EB-2015-0029/0049

BEFORE THE ONTARIO ENERGY BOARD

2015-2020 DSM Plans of:
Enbridge Gas Distribution Inc.
and Union Gas Limited

EVERYONE BENEFITS

Final Argument of

The Green Energy Coalition:

David Suzuki Foundation, Greenpeace Canada, Sierra Club of Canada

David Poch, Barrister

OCTOBER 2, 2015

Table of Contents:

1) Guiding Principles and OEB Priorities

GEC respectfully submits that for several key aspects the framework has been misapplied by the utilities, or needs to be amended or re-interpreted. In that regard there are five main themes that are addressed in our submissions below:

- **Everyone Benefits** – at the time of the development of the Framework the magnitude of the benefits to both DSM participants and non-participants was not apparent. The development of the Board's '$2' residential rate impact guideline was not informed by any quantification of the benefits to non-participants. Since that time government policy has placed increasing value on the economic and environmental benefits of DSM. Estimates of the rate lowering impacts on non-participants now demonstrate that they offset program costs.

- **Participation Can and Should be Expanded** – The Board's Framework recognizes that, with expanded participation in DSM programs, equity among customers is enhanced as are savings for customers and society as a whole. GEC's evidence makes clear that with a proper recognition of the benefits to non-participants and participants, expanded participation can occur without significant net rate impact. Further, recognition of the full extent of avoided costs can enable new programs and measures that allow more customers, especially residential and small business customers, to share in more of the benefit.

- **Large Industry Needs to Contribute and Will Benefit From Doing So** – The Board's direction to curtail incentive programs for large volume customers (LVC's) was premised on an understanding that these sophisticated customers would pursue savings on their own and that mandatory DSM would require them to subsidize their competitors. Both of those assumptions have been demonstrated to be incorrect. The evidence is clear that sophisticated industrial customers fail to achieve efficiency for a variety of reasons and can all benefit from participation. The self-direct approach minimizes cross-subsidy. Inefficient industrial gas use imposes costs on the system and society. All customer classes and society as a whole benefit from enhanced industrial DSM. Curtailment of industrial DSM would effectively make large industry a free-rider on the system.

- **Correcting Avoided Costs is a Priority** -- Getting avoided costs right is a critical first step to addressing all of the above points. It allows for a proper analysis of rate impacts. It enables recognition of cost-effective measures or measure applications that can

enhance savings, customer participation and therefore, equity. Since the development of the DSM Framework the Minister has explicitly called for consideration of carbon benefits and natural gas price suppression to screen prospective measures and to inform budgets. He has asked for studies of these factors to inform the conservation potential study due by June 1, 2016. These costs are in addition to the 15% non-energy benefits adder.

- **We Can't Wait Four Years** – Waiting until 2019 to implement findings of a mid-term review will frustrate the Minister's Directive to achieve all cost-effective DSM, will frustrate the Minister's request to capture carbon and DRIPE in screening *and budget setting*, and will embed years of lost opportunities as capital stock turns over without optimal energy efficient replacement. As we discuss under topic 13, there is a practical path to allow enhancements to the DSM portfolios prior to 2019 without stalling near term efforts or imposing needless regulatory burden.

Before turning to the specific topics listed in the Board's procedural order we wish to expand briefly on the first of the five items above, the benefits shared by all customers.

Everyone Benefits

Much of the oral hearing focussed on the near term costs and effectiveness of programs for particular rate groups and it is easy to forget the tremendous benefits that DSM brings to all customers:

- DSM from past years has already brought all customers significant rate lowering benefits and current DSM will create a stream of rate reducing impacts for years to come;

- DSM has a market transforming effect. It speeds the widespread implementation of efficient technology and practices and all customers benefit as the efficiency of products and practices in the market is enhanced and the price of efficient products falls.

- DSM enhances the health of the local economy. Efficiency displaces reliance on imported fuel. It creates local employment and economic growth.

- DSM leads to a healthier environment, benefitting all customers.

- DSM reduces economic risk from fuel price volatility, reduces the risk and cost of more stringent environmental regulation, and can reduce weather sensitivity of load, reducing system costs.

DSM, like a pipeline, is an investment intended to provide a forward stream of benefits. However DSM is not a singular project, it is a continuous campaign that has produced, and continues to produce, a stream of benefits – for both DSM participants and non-participants.

