenue:	8,444	238	238	238	238	238	238	238	238	238	238	238	238
Expenses:													-
O & M Expense	(2,323)	(65)	(65)	(65)	(65)	(65)	(65)	(65)	(65)	(65)	(65)	(65)	(65)
Municipal Tax	(1,689)	(45)	(45)	(45)	(45)	(45)	(45)	(45)	(45)	(45)	(45)	(45)	(45)
Income Tax	(1,050)	(34)	(34)	(34)	(34)	(34)	(34)	(34)	(34)	(34)	(34)	(34)	(34)
Net Operating Cash Flow	3,381	95	95	95	95	95	95	95	95	95	95	95	95
Capital													
Incremental Capital	(32,028)	-	-	-	-	-	-	-	-	-	-	-	-
Change in Working Capital	(3)	-	-	-	-	-	-	-	-	-	-	-	-
Total Capital	(32,031)	-	-	-	-	-	-	-	-	-	-	-	-
CCA Tax Shield													
CCA Tax Shield	7,666	103	96	91	85	80	75	71	67	63	59	55	169
Net Present Value													
PV of Operating Cash Flow	1,192	21	20	19	18	17	16	16	15	14	13	13	12
PV of Capital	(26,221)	-	-	-	-	-	-	-	-	-	-	-	-
PV of CCA Tax Shield	3,734	23	20	18	16	15	13	12	10	9	8	7	22
Total NPV by Year	(21,295)	44	40	37	34	32	29	27	25	23	22	20	34

Project NPV **(21,295)**

Parry Sound - IRP Pilot - IRPA
DCF Analysis
InService Date: Nov 1, 2025

Project Year ($000's)	Project Total	1	2	3	4	5	6	7	8	9	10
Operating Cash Flow											
Revenue:	8,444	-	-	10	37	70	100	128	153	174	193
Expenses:											
O & M Expense	(3,128)	(55)	(188)	(192)	(202)	(210)	(31)	(38)	(44)	(50)	(55)
Utility CNG Costs	(531)	-	-	(177)	(177)	(177)	-	-	-	-	-
Utility ETEE Costs	(3,765)	-	(1,285)	(1,257)	(1,222)	-	-	-	-	-	-
Municipal Tax	(1,137)	-	-	(2)	(2)	(2)	(1)	(7)	(31)	(33)	(33)
Income Tax	140	15	390	429	417	93	(15)	(5)	52	(17)	(28)
Net Operating Cash Flow	24	(40)	(1,082)	(1,190)	(1,149)	(226)	53	77	129	75	77
Capital											
Incremental Capital	(25,700)	-	-	(393)	(828)	(1,833)	(1,232)	(3,166)	(15,272)	(2,458)	(184)
Change in Working Capital	(3)	(3)	(72)	(8)	1	61	18	(0)	(0)	(0)	(0)
Total Capital	(25,704)	(3)	(72)	(401)	(827)	(1,771)	(1,214)	(3,166)	(15,272)	(2,458)	(184)
CCA Tax Shield											
CCA Tax Shield	6,040	-	-	6	19	46	46	77	224	349	349
Net Present Value											
PV of Operating Cash Flow	(1,959)	(39)	(1,005)	(1,051)	(966)	(181)	41	56	89	49	48
PV of Capital	(18,672)	(3)	(68)	(363)	(713)	(1,453)	(948)	(2,353)	(10,800)	(1,655)	(118)
PV of CCA Tax Shield	2,602	-	-	6	16	37	35	56	155	229	218
Total NPV by Year	(18,030)	(42)	(1,073)	(1,409)	(1,663)	(1,597)	(872)	(2,241)	(10,557)	(1,376)	149

Project NPV **(18,030)**

Parry Sound - IRP Pilot - IRPA
DCF Analysis
InService Date: Nov 1, 2025

Project Year ($000's)	Project Total	11	12	13	14	15	16	17	18	19	20
Operating Cash Flow											
Revenue:	8,444	209	224	235	238	238	238	238	238	238	238
Expenses:											
O & M Expense	(3,128)	(59)	(63)	(65)	(65)	(65)	(65)	(65)	(65)	(65)	(65)
Utility CNG Costs	(531)	-	-	-	-	-	-	-	-	-	-
Utility ETEE Costs	(3,765)	-	-	-	-	-	-	-	-	-	-
Municipal Tax	(1,137)	(33)	(33)	(32)	(32)	(32)	(32)	(32)	(32)	(32)	(32)
Income Tax	140	(31)	(34)	(37)	(38)	(38)	(38)	(38)	(38)	(38)	(38)
Net Operating Cash Flow	24	86	94	102	104	104	104	104	104	104	104
Capital											
Incremental Capital	(25,700)	(169)	(167)	-	-	-	-	-	-	-	-
Change in Working Capital	(3)	(0)	(0)	(0)	-	-	-	-	-	-	-
Total Capital	(25,704)	(169)	(167)	(0)	-	-	-	-	-	-	-
CCA Tax Shield											
CCA Tax Shield	6,040	331	314	296	279	262	246	231	217	204	192
Net Present Value											
PV of Operating Cash Flow	(1,959)	51	53	55	53	51	48	46	44	42	40
PV of Capital	(18,672)	(103)	(97)	(0)	-	-	-	-	-	-	-
PV of CCA Tax Shield	2,602	197	178	160	143	128	114	102	91	82	73
Total NPV by Year	(18,030)	145	134	214	196	179	163	148	135	123	113

Project NPV **(18,030)**

Parry Sound - IRP Pilot - IRPA
DCF Analysis
InService Date: Nov 1, 2025

Project Year ($000's)	Project Total	21	22	23	24	25	26	27	28	29	30
Operating Cash Flow											
Revenue:	8,444	238	238	238	238	238	238	238	238	238	238
Expenses:											
O & M Expense	(3,128)	(65)	(65)	(65)	(65)	(65)	(65)	(65)	(65)	(65)	(65)
Utility CNG Costs	(531)	-	-	-	-	-	-	-	-	-	-
Utility ETEE Costs	(3,765)	-	-	-	-	-	-	-	-	-	-
Municipal Tax	(1,137)	(32)	(32)	(32)	(32)	(32)	(32)	(32)	(32)	(32)	(32)
Income Tax	140	(38)	(38)	(38)	(38)	(38)	(38)	(38)	(38)	(38)	(38)
Net Operating Cash Flow	24	104	104	104	104	104	104	104	104	104	104
Capital											
Incremental Capital	(25,700)	-	-	-	-	-	-	-	-	-	-
Change in Working Capital	(3)	-	-	-	-	-	-	-	-	-	-
Total Capital	(25,704)	-	-	-	-	-	-	-	-	-	-
CCA Tax Shield											
CCA Tax Shield	6,040	181	170	160	150	141	133	125	117	110	103
Net Present Value											
PV of Operating Cash Flow	(1,959)	38	36	34	33	31	29	28	27	25	24
PV of Capital	(18,672)	-	-	-	-	-	-	-	-	-	-
PV of CCA Tax Shield	2,602	65	59	52	47	42	38	34	30	27	24
Total NPV by Year	(18,030)	103	94	87	79	73	67	62	57	52	48

Project NPV **(18,030)**

Parry Sound - IRP Pilot - IRPA
DCF Analysis
InService Date: Nov 1, 2025

Project Year ($000's)	Project Total	31	32	33	34	35	36	37	38	39	40	41	42
Operating Cash Flow													
Revenue:	8,444	238	238	238	238	238	238	238	238	238	238	238	238
Expenses:													
O & M Expense	(3,128)	(65)	(65)	(65)	(65)	(65)	(65)	(65)	(65)	(65)	(65)	(65)	(65)
Utility CNG Costs	(531)	-	-	-	-	-	-	-	-	-	-	-	-
Utility ETEE Costs	(3,765)	-	-	-	-	-	-	-	-	-	-	-	-
Municipal Tax	(1,137)	(32)	(32)	(32)	(32)	(32)	(32)	(32)	(32)	(32)	(32)	(32)	(32)
Income Tax	140	(38)	(38)	(38)	(38)	(38)	(38)	(38)	(38)	(38)	(38)	(38)	(38)
Net Operating Cash Flow	24	104	104	104	104	104	104	104	104	104	104	104	104
Capital													
Incremental Capital	(25,700)	-	-	-	-	-	-	-	-	-	-	-	-
Change in Working Capital	(3)	-	-	-	-	-	-	-	-	-	-	-	-
Total Capital	(25,704)	-	-	-	-	-	-	-	-	-	-	-	-
CCA Tax Shield													
CCA Tax Shield	6,040	97	91	86	81	76	71	67	63	59	56	52	160
Net Present Value													
PV of Operating Cash Flow	(1,959)	23	22	21	20	19	18	17	16	15	15	14	13
PV of Capital	(18,672)	-	-	-	-	-	-	-	-	-	-	-	-
PV of CCA Tax Shield	2,602	22	19	17	15	14	12	11	10	9	8	7	21
Total NPV by Year	(18,030)	45	41	38	35	33	30	28	26	24	23	21	34

Project NPV **(18,030)**

Southern Lake Huron - IRP Pilot - Facility
DCF Analysis
InService Date: Nov 1, 2025

Project Year ($000's)	Project Total	1	2	3	4	5	6	7	8	9	10
Operating Cash Flow											
Revenue:	10,351	-	-	9	36	71	104	135	164	191	219
Expenses:	-										
O & M Expense	(2,770)	-	-	(2)	(10)	(19)	(28)	(36)	(44)	(51)	(59)
Municipal Tax	(368)	-	-	(4)	(11)	(11)	(11)	(11)	(10)	(10)	(11)
Income Tax	(1,928)	-	-	3	(4)	(11)	(17)	(23)	(29)	(34)	(40)
Net Operating Cash Flow	5,285	-	-	7	12	30	48	65	80	95	110
Capital											
Incremental Capital	(4,454)	-	(130)	(1,721)	(304)	(300)	(292)	(288)	(281)	(277)	(290)
Change in Working Capital	-	-	-	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Total Capital	(4,454)	-	(130)	(1,721)	(304)	(300)	(292)	(288)	(282)	(278)	(290)
CCA Tax Shield											
CCA Tax Shield	1,056	-	-	28	31	34	35	37	39	41	43
Net Present Value											
PV of Operating Cash Flow	1,781	-	-	6	10	24	37	47	55	63	69
PV of Capital	(3,545)	-	(124)	(1,559)	(262)	(246)	(228)	(214)	(199)	(187)	(186)
PV of CCA Tax Shield	499	-	-	25	26	27	26	27	27	27	27
Total NPV by Year	(1,265)	-	(124)	(1,528)	(226)	(194)	(165)	(140)	(117)	(97)	(90)

Project NPV **(1,265)**

Southern Lake Huron - IRP Pilot - Facility
DCF Analysis
InService Date: Nov 1, 2025

Project Year ($000's)	Project Total	11	12	13	14	15	16	17	18	19	20
Operating Cash Flow											
Revenue:	10,351	246	272	291	297	297	297	297	297	297	297
Expenses:	-										
O & M Expense	(2,770)	(66)	(73)	(78)	(79)	(79)	(79)	(79)	(79)	(79)	(79)
Municipal Tax	(368)	(11)	(11)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)
Income Tax	(1,928)	(45)	(50)	(54)	(55)	(55)	(55)	(55)	(55)	(55)	(55)
Net Operating Cash Flow	5,285	125	139	150	153	153	153	153	153	153	153
Capital											
Incremental Capital	(4,454)	(288)	(283)	-	-	-	-	-	-	-	-
Change in Working Capital	-	(0)	(0)	(0)	(0)	-	-	-	-	-	-
Total Capital	(4,454)	(288)	(284)	(0)	(0)	-	-	-	-	-	-
CCA Tax Shield											
CCA Tax Shield	1,056	45	47	47	44	41	39	36	34	32	30
Net Present Value											
PV of Operating Cash Flow	1,781	74	79	81	79	75	71	68	64	61	58
PV of Capital	(3,545)	(176)	(165)	(0)	(0)	-	-	-	-	-	-
PV of CCA Tax Shield	499	27	27	25	22	20	18	16	14	13	12
Total NPV by Year	(1,265)	(74)	(59)	106	101	95	89	84	79	74	70

Project NPV **(1,265)**

Southern Lake Huron - IRP Pilot - Facility
DCF Analysis
InService Date: Nov 1, 2025

Project Year ($000's)	Project Total	21	22	23	24	25	26	27	28	29	30
Operating Cash Flow											
Revenue:	10,351	297	297	297	297	297	297	297	297	297	297
Expenses:	-										
O & M Expense	(2,770)	(79)	(79)	(79)	(79)	(79)	(79)	(79)	(79)	(79)	(79)
Municipal Tax	(368)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)
Income Tax	(1,928)	(55)	(55)	(55)	(55)	(55)	(55)	(55)	(55)	(55)	(55)
Net Operating Cash Flow	5,285	153	153	153	153	153	153	153	153	153	153
Capital											
Incremental Capital	(4,454)	-	-	-	-	-	-	-	-	-	-
Change in Working Capital	-	-	-	-	-	-	-	-	-	-	-
Total Capital	(4,454)	-	-	-	-	-	-	-	-	-	-
CCA Tax Shield											
CCA Tax Shield	1,056	28	27	25	24	22	21	20	18	17	16
Net Present Value											
PV of Operating Cash Flow	1,781	56	53	50	48	46	43	41	39	37	36
PV of Capital	(3,545)	-	-	-	-	-	-	-	-	-	-
PV of CCA Tax Shield	499	10	9	8	7	7	6	5	5	4	4
Total NPV by Year	(1,265)	66	62	59	55	52	49	47	44	42	39

Project NPV **(1,265)**

Southern Lake Huron - IRP Pilot - Facility
DCF Analysis
InService Date: Nov 1, 2025

Project Year ($000's)	Project Total	31	32	33	34	35	36	37	38	39	40	41	42
Operating Cash Flow													
Revenue:	10,351	297	297	297	297	297	297	297	297	297	297	297	297
Expenses:	-												
O & M Expense	(2,770)	(79)	(79)	(79)	(79)	(79)	(79)	(79)	(79)	(79)	(79)	(79)	(79)
Municipal Tax	(368)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)
Income Tax	(1,928)	(55)	(55)	(55)	(55)	(55)	(55)	(55)	(55)	(55)	(55)	(55)	(76)
Net Operating Cash Flow	5,285	153	153	153	153	153	153	153	153	153	153	153	132
Capital													
Incremental Capital	(4,454)	-	-	-	-	-	-	-	-	-	-	-	-
Change in Working Capital	-	-	-	-	-	-	-	-	-	-	-	-	4
Total Capital	(4,454)	-	-	-	-	-	-	-	-	-	-	-	4
CCA Tax Shield													
CCA Tax Shield	1,056	15	14	14	13	12	11	11	10	9	9	8	25
Net Present Value													
PV of Operating Cash Flow	1,781	34	32	31	29	28	26	25	24	23	22	21	17
PV of Capital	(3,545)	-	-	-	-	-	-	-	-	-	-	-	1
PV of CCA Tax Shield	499	3	3	3	2	2	2	2	2	1	1	1	3
Total NPV by Year	(1,265)	37	35	33	32	30	28	27	26	24	23	22	21

Project NPV **(1,265)**

Southern Lake Huron - IRP Pilot - IRPA
DCF Analysis
InService Date: Nov 1, 2025

Project Year ($000's)	Project Total	1	2	3	4	5	6	7	8	9	10
Operating Cash Flow											
Revenue:	10,351	-	-	9	36	71	104	135	164	191	219
Expenses:											
O & M Expense	(3,575)	(55)	(188)	(190)	(197)	(206)	(28)	(36)	(44)	(51)	(59)
Utility CNG Costs	(1,693)	-	(552)	(595)	(541)	(6)	-	-	-	-	-
Utility ETEE Costs	(501)	-	(167)	(167)	(167)	-	-	-	-	-	-
Municipal Tax	(361)	-	-	(2)	(2)	(4)	(11)	(11)	(11)	(11)	(11)
Income Tax	(1,114)	15	240	250	231	43	(17)	(23)	(29)	(34)	(40)
Net Operating Cash Flow	3,107	(40)	(666)	(694)	(640)	(102)	48	64	80	95	110
Capital											
Incremental Capital	(4,569)	-	(70)	(299)	(369)	(1,833)	(292)	(288)	(281)	(277)	(290)
Change in Working Capital	(4)	(3)	(43)	(2)	2	35	9	(0)	(0)	(0)	(0)
Total Capital	(4,573)	(3)	(113)	(301)	(366)	(1,798)	(282)	(288)	(282)	(278)	(290)
CCA Tax Shield											
CCA Tax Shield	1,106	-	-	6	10	39	39	41	43	45	47
Net Present Value											
PV of Operating Cash Flow	(150)	(39)	(618)	(613)	(538)	(82)	36	47	55	62	69
PV of Capital	(3,521)	(3)	(108)	(273)	(316)	(1,475)	(220)	(214)	(199)	(187)	(186)
PV of CCA Tax Shield	495	-	-	5	9	31	29	30	30	29	29
Total NPV by Year	(3,176)	(42)	(726)	(881)	(845)	(1,526)	(155)	(138)	(114)	(95)	(88)

Project NPV **(3,176)**

Southern Lake Huron - IRP Pilot - IRPA
DCF Analysis
InService Date: Nov 1, 2025

Project Year ($000's)	Project Total	11	12	13	14	15	16	17	18	19	20
Operating Cash Flow											
Revenue:	10,351	246	272	291	297	297	297	297	297	297	297
Expenses:											
O & M Expense	(3,575)	(66)	(73)	(78)	(79)	(79)	(79)	(79)	(79)	(79)	(79)
Utility CNG Costs	(1,693)	-	-	-	-	-	-	-	-	-	-
Utility ETEE Costs	(501)	-	-	-	-	-	-	-	-	-	-
Municipal Tax	(361)	(11)	(11)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)
Income Tax	(1,114)	(45)	(50)	(54)	(55)	(55)	(55)	(55)	(55)	(55)	(55)
Net Operating Cash Flow	3,107	125	139	150	153	153	153	153	153	153	153
Capital											
Incremental Capital	(4,569)	(288)	(283)	-	-	-	-	-	-	-	-
Change in Working Capital	(4)	(0)	(0)	(0)	(0)	-	-	-	-	-	-
Total Capital	(4,573)	(288)	(284)	(0)	(0)	-	-	-	-	-	-
CCA Tax Shield											
CCA Tax Shield	1,106	48	50	49	46	44	41	39	36	34	32
Net Present Value											
PV of Operating Cash Flow	(150)	74	78	81	78	75	71	68	64	61	58
PV of Capital	(3,521)	(176)	(165)	(0)	(0)	-	-	-	-	-	-
PV of CCA Tax Shield	495	29	28	27	24	21	19	17	15	14	12
Total NPV by Year	(3,176)	(73)	(58)	107	102	96	90	85	80	75	70