GEC's evidence in this proceeding demonstrates that past DSM is lowering today's rates for all gas customers and that today's DSM will continue that effect. Rate increases from current DSM spending will be offset in whole or part by rate reductions due to prior DSM investments. Constraining this gravy train would only hurt all customers going forward.

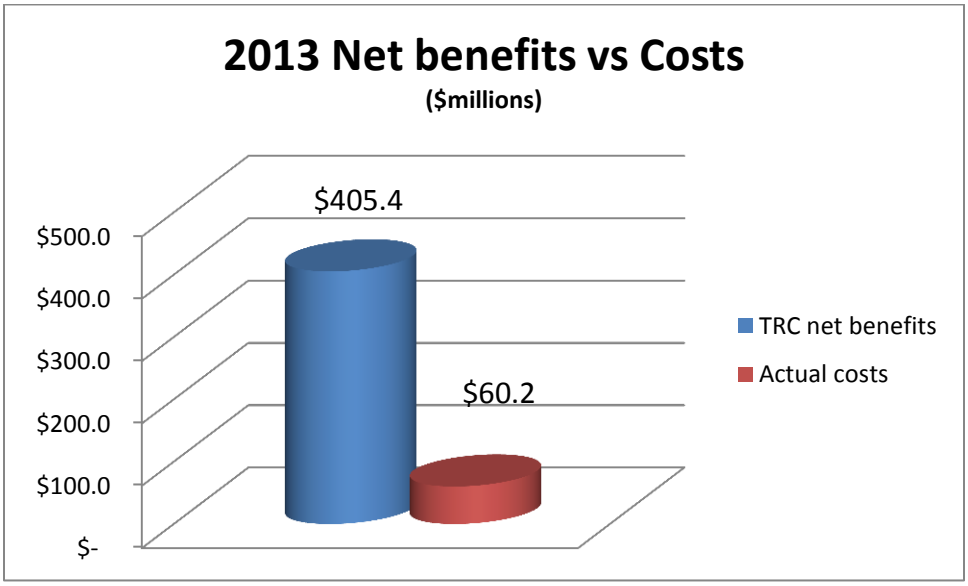
The benefits that all customers share in the form of reduced rates from infrastructure deferral, gas commodity price suppression, or carbon compliance cost avoidance are just the tip of the iceberg. Union's past efforts have conserved 7.5 billion cubic meters[1]. Enbridge has saved 8.8 billion cubic meters of gas over the course of its multi-year program. Union has persisting savings of approximately 8% of its current throughput to retail customers[2]. Enbridge has persisting savings approximating 6.7% of its throughput[3]. The majority of Enbridge's savings came from reducing space heating loads that would otherwise disproportionately add to system peak[4]. The savings for participants is in the billions of dollars. For Enbridge alone, 1997-2014 net TRC benefits are $2,455,151,786[5]. As Mr. O'Leary noted in argument, over the past years Enbridge has saved the equivalent of 16.5 million tonnes of CO_2. And most customers are participants in current or past programs and share in these participant benefits. Enbridge witnesses estimated that 1,200,000 of its customers have participated in just one of its past programs.[6] Union's witnesses noted that approximately 700,000 of their residential customers participated in their DSM program reducing hot water consumption[7].

Gas customers also benefit through indirect participation as a result of market transformation. Utility efforts to foster improved insulation and air sealing techniques in new construction have enabled tighter building code standards, accelerating the transformation of the Ontario market. Just as the gas utilities' highly successful water heater efficiency improvements transformed the Ontario market years ahead of jurisdictions that ignored efficiency, with improved evaluation of avoided costs, new programs could usher in and lower the cost of tankless water heaters leading to the next market transformation.

---

[1] V.2, p.77 referring to Exhibit B, T13.Union.VECC.2
[2] See J4.8 total of column a/ 14,204,104
[3] See V.5, p.26 where the last 12 years of annual savings are taken as an approximation of persisting savings given the average 15 or 16 year measure life and compared to throughput.
[4] A review of the TRC spreadsheets documenting all savings from 2012 through 2014 found at I.T8.EGDI.GEC.8 shows that Enbridge's savings were between 50% and 62% space heating savings during those years.
[5] JT1.34
[6] V.8 p.5
[7] V.2, p. 74