Project NPV **(3,176)**

Southern Lake Huron - IRP Pilot - IRPA
DCF Analysis
InService Date: Nov 1, 2025

Project Year ($000's)	Project Total	21	22	23	24	25	26	27	28	29	30
Operating Cash Flow											
Revenue:	10,351	297	297	297	297	297	297	297	297	297	297
Expenses:											
O & M Expense	(3,575)	(79)	(79)	(79)	(79)	(79)	(79)	(79)	(79)	(79)	(79)
Utility CNG Costs	(1,693)	-	-	-	-	-	-	-	-	-	-
Utility ETEE Costs	(501)	-	-	-	-	-	-	-	-	-	-
Municipal Tax	(361)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)
Income Tax	(1,114)	(55)	(55)	(55)	(55)	(55)	(55)	(55)	(55)	(55)	(55)
Net Operating Cash Flow	3,107	153	153	153	153	153	153	153	153	153	153
Capital											
Incremental Capital	(4,569)	-	-	-	-	-	-	-	-	-	-
Change in Working Capital	(4)	-	-	-	-	-	-	-	-	-	-
Total Capital	(4,573)	-	-	-	-	-	-	-	-	-	-
CCA Tax Shield											
CCA Tax Shield	1,106	30	28	27	25	23	22	21	19	18	17
Net Present Value											
PV of Operating Cash Flow	(150)	56	53	50	48	46	43	41	39	37	36
PV of Capital	(3,521)	-	-	-	-	-	-	-	-	-	-
PV of CCA Tax Shield	495	11	10	9	8	7	6	6	5	4	4
Total NPV by Year	(3,176)	66	63	59	56	53	50	47	44	42	40

Project NPV **(3,176)**

Southern Lake Huron - IRP Pilot - IRPA
DCF Analysis
InService Date: Nov 1, 2025

Project Year ($000's)	Project Total	31	32	33	34	35	36	37	38	39	40	41	42
Operating Cash Flow													
Revenue:	10,351	297	297	297	297	297	297	297	297	297	297	297	297
Expenses:													
O & M Expense	(3,575)	(79)	(79)	(79)	(79)	(79)	(79)	(79)	(79)	(79)	(79)	(79)	(79)
Utility CNG Costs	(1,693)	-	-	-	-	-	-	-	-	-	-	-	-
Utility ETEE Costs	(501)	-	-	-	-	-	-	-	-	-	-	-	-
Municipal Tax	(361)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)
Income Tax	(1,114)	(55)	(55)	(55)	(55)	(55)	(55)	(55)	(55)	(55)	(55)	(55)	(55)
Net Operating Cash Flow	3,107	153	153	153	153	153	153	153	153	153	153	153	153
Capital													
Incremental Capital	(4,569)	-	-	-	-	-	-	-	-	-	-	-	-
Change in Working Capital	(4)	-	-	-	-	-	-	-	-	-	-	-	-
Total Capital	(4,573)	-	-	-	-	-	-	-	-	-	-	-	-
CCA Tax Shield													
CCA Tax Shield	1,106	16	15	14	13	13	12	11	10	10	9	9	27
Net Present Value													
PV of Operating Cash Flow	(150)	34	32	31	29	28	26	25	24	23	22	21	20
PV of Capital	(3,521)	-	-	-	-	-	-	-	-	-	-	-	-
PV of CCA Tax Shield	495	4	3	3	3	2	2	2	2	1	1	1	3
Total NPV by Year	(3,176)	37	35	34	32	30	28	27	26	24	23	22	23

Project NPV **(3,176)**

IRP Pilot Projects - Parry Sound and Southern Lake Huron
InService Date for all alternatives: 01-Nov-2025

Stage 1 - Listing of Key Input
Parameters, Values and Assumptions
($000'S)

Discounting Assumptions	
Project Time Horizon	40 years commencing at facilites in-service date of 01 Nov 25
Discount Rate	Incremental after-tax weighted average After Tax Cost of Capital 5.07%
Key DCF Input Parameters, Values and Assumptions	
Net Cash Inflow:	
Incremental Revenue:	
Distribution customer rates	0.136970 $/ M3 / month applied to Contract Demand 0.231620 $ / M3 applied to general service volume
Operating and Maintenance Expense	Estimated incremental cost
Incremental Tax Expenses:	
Municipal Tax	Estimated incremental cost
Income Tax Rate	26.50%
CCA Rates:	

CCA Classes:	CCA Class	CCA Rate	Declining balance rates by CCA class:
Land	-	-	
Mains - Metallic	51	6%	
Customer Services & Meters	51	6%	

Cash Outflow:	
Incremental Capital Costs Attributed	Refer to Exhibit E, Tab 1, Schedule 1, Tables 1/2/5
Change in Working Capital	5.051% applied to O&M

COST ALLOCATION AND RECOVERY

1. In the IRP Decision[1], the OEB approved two IRP Costs deferral accounts for the period 2021 to 2023. In Enbridge Gas's 2024 Rebasing Application, Enbridge Gas has proposed to continue the IRP Costs deferral accounts in 2024 and through the 2025 to 2028 IR term as the accounts are still required to support IRP.[2] The two IRP Costs deferral accounts are:
   - The IRP Operating Costs Deferral Account (179-385) records incremental IRP general administrative costs, as well as incremental operating and maintenance costs and ongoing evaluation costs for approved IRP plans.
   - The IRP Capital Costs Deferral Account (179-386) records the actual annual revenue requirement of project costs eligible to be capitalized for inclusion in rate base as part of approved IRP plans where Enbridge Gas owns and operates the IRPA.

2. Enbridge Gas proposes to include the IRP Pilot Project costs in the IRP Costs Deferral Accounts because the project costs are incremental to the costs that support Enbridge Gas's 2023 current-approved and 2024 proposed rates.[3]

3. Enbridge Gas proposes to include the IRP Pilot operating costs for both the Parry Sound Pilot Project and the Southern Lake Huron Pilot Project in the IRP Operating Costs Deferral Account and the actual annual revenue requirement for the IRP Pilot capital costs for both the Parry Sound Pilot Project and the Southern Lake Huron Pilot Project in the IRP Capital Costs Deferral Account. Enbridge Gas will bring forward actual balances in the IRP Costs Deferral Accounts with its Non-

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[1] EB-2020-0091.
[2] EB-2022-0200, Exhibit 9, Tab 1, Schedule 2, page 2.
[3] There are no IRP Pilot Project costs included in the forecast of operating or capital costs supporting Enbridge Gas's 2024 Rebasing (EB-2022-0200) application.

Commodity Deferral Account Clearance and Earnings Sharing Mechanism application.

4. The IRP Decision[4] requires cost allocation to be included in an IRP Plan application. Enbridge Gas's proposal for the cost allocation of the Pilot Project costs is outlined further below.

Project Costs

5. The Parry Sound Pilot Project includes a combination of supply-side (CNG, and TCE contracted pressures) and demand-side (ETEE) and project specific IRPA costs.[5] The Southern Lake Huron Pilot Project includes a combination of supply-side (CNG) and demand-side (ETEE, and DR) and project specific IRPA costs.[6] A summary of the costs for the Parry Sound Pilot Project and the Southern Lake Huron Pilot Project is provided in Table 1.

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[4] EB-2020-0091, Decision and Order, July 22, 2021, page 87.
[5] Exhibit D, Tab 1, Schedule 1.
[6] Exhibit D, Tab 1, Schedule 1.

Table 1
Summary of IRP Pilot Project Costs

Line No.		2023	2024	2025	2026	2027	2028	Total
		(a)	(b)	(c)	(d)	(e)	(f)	(g)
	Parry Sound Project							
1	Operating Costs	211	1,711	1,680	1,645	423	-	5,671
2	Capital Costs	878	-	70	-	-	-	948
3	Total (1)	1,089	1,711	1,750	1,645	423	-	6,619
	Southern Lake Huron Project							
4	Operating Costs	97	1,241	1,918	1,833	312	-	5,401
5	Capital Costs	382	668	-	-	-	-	1,050
6	Total (2)	479	1,910	1,918	1,833	312	-	6,451
7	Total Pilot Costs	1,568	3,621	3,669	3,478	735	-	13,070

Notes:
(1) Exhibit E, Tab 1, Schedule 1, Table 2.
(2) Exhibit E, Tab 1, Schedule 1, Table 11.

6. Operating costs of the IRP Pilot Projects will be recorded in the IRP Operating Costs Deferral Account and the annual revenue requirement of the IRP Pilot Projects will be recorded in the IRP Capital Costs Deferral Account. The annual revenue requirement is provided at Attachment 1. The expected balance in the IRP Costs deferral accounts is provided in Table 2.

Table 2
IRP Costs Deferral Account Balances

Line No.		2023	2024	2025	2026	2027	2028
		(a)	(b)	(c)	(d)	(e)	(f)
	IRP Operating Costs Deferral Account (1)						
1	Parry Sound Project	211	1,711	1,680	1,645	423	-
2	Southern Lake Huron Project	97	1,241	1,918	1,833	312	-
3	Total	308	2,952	3,599	3,478	735	-
	IRP Capital Costs Deferral Account (2)						
4	Parry Sound Project	(58)	117	113	123	121	119
5	Southern Lake Huron Project	(25)	58	135	133	131	129
6	Total	(84)	175	248	256	252	249
7	Total IRP Costs Deferral Account Balance	224	3,127	3,847	3,734	987	249

Notes:
(1) IRP Operating Costs Deferral Account balance for the Parry Sound and Southern Lake Huron Pilot Project operating costs per Table 1, line 1 and line 4, respectively.

(2) IRP Capital Costs Deferral Account balance for the Parry Sound and Southern Lake Huron Pilot Project capital costs relate to the revenue requirement on the capital spend per Exhibit E, Tab 1, Schedule 2, Attachment 1. The revenue requirement was calculated based on the capital costs per Table 2, including overheads, as provided at Exhibit E, Tab 1, Schedule 1, Attachment 2.

Cost Allocation

7. Enbridge Gas proposes to allocate the IRP Operating Costs and the IRP Capital Costs deferral account balances related to the Parry Sound Pilot Project costs to Union North rate classes in proportion to the system peak and average day demands, excluding the demands of customers who are served by sole use mains. The proposed cost allocation methodology is consistent with the allocation of joint use mains in the Union North rate zone in Union's 2013 OEB-approved Cost Allocation Study.[7] The proposed cost allocation methodology is the same as the allocation methodology that would be used for the majority of the assets that would

[7] EB-2011-0210, Exhibit G3, Tab 2, Schedule 21.

be installed under the Parry Sound Baseline Facility Project (described at Exhibit C, Tab 1, Schedule 1).

8. Enbridge Gas proposes to allocate the IRP Operating Costs and the IRP Capital Costs deferral account balaces related to the Southern Lake Huron Pilot Project costs to Union South in-franchise rate classes in proportion to Union South design day demands, excluding demands served directly off transmission lines. The proposed cost allocation methodology is consistent with the allocation distribution mains in the Union South rate zone in Union's 2013 OEB-approved Cost Allocation Study. The proposed cost allocation methodology is the same as the allocation methodology that would be used for the majority of assets that would be installed under the Southern Lake Huron Baseline Facility Project (described at Exhibit C, Tab 1, Schedule 1).

9. Enbridge Gas has proposed harmonized cost allocation methodologies in its 2024 Rebasing application that are different than the cost allocation methodologies described above. If the OEB approves cost allocation methodologies that are different than described in this Application, Enbridge Gas will propose a change to the allocation methodology as part of the Non-Commodity Deferral Account Clearance and Earnings Sharing Mechanism application where disposition is requested for actual IRP Pilot Project costs.

<u>Bill Impacts</u>

10. Enbridge Gas has provided an illustration of the bill impacts of the IRP Pilot Projects for a typical customer in each rate zone based on the year 2025. The 2025 balance of $3.861 million is the largest IRP Pilot Project deferral balance between 2023 and 2028 as provided in Table 2.

11. The typical residential customer bill impact associated with disposition of the 2025 IRP Costs deferral account balance for the Pilot Projects is:
    - No impact for a residential customer consuming 2,400 m^3 in the EGD rate zone.
    - A charge of $1.41 for a residential customer consuming 2,200 m^3 in the Union North rate zone.
    - A charge of $0.89 for a residential customer consuming 2,200 m^3 in the Union South rate zone.

12. The unit rate and bill impact for typical customers by rate class is provided at Attachment 3 and Attachment 4, respectively.

Filed: 2023-06-20
EB-2023-0335
Exhibit E
Tab 1
Schedule 2
Attachment 1
Page 1 of 2

IRP Capital Costs Revenue Requirement - Parry Sound Pilot Project

Line No.	Particulars ($000s)	2023	2024	2025	2026	2027	2028
		(a)	(b)	(c)	(d)	(e)	(f)
	Incremental Rate Base Investment						
1	Capital Expenditures (1)	1,108	-	87	-	-	-
2	Average Rate Base	137	1,089	1,067	1,109	1,074	1,039
	Incremental Revenue Requirement Calculation:						
	Return on Incremental Rate Base: (2)						
3	Long-term Debt Interest	5	44	43	44	43	42
4	Short-term Debt Interest	(0)	(0)	(0)	(0)	(0)	(0)
5	Preference Shares	0	1	1	1	1	1
6	Equity	4	35	34	36	35	33
7	Total Return on Incremental Rate Base	10	80	78	81	78	76
	Incremental Operating Expenses:						
8	Depreciation Expense (3)	3	32	34	35	35	35
9	Total Incremental Operating Expenses	3	32	34	35	35	35
	Incremental Income Taxes:						
10	Return on Equity and Preference Shares (line 5 + line 6)	5	36	35	37	35	34
	Utility Timing Differences						
11	Add: Depreciation Expense (line 8)	3	32	34	35	35	35
12	Less: Current Year Tax Deductions	(204)	(54)	(64)	(52)	(49)	(46)
13	Taxable Income (line 10 + line 11 + line 12)	(197)	14	5	19	21	23
14	Income Taxes Before Gross Up (line 13 x 26.5%) (4)	(52)	4	1	5	6	6
15	Total Incremental Income Taxes After Gross Up (line 14 / (1-26.5%) (4) (5)	(71)	5	2	7	8	8
16	Total Incremental Revenue Requirement (line 7 + line 9 + line 15)	(58)	117	113	123	121	119

Notes:
(1) Capital expenditures including indirect overheads per Exhibit E, Tab 1, Schedule 1, Attachment 2.
(2) The return on rate base is calculated based on Union's 2013 Board-approved capital structure:

Capital Structure	Component %	Cost Rate	Return Component
Long-term Debt	61.30%	6.53%	4.00%
Short-term Debt	-0.03%	1.31%	0.00%
Preference Shares	2.74%	3.05%	0.08%
Equity	36.00%	8.93%	3.21%
Total	100.00%		7.30%

(3) Depreciation expense at Board-approved depreciation rates.
(4) Enbridge Gas's current provincial and federal tax rate is equal to 26.5%.
(5) Incremental taxes related to utility timing differences are negative if the capital cost allowance deduction in arriving at taxable income exceeds the provision of book depreciation in the year.

IRP Capital Costs Revenue Requirement - Southern Lake Huron Pilot Project

Line No.	Particulars ($000s)	2023 (a)	2024 (b)	2025 (c)	2026 (d)	2027 (e)	2028 (f)
	Incremental Rate Base Investment						
1	Capital Expenditures (1)	482	834	-	-	-	-
2	Average Rate Base	60	920	1,271	1,235	1,198	1,161
	Incremental Revenue Requirement Calculation:						
	Return on Incremental Rate Base: (2)						
3	Long-term Debt Interest	2	37	51	49	48	46
4	Short-term Debt Interest	(0)	(0)	(0)	(0)	(0)	(0)
5	Preference Shares	0	1	1	1	1	1
6	Equity	2	30	41	40	39	37
7	Total Return on Incremental Rate Base	4	67	93	90	87	85
	Incremental Operating Expenses:						
8	Depreciation Expense (3)	1	25	37	37	37	37
9	Total Incremental Operating Expenses	1	25	37	37	37	37
	Incremental Income Taxes:						
10	Return on Equity and Preference Shares (line 5 + line 6)	2	30	42	41	40	38
	Utility Timing Differences						
11	Add: Depreciation Expense (line 8)	1	25	37	37	37	37
12	Less: Current Year Tax Deductions	(89)	(152)	(65)	(61)	(57)	(54)
13	Taxable Income (line 10 + line 11 + line 12)	(86)	(96)	14	17	19	22
14	Income Taxes Before Gross Up (line 13 x 26.5%) (4)	(23)	(25)	4	4	5	6
15	Total Incremental Income Taxes After Gross Up (line 14 / (1-26.5%) (4) (5)	(31)	(35)	5	6	7	8
16	Total Incremental Revenue Requirement (line 7 + line 9 + line 15)	(25)	58	135	133	131	129

Notes:
(1) Capital expenditures including indirect overheads per Exhibit E, Tab 1, Schedule 1, Attachment 2.
(2) The return on rate base is calculated based on Union's 2013 Board-approved capital structure:

Capital Structure	Component %	Cost Rate	Return Component
Long-term Debt	61.30%	6.53%	4.00%
Short-term Debt	-0.03%	1.31%	0.00%
Preference Shares	2.74%	3.05%	0.08%
Equity	36.00%	8.93%	3.21%
Total	100.00%		7.30%

(3) Depreciation expense at Board-approved depreciation rates.
(4) Enbridge Gas's current provincial and federal tax rate is equal to 26.5%.
(5) Incremental taxes related to utility timing differences are negative if the capital cost allowance deduction in arriving at taxable income exceeds the provision of book depreciation in the year.

Allocation
2025 IRP Operating & Capital Costs Account Balance

		Allocator		Allocation ($000s)				
		Union North	Union South	Operating Costs		Capital Costs		
Line No.	Particulars	Joint Use Mains (1)	Distribution Demand (2)	Parry Sound (3)	Southern Lake Huron (4)	Parry Sound (3)	Southern Lake Huron (4)	Allocation Total
		(a)	(b)	(c)	(d)	(e)	(f)	(g)
	EGD Rate Zone							
1	Rate 1	-	-	-	-	-	-	-
2	Rate 6	-	-	-	-	-	-	-
3	Rate 9	-	-	-	-	-	-	-
4	Rate 100	-	-	-	-	-	-	-
5	Rate 110	-	-	-	-	-	-	-
6	Rate 115	-	-	-	-	-	-	-
7	Rate 125	-	-	-	-	-	-	-
8	Rate 135	-	-	-	-	-	-	-
9	Rate 145	-	-	-	-	-	-	-
10	Rate 170	-	-	-	-	-	-	-
11	Rate 200	-	-	-	-	-	-	-
12	Rate 300	-	-	-	-	-	-	-
13	Total EGD Rate Zone	-	-	-	-	-	-	-
	Union North Rate Zone							
14	Rate 01	35	-	595	-	40	-	635
15	Rate 10	11	-	186	-	13	-	198
16	Rate 20	27	-	456	-	31	-	487
17	Rate 25	4	-	73	-	5	-	78
18	Rate 100	22	-	371	-	25	-	396
19	Total Union North Rate Zone	100	-	1,680	-	113	-	1,794
	Union South Rate Zone							
20	Rate M1	-	31,063	-	1,227	-	86	1,313
21	Rate M2	-	11,510	-	455	-	32	487
22	Rate M4	-	2,539	-	100	-	7	107
23	Rate M5	-	44	-	2	-	0	2
24	Rate M7	-	2,142	-	85	-	6	91
25	Rate M9	-	-	-	-	-	-	-
26	Rate M10	-	-	-	-	-	-	-
27	Rate T1	-	813	-	32	-	2	34
28	Rate T2	-	443	-	18	-	1	19
29	Rate T3	-	-	-	-	-	-	-
30	Total Union South Rate Zone	-	48,554	-	1,918	-	135	2,053
31	Total In-Franchise (5)	100	48,554	1,680	1,918	113	135	3,847