Of course all gas customers are also citizens who have a stake in a healthy economy and environment. DSM lowers the cost of energy service to the economy, creates local employment, increases Ontario's energy self-reliance, and reduces harmful emissions. It will also lower the cost to Ontarians of meeting the aggressive GHG targets that government has recently committed to. Even ignoring the offsetting benefits of price suppression, carbon compliance cost reduction and more realistic infrastructure deferral benefits, DSM is far more cost-effective for society than supply:[8]



In light of the benefits enjoyed by all gas customers GEC is asking the Board to refine or reconsider two of its framework guidelines. **In GEC's submission the $2 residential rate impact guideline (and budget caps based thereon) should be refined to explicitly recognize the net rate impacts from both DSM budgets and the rate lowering effects of DSM, enabling a further ramp up of budgets in 2017 and thereafter.** Further, **GEC is asking the Board to reconsider its guideline cancelling Union's large volume customer DSM program and to direct a refinement of that program in light of the results of the forthcoming net to gross study[9].**

The basis for these reconsideration requests is twofold. First, the framework was developed without the benefit of a full record or proceeding, and, as we will elaborate upon in subsequent sections of this submission, there is now new evidence on rate impact offsets that must be

[8] Data sources: 2013 is the most recent year with finalized results - TRC net benefits from I.T8.EGDI.GEC.34 and B.T13.Union.GEC.1. Final costs from I.2.EGDI.VECC.2 and B.T3.Union.GEC.18. Note that TRC results are net of non-energy benefits, free-riders and free drivers and are based on the unduly restricted view of avoided costs as produced by the companies.

[9] Throughout this argument recommendations are bolded. A compilation of recommendations appears at the end of our submissions.

considered. Second, the context has changed with the recent government policy announcements in regard to greenhouse gas reduction targets and mechanisms.

The Board's guidelines are just that, guidelines. As such they are not binding on the utilities or on the hearing panel. While the guidelines are indicative of past practices and the Board's preferences from experience to date, the Panel in this case is required to make its decision based on the evidence. The Board developed its policy on large volume programs and on rate impacts (and the resulting suggested budgets), in a process that had submissions but no testimony, no discovery, no testing of evidence, and where intervenors were given limited costs for participation. For these reasons it is particularly important that the Panel in this proceeding maintain an open mind. Contrary to the submissions of Enbridge suggesting we are simply re-arguing the matter – we are asking for reconsideration in light of the new policy commitments of the government and based on more extensive evidence as opposed to the incomplete record available at the time of the framework development.

In regard to rate impacts, the Board should look to the underlying intent of the guideline and the best evidence available in determining budgets and targets. As we discuss below, to evaluate the impact on non-DSM participants it is the ongoing net rate impacts of budget plus the offsetting rate reducing impacts, not simply the gross rate impact of the budget alone that must inform the Panel's considerations. In GEC's submission this becomes an important issue for the 2017 program year and following. As set out below, this Panel can provide directions on spending and a review mechanism such that the budget can ramp up at that time without the need for an additional oral hearing and without offending the $2 guideline if it is applied on a net basis. Our submissions on this matter can be found under topic 3 (budget) and our submissions on the process to enable changes in the post 2016 period are included under topic 13 (other).

With respect to large volume programs, the Board must have regard to the overall system and societal costs and benefits, not simply the self-interest of a few companies focussed more on quarterly earnings than long-term economics and system costs. This is an immediate concern. Cancellation as of January first 2016 will mean a loss of momentum and risk market confusion. Union has noted that its current large volume customer program which includes Rate T1 customers, has a budget of $4.5 million[10]. The Self-Direct "program spend" portion delivered to R100/T2 customers represents $3.3 million of this in 2014 and Union notes that similar results could be achieved in 2016 for a total budget of $4 million.[11] Union acknowledges that doubling

[10] A/T2/p. 7, Table 4
[11] B.T3.Union.ED.4 shows T2/R100 spending in 2014 at $3.3 million.

the budget would lead to roughly double the savings.[12] GEC supports such a doubling which will bring significant benefits to all customers. The results of the current net to gross study can inform refinement of the program and improvements can address any concern about free ridership. Our detailed submissions addressing this matter can be found under topic 5 (program types) and topic 3 (budget).

This is a hearing in regard to six year plans. We recognize that the utilities have prepared plans in reliance on the guidelines. However, in GEC's respectful submission, to lock in sub-optimal plans because it is simpler to stay within the confines of the guidelines would be a grave disservice to the public interest.