Notes:
(1) Union North joint use mains allocation is in proportion to forecast 2024 Union North peak and average design day demands, excluding large industrial. 2024 forecast used as the 2025 forecast not available at the time of filing the Application.
(2) Union South distribution demand allocation is in proportion to forecast 2024 Union South in-franchise design day demands, excluding demands served directly off transmission lines. 2024 forecast used as the 2025 forecast not available at the time of filing the Application.
(3) Allocated in proportion to column (a).
(4) Allocated in proportion to column (b).
(5) The total balance in columns (c) to (f) from Exhibit E, Tab 1, Schedule 2, Table 2.

Unit Rates for Disposition
2025 IRP Operating & Capital Costs Account Balance

Line No	Particulars	Account Balance for Disposition (1) ($000s)	2024 Forecast Usage (2) (10^3m^3)	Billing Units	Unit Rate for Disposition
		(a)	(b)	(c)	(d) = (a/b*100)
	EGD Rate Zone				
1	Rate 1	-	5,001,027	10^3m^3	-
2	Rate 6	-	4,795,693	10^3m^3	-
3	Rate 9	-	-	10^3m^3	-
4	Rate 100	-	27,429	10^3m^3	-
5	Rate 110	-	1,068,281	10^3m^3	-
6	Rate 115	-	381,873	10^3m^3	-
7	Rate 125	-	824,971	10^3m^3	-
8	Rate 135	-	52,646	10^3m^3	-
9	Rate 145	-	15,714	10^3m^3	-
10	Rate 170	-	323,254	10^3m^3	-
11	Rate 200	-	188,852	10^3m^3	-
12	Rate 300	-	-	10^3m^3	-
13	Total EGD Rate Zone	-			
	Union North Rate Zone				
14	Rate 01	635	989,005	10^3m^3	0.0642
15	Rate 10	198	327,974	10^3m^3	0.0605
16	Rate 20	487	929,101	10^3m^3	0.0524
17	Rate 25	78	126,831	10^3m^3	0.0613
18	Rate 100	396	1,076,378	10^3m^3	0.0368
19	Total Union North Rate Zone	1,794			
	Union South Rate Zone				
20	Rate M1	1,313	3,255,132	10^3m^3	0.0404
21	Rate M2	487	1,319,376	10^3m^3	0.0369
22	Rate M4	107	593,899	10^3m^3	0.0181
23	Rate M5	2	59,493	10^3m^3	0.0031
24	Rate M7	91	789,737	10^3m^3	0.0115
25	Rate M9	-	90,073	10^3m^3	-
26	Rate M10	-	-	10^3m^3	-
27	Rate T1	34	431,289	10^3m^3	0.0080
28	Rate T2	19	5,005,643	10^3m^3	0.0004
29	Rate T3	-	249,200	10^3m^3	-
30	Total Union South Rate Zone	2,053			
31	Total In-Franchise	3,847			

Notes:
(1) Exhibit E, Tab 1, Schedule 2, Attachment 2, column (g).
(2) 2024 forecast usage used as the 2025 forecast usage not available at the time of filing the Application.

Bill Impacts for Typical Small and Large Customers
2025 IRP Operating & Capital Costs Account Balance

Line No.	Particulars	Unit Rate for Disposition (1) (cents/m³)	Annual Volume		Bill Impact ($)
		(a)	(b)	(c)	(d)
	EGD Rate Zone				
1	Rate 1 - Residential	-	2,400	m³	-
2	Rate 6 - Heating & Other Uses	-	22,606	m³	-
3	Rate 6 - General Use	-	43,285	m³	-
4	Rate 100 - Small	-	339,188	m³	-
5	Rate 110 - Small	-	598,568	m³	-
6	Rate 110 - Average	-	9,976,121	m³	-
7	Rate 115 - Small	-	4,471,609	m³	-
8	Rate 125 - Average	-	2,315,000	m³/d	-
9	Rate 135 - Average	-	598,567	m³	-
10	Rate 145 - Average	-	598,568	m³	-
11	Rate 170 - Average	-	9,976,121	m³	-

Notes:
(1) Exhibit E, Tab 1, Schedule 2, Attachment 3, column (d).

Bill Impacts for Typical Small and Large Customers
2025 IRP Operating & Capital Costs Account Balance

Line No.	Particulars	Unit Rate for Disposition (1) (cents/m³)	Annual Volume		Bill Impact ($)
		(a)	(b)	(c)	(d)
	Union North Rate Zone				
1	Rate 01 - Residential	0.0642	2,200	m³	1.41
2	Rate 10	0.0605	93,000	m³	56
3	Rate 20 - Small	0.0524	3,000,000	m³	18,853
4	Rate 20 - Large	0.0524	15,000,000	m³	94,264
5	Rate 25 - Average	0.0613	2,275,000	m³	1,395
6	Rate 100 - Small	0.0368	27,000,000	m³	119,178
7	Rate 100 - Large	0.0368	240,000,000	m³	1,059,360
	Union South Rate Zone				
8	Rate M1 - Residential	0.0404	2,200	m³	0.89
9	Rate M2	0.0369	73,000	m³	27
10	Rate M4 - Small	0.0181	875,000	m³	1,898
11	Rate M4 - Large	0.0181	12,000,000	m³	26,030
12	Rate M5 - Small	0.0031	825,000	m³	26
13	Rate M5 - Large	0.0031	6,500,000	m³	204
14	Rate M7 - Small	0.0115	36,000,000	m³	49,534
15	Rate M7 - Large	0.0115	52,000,000	m³	71,549
16	Rate M9 - Small	-	6,950,000	m³	-
17	Rate M9 - Large	-	20,178,000	m³	-
18	Rate T1 - Small	0.0080	7,537,000	m³	7,210
19	Rate T1 - Average	0.0080	11,565,938	m³	11,064
20	Rate T1 - Large	0.0080	25,624,080	m³	24,512
21	Rate T2 - Small	0.0004	59,256,000	m³	2,663
22	Rate T2 - Average	0.0004	197,789,850	m³	8,889
23	Rate T2 - Large	0.0004	370,089,000	m³	16,633
24	Rate T3	-	272,712,000	m³	-

Notes:
(1) Exhibit E, Tab 1, Schedule 2, Attachment 3, column (d).

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Question(s):

a) Please provide a copy of the Terms of Reference for the OEB IRP TWG

b) Please explain the frequency and intended content of Pilot Project updates to the OEB IRP TWG during the 2024-2027 period.

c) What role (if any) does the OEB IRP TWG have for reviewing, approving or recommending changes during implementation of the Pilot Projects.

Response:

a) Please see Attachment 1.

b-c) Please see response at Exhibit I.STAFF-23.

Integrated Resource Planning
Technical Working Group
Terms of Reference

February 17, 2022

1.0 Background and Objective

The OEB's July 22, 2021 Decision and Order established an Integrated Resource Planning (IRP) Framework for Enbridge Gas. Integrated resource planning involves consideration of both traditional facility solutions and alternative supply- or demand-side solutions to meet Enbridge Gas's identified natural gas system needs. The IRP Framework provides direction on the OEB's requirements for IRP for Enbridge Gas.

The IRP Framework requires the OEB to establish an Integrated Resource Planning Technical Working Group. The Working Group is expected to be in operation for a minimum of two years, during the implementation of this first-generation IRP Framework.

The Working Group will be led by OEB staff with an objective to provide input on IRP issues that will be of value to both Enbridge Gas in implementing IRP, and to the OEB in its oversight of the IRP Framework. Enbridge Gas retains the sole responsibility to make final system planning decisions and bring forward project applications to the OEB for approval.

2.0 Priorities and Scope of Work

The OEB expects that the first priorities of the Working Group will be:

- Consideration of IRP pilot projects to better understand how IRP can be implemented to avoid, delay or reduce facility projects. Enbridge Gas is expected to select and deploy two IRP pilot projects by the end of 2022.
- Enhancements or additional guidance in using the Discounted Cash Flow-plus economic evaluation methodology to assess and compare the costs and benefits of using either facility solutions or IRP alternatives to meet system needs.

On an annual basis, the Working Group will also be expected to review and comment on a draft of Enbridge Gas's annual report on its IRP activities. The Working Group will file a report to the OEB in the same proceeding Enbridge Gas's annual IRP report is filed. The Working Group report should include any comments on Enbridge Gas's annual IRP report including material concerns that remain unresolved by the Working Group, and may also describe other activities undertaken by the Working Group in the previous year.