[12] B.T3.Union.ED.4

2) DSM Targets

GEC submits that the targets proposed by the companies are systematically low and the information that they have provided cannot be relied upon to repair the targets going forward. We note:

- Enbridge has relied upon an incomplete and flawed potential study.
- While both companies acknowledge that there is significant untapped potential if adequate budget were made available, they have offered little or no basis to set appropriate targets assuming budget is available.
- The sensitivity studies of the companies are simplistic and dramatically flawed.
- GEC's evidence comparing Ontario to leading jurisdictions provides real world benchmarks for the much higher results that can be achieved.
- Mr. Neme's elaboration of the low market penetrations being targeted by the companies makes clear that the targets do not come close to approaching the Minister's Directive goal of achieving all cost effective DSM.

We address each of these points below. We discuss program specific targets that are included in the scorecards under Topic 4 (Shareholder Incentive).

a) Informing Targets by Reference to Achievable Potential

DSM targets should be informed, *inter alia*, by two considerations -- available budget and available cost-effective potential including a consideration of opportunities to improve program effectiveness. We address the issue of budget constraints below, where we conclude and submit that there is ample room even within the '$2 rate impact' constraint to allow for a significant budget increase in future years, and therefore higher targets. We also address the opportunities for improved program effectiveness under topic 5 below. However, assuming increased budget availability for the 2017 period and following, it is then appropriate to consider what is reasonably achievable.

Mr. Neme notes that potential studies can help identify opportunities but are not a good barometer of what can be achieved[13]. He found particular problems with Enbridge's reliance on the Navigant study. Mr. Welsh took issue with one of Mr. Neme's methodological criticisms but there was no challenge to other observed failings. Of note was Navigant's omission of

[13] See discussion at V. 10, pp. 80-84

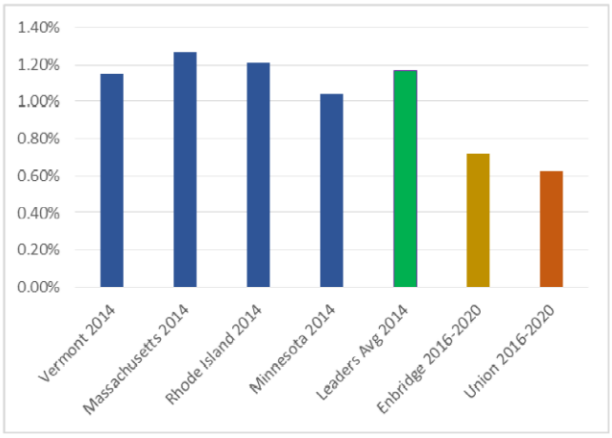
custom project measures that Enbridge is currently delivering (a large component of achievable DSM). Mr. Neme reviewed a stratified random sample of industrial projects that were analysed under Enbridge's 2014 Custom Project Savings Verification process and found that approximately half of the projects employed measures that do not appear to have been addressed by the Navigant study. He also observed that Navigant's conclusion that 96% of technical potential is cost-effective suggests that Navigant largely limited their review to measures already being delivered[14]. The study suffers from a circular problem of being limited by what's already on the list. As Mr. Neme said, "Put simply, it is not plausible that the supply curve of efficiency is a gradual upward slope to the current cost-effectiveness threshold and then becomes almost vertical."

Mr. Neme suggests a better barometer in the form of benchmarking against the *actual savings achieved* in other comparable cold climate jurisdictions that have relatively mature programs and are subject to similar government policies. His comparisons to such jurisdictions are summarized at L.GEC.1, p. 9 where he notes:

> *"[Proposed] Savings [are] a little more than half of what leading jurisdictions have already achieved (i.e. in 2014)".*[15]

The comparison can be seen in his Figure 1.

Annual Savings as % of 2012 Residential, Commercial & Industrial Sales[16]



[14] L.GEC.1, p. 22-24

[15] Mr. Neme subsequently noted in J.10.3 that the comparison set included smaller utilities and that Enbridge's proposed 2016-2020 average annual savings are 58% of those achieved by the largest utilities in each of the four leading jurisdictions. Union's proposed 2016-2020 average annual savings are 51% of those achieved by the largest utilities in each of the four leading jurisdictions.