Other potential areas of work for the Working Group may include addressing:

- Learnings from natural gas IRP in other jurisdictions
- Performance metrics for IRP
- Accounting treatment of IRP costs
- Treatment of stranded assets in system planning
- Other activities relevant to the IRP Framework, as identified by the Working Group or as directed by the OEB

3.0 Membership

The Working Group includes representatives from OEB staff and Enbridge Gas, non-utility members, and observers. OEB staff, Enbridge Gas, and observer organizations are expected to select their own representatives, while non-utility members are selected by the OEB as individuals, not representatives of specific organizations. The Working Group will have approximately 10 members plus OEB staff. Working Group members are selected based on relevant demonstrable technical expertise that relates to and informs the activities to be addressed by the Working Group. The OEB has ultimate authority regarding the selection and status of Working Group members.

4.0 Term

The term of the Working Group is expected to be for an initial period of two years.

5.0 Roles and Responsibilities

<u>All IRP Working Group Members, Including Non-Utility Members</u>
All Working Group members will:

- Attend and actively participate at meetings as appropriate
- Treat each other with courtesy and respect.
- Share their expertise and knowledge as they relate to the topic areas being discussed and provide comments for consideration.
- Abide by the OEB’s rules on the treatment of confidential items brought forth for discussion, including requirements of a confidentiality agreement.
- Follow up on action items or take on additional work as assigned.

<u>OEB Staff Members</u>
OEB staff will co-ordinate the activities of the Working Group. OEB staff representatives have the following additional responsibilities:

- Establish priority activities and a workplan, with input from Working Group members, taking account of any direction provided by the OEB.
- Chair meetings of the Working Group or designate a member of the Working Group to chair the meeting, if required.

- Provide (or ensure the appropriate Working Group member provides) any materials for discussion in advance of meetings.
- Co-ordinate attendance through online meeting invitations.
- Circulate an agenda in advance of the meeting noting the purpose of each item (for discussion, for information, etc.).
- Record key meeting outcomes with an action items list and follow up to ensure action items are completed as assigned to Working Group members.
- Confirm any decisions and/or action items at close of the meeting and provide targeted timelines for each action item.
- Co-ordinate the development of any materials authored by the Working Group, and disseminate such materials on behalf of the Working Group, including posting materials on the OEB website, providing updates to OEB management, and/or filing in OEB proceedings, as appropriate.
    - This includes filing a report on the Working Group's activities on an annual basis, in the same proceeding in which Enbridge Gas's annual IRP report is filed.

<u>Enbridge Gas Members</u>
Enbridge Gas representatives have the following additional responsibilities:

- Provide relevant information to the Working Group regarding Enbridge Gas's current and planned IRP activities.
    - This includes providing a draft of Enbridge Gas's annual IRP report to the Working Group far enough in advance of planned filing to the OEB to give the Working Group adequate time to review and comment.
- Provide updates to Enbridge Gas on the Working Group's activities for Enbridge Gas's information and consideration.
    - Enbridge Gas is expected to consider the activities of the Working Group to inform subsequent applications to the OEB related to IRP, such as IRP Plan/Leave to Construct applications, rates applications, and applications to clear balances in IRP-related deferral accounts.

<u>Non-Utility Members</u>
In addition to the responsibilities described above, non-utility members will provide input and advice based on their experience and technical expertise and not advocate specific commercial interests or on behalf of parties they have represented before the OEB in various proceedings.

Observers

Working Group observers will:

- Attend Working Group meetings.
- Provide input on matters when solicited/as appropriate and/or if it pertains to their area of expertise/ experience.

Any materials authored by the IRP Working Group and filed with the OEB will not be considered to represent the views of Working Group observers, or their organizations.

The Working Group includes observers from the Independent Electricity System Operator (due to its experience with Integrated Resource Planning in the electricity sector) and EPCOR Natural Gas Limited Partnership (due to its interest in gaining an understanding of the applicability of IRP to its natural gas distribution operations).[1]

6.0 Meeting Frequency, Preparation, and Public Reporting

It is anticipated that the Working Group will meet on approximately a monthly basis initially. It is anticipated that meetings will typically be held by video conference.

Frequency of meetings going forward and the timing of any deliverables for the Working Group will be determined in consultation with the Working Group members. Members may be asked to take on additional work between meetings, depending on their experience and the tasks at hand.

A summary of key outcomes from each meeting held will be prepared and shared with meeting participants to review for accuracy. Once they are reviewed and approved by members of the Working Group, the OEB will post the key outcomes and related meeting materials on its website (unless confidential treatment of materials has been requested), to allow stakeholders to follow the Working Group's progress.

7.0 Issues Resolution

The IRP Working Group will attempt to achieve consensus on IRP-related issues where appropriate. Any materials authored by the Working Group will reflect the Working Group's shared conclusions and not necessarily the views of the OEB, as well as identify areas where consensus was not reached, documenting differing perspectives as necessary.

8.0 Confidentiality

To support the OEB's objectives of transparency and openness, materials sent to or authored by the Working Group will generally be considered non-confidential and placed on the OEB website, with confidential treatment only on an exception basis.[2] Enbridge Gas or other Working Group members may indicate that certain materials that

[1] As a rate-regulated natural gas distributor, EPCOR will also be responsible for paying a small portion of any costs awarded to IRP Working Group members.

[2] Drafts of materials in the process of being developed by the Working Group may not be placed on the public record until finalized, even if not considered confidential.

they provide to the Working Group should be treated as confidential information. If necessary, Enbridge Gas may request that specific members not participate in review or discussion of issues of a commercially sensitive nature. Working Group members that wish to review confidential materials will sign a confidentiality agreement, which will apply to all information that contains confidential information that they receive as a member of the Working Group. For the purposes of the Working Group, OEB staff will accommodate requests from members for confidential treatment of materials they provide, but the OEB will not make a formal determination on confidentiality, unless this matter is raised at a later date in a proceeding before the OEB.

9.0 Participant Costs

Cost awards will be available under Section 30 of the Ontario Energy Board Act, 1998 to eligible persons in relation to their participation in the Working Group. The OEB will initiate a cost awards process on a regular basis to ensure that members are compensated for their contributions to the Working Group. Maximum cost claims will be set based on meeting hours (default maximum cost award of 2.0 times meeting time to take into consideration preparation and follow-up time) and volume of documentation to review in preparation for or between meetings (maximum incremental cost award will vary).

Additionally, individual Working Group members or a subset of Working Group members may agree to take on additional tasks, and, with approval from the OEB, will be eligible to claim cost awards for the time to complete those additional tasks. OEB staff will provide guidance regarding costs as appropriate.

Appendix A: IRP Technical Working Group Members

Name	**Role**
Michael Parkes	OEB staff representative (Working Group chair)
Stephanie Cheng	OEB staff representative
Chris Ripley	Enbridge Gas representative
Amrit Kuner	Enbridge Gas representative
Amber Crawford, Association of Municipalities of Ontario	Non-utility member
John Dikeos, ICF Consulting Canada Inc.	Non-utility member
Tammy Kuiken, DNV	Non-utility member
Cameron Leitch, EnWave Energy Corporation	Non-utility member
Chris Neme, Energy Futures Group	Non-utility member
Dwayne Quinn, DR Quinn & Associates Ltd.	Non-utility member
Jay Shepherd, Shepherd Rubenstein Professional Corporation	Non-utility member
Kenneth Poon, EPCOR Natural Gas LP	Observer
Steven Norrie, Independent Electricity System Operator	Observer

As representatives and membership may change from time to time, this list will be updated at least annually.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe (PP)

Interrogatory

Question(s):

a) Does Enbridge agree that objectivity and credibility of results from the Pilot Projects are important? If no, please explain why not.

b) Please explain what controls has Enbridge included for each Pilot Project to ensure that the results are objective and credible.

c) Has Enbridge considered use of an objective and credible third-party to compile and/or validate the results for the Pilot Projects? If no, why not?

Response:

a) Yes, Enbridge Gas agrees that evaluation of the results of the Pilot Projects need to be objective and credible.

b) As noted at Exhibit A, Tab 1, Schedule 1, page 2:

> The primary objectives of the Parry Sound Pilot Project are to develop an understanding of how ETEE programs impact peak hour flow/demand and to develop an understanding of how to design, deploy, and evaluate ETEE programs.

Enbridge Gas has proposed to utilize existing and install new automated meter reading technology in the Pilot Project areas to collect and transmit hourly interval data from customer meters. This will enable the Company to quantify the impacts of the proposed IRPAs on distribution system peak period flows/demand through actual data. Enbridge Gas will collect baseline customer data, prior to implementation of any demand-side alternatives, and then collect data following the implementation of the IRP alternatives. This will provide Enbridge Gas with specific data on each customer for each specific demand-side alternative, before and after, using both actual data for entire seasons (warm and cold days) and extrapolated data for forecasted colder days up to the design day temperature for that area. This information and results will be shared with stakeholders through the Technical Working Group ("TWG") and the IRP Annual Report as described in response at

Exhibit I.STAFF-23. Given the direct factual nature of the data and the fact that the OEB has set up a TWG which includes expertise in evaluation of energy conservation programming, the results are expected to be both credible and objective.

c) In 2022, Enbridge Gas engaged an objective and credible third-party industry consultant to review and comment on the in-house analysis methods. Information will be shared with the TWG as work progresses and details will be discussed in the Pilot Project Final Report. Enbridge Gas has budgeted for a third-party consultant, as required, to review the data and analysis for the Pilot Projects.

   In addition, the IRP TWG includes representatives that have vast experience in DSM audits and system analysis. Enbridge Gas expects those representatives to review and provide commentary on the analysis and results.

ENBRIDGE GAS INC.

Answer to Interrogatory from
School Energy Coalition (SEC)

Interrogatory

Reference:

[Ex. A/2]

Question(s):

Please describe the differences, if any, between the load and peak load forecasts for the two pilot project areas underlying this Application, and the load and peak forecasts for those same areas that are part of the Applicant's forecasts in EB-2022-0200 and EB-2021-0002.

Response:

The methodologies used to prepare the peak hourly load forecast as well as the energy transition adjustment factors are identical to those described in EB-2022-0200. However there have been updates made to the forecast based on new customer attachments and proposed attachments, as well as updates to make an Unsteady State Modeling ("USM") model for the Parry Sound Pilot Project area. Please see Exhibit B, Tab 1, Schedule 1, page 8 for further detail regarding the USM model.

The peak hourly forecast in the Pilot Projects Application is not comparable to the DSM Plan (EB-2021-2002), as the former's forecast is based on m^3/hr and the latter's forecast is based on annual m^3.

ENBRIDGE GAS INC.

Answer to Interrogatory from
School Energy Coalition (SEC)

Interrogatory

Reference:

[B/1/1, p 9 and 13]

Question(s):

Please provide the numerical data behind Figures 3, 5 and 6.

Response:

Please see Attachment 1. Please note the values for the Parry Sound system utilize an unsteady state model and may not align to steady state volumes downstream for other responses.

Figure 3 - Parry Sound Forecast Peak Hour Demands

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
RES	2302.4	2279.1	2272.1	2241.9	2220.9	2195.3	2181.3	2146.4	2127.8	2106.8
COM/IND	2806.5	2747	2725.3	2698.3	2690.2	2684.8	2690.2	2682.1	2687.5	2687.5
Forecast	161.33	302.51	435.81	569.88	696.81	814.92	925.83	1029.9	1127.6	1218.9
Total Future	5270.2	5328.6	5433.3	5510	5607.9	5695	5797.3	5858.3	5942.9	6013.2
ETEE Red	0	0	-85.059	-137.04	-187.34	-187.34	-187.34	-187.34	-187.34	-187.34
Forecast w/ ETEE Red	5270.2	5328.6	5348.2	5373	5420.5	5507.6	5610	5671	5755.5	5825.9

Figure 5 - Southern Lake Huron (Entire System) Forecasted Peak Hour Demands

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
RES	32575.958	32280.112	32148.624	31754.161	31458.316	31195.343	31063.853	30636.523	30373.547	30077.7
COM/IND	14478.925	14358.551	14334.477	14262.253	14226.141	14214.103	14250.215	14190.029	14190.029	14177.992
Forecast	1295.928	1727.82	2073.023	2407.012	2706.426	2958.736	3198.91	3428.056	3646.142	3855.003
Total Future	48350.811	48366.483	48556.124	48423.426	48390.883	48368.182	48512.978	48254.608	48209.718	48110.695
ETEE Red			-42.7	-88.6	-122.1	-122.1	-122.1	-122.1	-122.1	-122.1
Forecast w/ ETEE Red	48350.811	48366.483	48513.424	48334.826	48268.783	48246.082	48390.878	48132.508	48087.618	47988.595

Figure 6 - Southern Lake Huron (Area of Influence) Forecasted Peak Hour Demands

	2022	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
RES	5226	5178.5	5157.4	5094.1	5046.7	5004.5	4983.4	4914.8	4872.6	4825.2
COM/IND	515.57	512.09	511.4	509.31	508.27	507.92	508.96	507.23	507.23	506.88
Forecast	131.87	244.58	357.32	470.08	554.06	605.53	653.96	699.8	742.98	783.99
Total Future	5873.4	5935.2	6026.1	6073.5	6109	6117.9	6146.3	6121.9	6122.8	6116
ETEE Red			-42.7	-88.6	-122.1	-122.1	-122.1	-122.1	-122.1	-122.1
Forecast w/ ETEE Red	5873.4	5935.2	5983.4	5984.9	5986.9	5995.8	6024.2	5999.8	6000.7	5993.9

ENBRIDGE GAS INC.

Answer to Interrogatory from
School Energy Coalition (SEC)

Interrogatory

Reference:

[B/1/1, p. 14]

Question(s):

Please confirm that the proposed IRPA also defers the replacement of the high risk steel mains discussed. If that is not the case, please describe how the IRPA impacts, if at all, the replacement of high risk steel mains.

Response:

No, the Pilot Project IRPAs do not defer the steel main replacement project identified in the Company's 2023 to 2032 AMP. As described in Exhibit B, Tab 1, Schedule 1, page 15, the Pilot Project IRPA's will not affect the need for replacement projects but may impact the scope of such projects. Replacement projects will be reviewed for sizing and scope prior to commencement with all the latest demand inputs resulting from the customer forecast and any IRPAs.

ENBRIDGE GAS INC.

Answer to Interrogatory from
School Energy Coalition (SEC)

Interrogatory

Reference:

[D/1/1, p.2, 11 et seq.]

Question(s):

Please confirm that the incremental HER+ incentives (from $10K to $15K max) will be funded by the IRP budget, but the base incentives will continue to be be funded by DSM and/or NRCan as they would have in the normal course. If that is not the case, please provide more detail on the proposed funding attribution.

Response:

Not confirmed. Please see Exhibit D, Tab 1, Schedule 1, paragraphs 26 to 29 for the detailed explanation on the proposed funding attribution approach that uses the HER+ offering as an example. The proposal in this Application would not impact the portion of the HER+ participant incentives funded by NRCan, however the remaining HER+ participant incentives (inclusive of the additional incentive proposed for the ETEE version of the HER+ offering) would be funded by the Pilot Project budget.

ENBRIDGE GAS INC.

Answer to Interrogatory from
School Energy Coalition (SEC)

Interrogatory

Reference:

[D/1/1, p. 17]

Question(s):

In EB-2021-0002, Schedule B of the Decision dated November 15, 2022, the OEB set out a table of incentives for measures related to the joint NRCan/EGI offering for residential customers. Please file a revised copy of that table applicable to the pilot projects in this Application.

Response:

Please see Exhibit D, Tab 1, Schedule 1, Table 7 and Table 10. Please note, response to Exhibit I.IESO-2, part b) includes an update to Table 10.

ENBRIDGE GAS INC.

Answer to Interrogatory from
School Energy Coalition (SEC)

Interrogatory

Reference:

[D/1/1, p. 9, 20]

Question(s):

Please describe the stakeholder engagement with the one large institutional customer described, preferably without identifying the customer.

Response:

In August 2022, employees of the customer were engaged by an Enbridge Gas Energy Solutions Advisor ("ESA") to discuss any existing or new energy efficiency opportunities to implement at their facility. In 2020, the customer had previously participated in Demand Side Management ("DSM") programming through a steam trap audit, engineering feasibility assessment, and energy simulations.

In October 2022, the ESA performed a site visit and performed a detailed audit of facility equipment and loads. Post-site visit, the ESA compiled a report and provided it to the customer.

In December 2022, with financial support from Enbridge Gas through the DSM program and consultation with the ESA, the customer agreed to undertake a comprehensive energy modelling and audit exercise conducted by a third-party engineering consulting firm to further develop energy savings opportunities and derive business cases and cost estimates to put forward for management approval. As part of the scope of the consulting firm's work, peak gas consumption was evaluated, and energy efficiency opportunity recommendations included estimates on peak gas usage reductions. The Enbridge Gas ESA and consulting firm staff were on-site in early December 2022 for the detailed site audit. In late December 2022 with support from the Enbridge Gas ESA, the comprehensive consultant's report was produced and shared with the customer.

In June 2023, the ESA visited the customer to provide technical advice regarding optimization in the operation of their equipment and systems. Savings and incentive calculations were performed by the ESA and provided to the customer for review. Later in the month, the customer implemented the energy efficiency solution. Energy savings will be claimed under DSM in 2023.

ENBRIDGE GAS INC.

Answer to Interrogatory from
School Energy Coalition (SEC)

Interrogatory

Reference:

[D/1/1, p. 20]

Question(s):

Please confirm that commercial direct install will cover 100% of the incremental cost of efficient equipment, and not 100% of the total cost of the measure. If this is not the case, please describe the rationale for covering more than the incremental cost. Please identify in this response measures that are considered to be 100% incremental.

Response:

Not confirmed. The enhanced targeted energy efficiency (“ETEE”) commercial direct install offering is proposed to cover up to 100% of the total cost of the measure. Incremental cost is in reference to the upgrade cost versus a base case equipment. The focus of this ETEE offering is on retrofit applications where the base case would be the existing equipment. In retrofit applications, the incremental cost is also the full energy efficiency project cost.

ENBRIDGE GAS INC.

Answer to Interrogatory from
School Energy Coalition (SEC)

Interrogatory

Reference:

[D/1/1, p. 28]

Question(s):

Please expand Table 11 to include each of the measures in Table 10.

Response:

Technology	Approx. Peak Reduction	Approx. Consumption Reduction
Cold Climate Air Source Heat Pump (ccASHP)	80%	80%
Ground Source Heat Pump (GSHP)	80%	80%

A simplified approach to reduction estimates was applied in consideration of the Pilot Project measures as a starting point. In developing these estimates for the electric measures above, an overriding assumption was made that the primary gas appliance for space heating (i.e., the gas furnace) and its respective space heating load (including during peak gas usage) was replaced with the ccASHP or GSHP aligning with the requirement noted in response at Exhibit I.OGVG-3 part, a). An assumption that 80% of the residential gas consumption load was related to space heating was applied.

As noted in Exhibit D, Tab 1, Schedule 1, page 32, paragraph 72, it has been assumed that percentage reductions on peak demand would be proportional to percentage reductions on forecast annual gas consumption. As part of the Pilot Projects objectives, Enbridge Gas expects to develop an understanding of how enhanced targeted energy efficiency ("ETEE") and demand response ("DR") programs impact peak hour flow/demand.

ENBRIDGE GAS INC.

Answer to Interrogatory from
School Energy Coalition (SEC)

Interrogatory

Reference:

[D/1/1, p. 32]

Question(s):

Please explain why the Applicant is proposing a cap on the two electrification technologies, but no cap on the number of gas heat pumps, hybrid heating options, or thermal storage.

Response:

Enbridge Gas has proposed a cap for the three advanced technologies. Please see Exhibit D, Tab 1, Schedule 1, page 27, paragraphs 52 to 54.

ENBRIDGE GAS INC.

Answer to Interrogatory from
School Energy Coalition (SEC)

Interrogatory

Reference:

[D/1/1, p. 32]

Question(s):

For the electrification measures, please break them down by year in the same manner as the “advanced technologies”.

Response:

Please see the table below for the requested data breakdown. Please note that although the participants have been budgeted in the proposed first year of the Pilot Project, Enbridge Gas expects there will be flexibility in the allocation of annual budgets across the years within the Pilot Project term, such that participants can enroll in the future years if the participant quota has not been met in the first year.

	2024	**2025**	**2026**
ETEE - Electrification Measures - ccASHP			
Budgeted Number of Participants	20	0	0
Estimated Peak Reduction - Cumulative (m3/hr)	20.6	0.0	0.0
ETEE - Electrification Measures - GSHP			
Budgeted Number of Participants	10	0	0
Estimated Peak Reduction - Cumulative (m3/hr)	10.3	0.0	0.0

ENBRIDGE GAS INC.

Answer to Interrogatory from
School Energy Coalition (SEC)

Interrogatory

Reference:

[D/1/2, p. 7]

Question(s):

Please confirm that commercial/industrial in this context includes institutional.

Response:

Confirmed.

ENBRIDGE GAS INC.

Answer to Interrogatory from
School Energy Coalition (SEC)

Interrogatory

Reference:

[D/1/3]

Question(s):

With respect to the proposed collection of hourly data:

a) Please explain in detail why hourly data is needed for IRPAs and not for traditional facilities solutions.

b) Please explain why 100% hourly data is required for Parry Sound, rather than a statistically valid sample.

Response:

a) Hourly data is not inherently required for all IRPAs. Hourly data is required for the Pilot Projects in order to meet one of the primary objectives listed at Exhibit B, Tab 1, Schedule 1, paragraph 6: to "Develop an understanding of how ETEE and DR programs impact peak hour flow/demand". For a detailed explanation of how hourly data supports this objective, please see Exhibit D, Tab 1, Schedule 3, pages 1 to 7, and please see Exhibit D, Tab 1, Schedule 3, page 10, paragraph 37 regarding the potential requirements of hourly data on future IRPAs.

b) Please see response at Exhibit I.STAFF-5. 100% hourly data is required for Parry Sound as gate station flow measurement will not provide sufficient detail to measure specific IRPA impacts.

ENBRIDGE GAS INC.

Answer to Interrogatory from
School Energy Coalition (SEC)

Interrogatory

Reference:

[E/1/1]

Question(s):

For each of the tables of costs in this exhibit, other than Table 6 and Table 13, please detail all costs that are:

a) Compensation and related overheads of Enbridge personnel (together with the budget that would otherwise include these costs);

b) Charges from affiliates, including but not limited to Enbridge Inc., (together with the budget that would otherwise include these costs); or

c) Capitalized overheads.

Response:

For Tables 1, 5, 7, 12 in Exhibit E, Schedule 1, Tab 1:

a-c) The costs in these tables do not include the items or charges detailed in the questions.

For the remaining tables, any applicable costs are detailed in similar format to Exhibit E, Tab 1, Schedule 1, Attachment 1 as they provide a comprehensive summary of the costs associated with the Pilot Projects.

a) Please see Attachment 1 for any compensation and related overheads costs.

b) There are no costs associated with affiliates included in the Pilot Projects.

c) Please see Exhibit E, Tab 1, Schedule 1, Attachment 2, page 1, line 4 and 9 provides the capitalized overheads related to the Parry Sound and Southern Lake Huron Pilot Project respectively.

Operating & Maintenance Costs

Line No.	Particulars ($000s)	2023	2024	2025	2026	2027	Total
	Parry Sound IRPA						
	Supply Side Alternative						
1	TC Energy	-	-	-	-	-	-
2	CNG	-	-	-	-	-	-
	Demand Side Alternative						
3	ETEE - Enhanced DSM	-	20.6	18.7	17.6	-	56.9
4	ETEE – Advanced Technology	-	14.0	15.7	9.9	-	39.6
5	ETEE – Electrification Measures	-	-	-	-	-	-
	Other O&M						
6	Stakeholdering	-	-	-	-	-	-
7	Administrative / Legal	-	-	-	-	-	-
8	Incremental FTE	-	187.5	187.5	187.5	187.5	750.0
9	Total Direct O&M Costs	-	222.1	221.9	215.0	187.5	846.5
	Pilot Learnings O&M Costs						
10	Data Collection & Analysis	-	-	-	-	-	-
11	Total Parry Sound O&M Costs	$ -	$ 222.1	$ 221.9	$ 215.0	$ 187.5	$ 846.5
	Southern Lake Huron IRPA						
	Supply Side Alternative						
12	CNG	-	-	-	-	-	-
	Demand Side Alternative						
13	ETEE - Enhanced DSM (Area of Influence)	-	6.1	7.1	6.7	-	19.9
14	Demand Response (Area of Influence)	-	4.3	3.7	2.9	0.2	11.1
	Other O&M						
15	Stakeholdering	-	-	-	-	-	-
16	Administrative / Legal	-	-	-	-	-	-
17	Incremental FTE	-	187.5	187.5	187.5	187.5	750.0
18	Total Direct O&M Costs	-	197.9	198.3	197.1	187.7	781.0
	Demand Side Alternative						
19	ETEE - Commercial/Industrial (Greater SLH - C/I)	-	1.0	10.1	10.1	-	21.2
20	Demand Response (Greater SLH - Res)	-	6.0	6.0	5.0	-	17.0
	Pilot Learnings O&M Costs						
21	Data Collection & Analysis	-	-	-	-	-	-
22	Total Southern Lake Huron O&M Costs	$ -	$ 204.9	$ 214.4	$ 212.2	$ 187.7	$ 819.2
23	Total IRP Pilot O&M Costs	$ -	$ 427.0	$ 436.3	$ 427.2	$ 375.2	$ 1,665.7

ENBRIDGE GAS INC.

Answer to Interrogatory from
School Energy Coalition (SEC)

Interrogatory

Reference:

[E/1/1, Attachments]

Question(s):

How, if at all, has the reduced risk of stranded assets as a result of the use of an IRPA been valued? If the value has been assumed to be zero, please explain why that is appropriate.

Response:

Enbridge Gas did not complete a full DCF+ economic analysis for the Pilot Projects and, therefore, has not explicitly valued the reduced risk of stranded assets as a result of the implementation of the proposed IRPAs. As noted in Exhibit D, Tab 1, Schedule 1, page 33, however, "the deferral of the baseline facility projects provides the opportunity to understand how the changes in the forecasted participant levels and peak hour reductions, in conjunction with hydraulic system modifications, changes to existing customer demands and the impact of Ontario's energy transition on Enbridge Gas's demand forecast could impact each project's future timing and scope".

As noted at Exhibit B, Tab 1, Schedule 1, page 5, Enbridge Gas completed a Stage 1 DCF analysis to provide the OEB and stakeholders with an understanding of the rate impacts for both the baseline project and the IRPA alternative to assist the OEB. A full DCF+ cost test will be provided for Enbridge Gas's first IRP Plan filed in 2024. The DCF+ calculations completed will include demand forecast sensitivities, which will provide insight into how much Enbridge Gas's demand forecast must change before the IRPA becomes the more cost-effective solution. This, in turn, supports quantifying what the 'option value', or said another way, what the value of using an IRPA to reduce the risk of stranded assets could be.

ENBRIDGE GAS INC.

Answer to Interrogatory from
School Energy Coalition (SEC)

Interrogatory

Reference:

[F/1/1]

Question(s):

Please describe stakeholder engagement the Applicant has carried out, if any, with local school boards in Parry Sound and Sarnia.

Response:

Enbridge Gas has not held stakeholder meetings with the Near North District School Board ("NNDSB") in the Parry Sound Pilot area. Enbridge Gas has held initial meetings with the Lambton Kent District School Board ("LKDSB") to better understand how DR programs could be implemented for schools and how the Pilot Project offerings could help align with LKDSB's goals for reducing greenhouse gas emissions. These initial meetings involved the introduction of Integrated Resource Planning ("IRP") and discussion of types of DR programs being considered, recognizing that DR programs are primarily focused on peak hour demand savings and not necessarily focused on reducing greenhouse gas emissions. Additional conversations also considered the state of the school buildings (with some being older than others) and the differences between secondary and primary schools with the latter being more sensitive to heating turn downs if a DR offering was available to their customer class. However, Enbridge Gas did not propose to implement a commercial DR offering as part of the Pilot Projects Application at this time due to limited commercial customers in the Southern Lake Huron Area of Influence.

Once the OEB has issued a Decision on the Pilot Projects Application, Enbridge Gas staff will revisit conversations with LKDSB and the NNDSB with schools in the Parry Sound Pilot area for a more detailed review of the approved programs and offerings that are available to them through the Pilot Project programming. A portfolio of energy efficiency offerings through the DSM programs remain available to schools until the OEB issues a Decision and after ETEE programming is in-market.