[16] L.GEC.1, p. 10

It is important to note that this comparison is between the *future* (2016-2020) Ontario targets and the *current* (2014) results in other jurisdictions, and these other jurisdictions can be expected to experience further growth in DSM results in the forward period. For example, Mr. Neme noted that "In Minnesota, the average target that's been set for the utilities there is about 25 percent higher…in the 2016 plans, than what they achieved in 2014."[17]

Mr. Neme also provided a few examples of measures and program approaches that offer considerable scope for higher savings if budget allows. Notable among these was the illustration of what can be achieved with upstream incentives targeted at product distributors and manufacturers (see below under topic 5 – program types). Mr. Neme noted how portfolio costs/m^3 are rising in Ontario due in part to the laudable policy of including all sectors, especially low income customers, but that expanded effort could productively be targeted to the C&I sector with its higher cost effectiveness. He analysed actual participation rates for a sample of C&I measures for each utility which indicate there is lots of room to improve[18]:

Market Shares for Selected Enbridge C&I Measures

Measure	Potential annual market	2017 participants proposed	2017 participation rate
Commercial roof insulation when reroofing	4,680	0	0.0%
Commercial condensing hot water tanks	2,964	0	0.0%
Demand controlled kitchen ventilation	1,793	143	8.0%
Commercial cooking equipment	2,286	278	12.2%

Market Shares for Selected Union C&I Measures

Program & Measure	Potential annual market	2017 participants proposed	2017 participation rate
Commercial roof insulation when reroofing	3,200	0	0%
Commercial condensing hot water tanks	1,900	280	14.7%
Demand controlled kitchen ventilation	1,229	50	4.1%
Commercial cooking equipment	1,676	170	10.1%

[17] V.10, p. 77
[18] L.GEC.1, Tables 1 & 2

Mr. Neme noted that in contrast to these low values, leading programs can achieve 50% or higher participation rates in equipment replacement markets[19]. We note the Board's framework explicitly calls upon the companies to "Design programs so they achieve high participation levels" (Framework p.8).

Further suggestions for increased savings by way of program changes are addressed below under topic 5 (program types). There were numerous examples throughout the hearing where the utilities acknowledged that the primary constraint on added savings was budget[20].

In short, the evidence is clear that there is lots of cost-effective real world achievable potential and that improved program approaches can lead to lower administration costs per cubic meter and lower free ridership, and therefore increasing, rather than diminishing, returns.

b) Sensitivity Analyses as a Basis for Altered Targets

Both companies have offered sensitivity analyses that purport to show the relationship between added budget and added savings. GEC's expert witness, Mr. Neme, has pointed out serious flaws in these analyses including[21]:

- Neither utility optimized where added spending would go as between programs and measures;
- Neither considered changes to their base programs;
- Neither considered the reduced free rider rates and increased net savings that come with greater participation;
- Neither company reported on the TRC benefits that added spending would produce – a key economic rationale for DSM;
- Union did not limit its growth assumption to scalable programs;
- Union did not consider the economy of scale that comes from participation rising faster than partially fixed administration costs;
- Enbridge scaled up market transformation programs (which should already be designed to 'transform the market'); and,

[19] V.10, p. 88
[20] See for example the discussion of Union's Home retrofit program at V.1, p.61, and of higher customer incentives increasing results but being budget limited at V.2, p. 98-99.
[21] L.GEC.1, pp. 20 – 24 and see discussion at V. 5, p. 29 *et seq*.

- Enbridge based its numbers on a potential study that was itself flawed[22] (see '2 (a)' above) and then made a mathematical error where it adjusted both the incremental savings per dollar and the existing or base savings per dollar downward for diminishing returns even though the base level would obviously not be affected by diminishing returns[23].

All of which suggests that these analyses are not worth the paper they are printed on. This reinforces our view that **the sensitivity analyses of the companies are superficial, seriously flawed, and cannot be relied upon to inform targets should the budget increase post 2016 as GEC has suggested. For the period post 2016 revised targets should be required and subject to review by both intervenors and the Board. Targets for 2017 and possibly 2018 could be developed in a streamlined process a year hence.**

c) 2015 and 2016 Targets

GEC notes that it is late in 2015 and that the proposed budget ramp up for 2016 is a near doubling of budget. Accordingly, GEC's submissions on 2015 and 2016 target levels are limited to minor adjustments with the exception of the targets associated with Union's large volume customers.

i) Union 2015 and 2016 Targets

Should the Board accept GEC's suggestion that Union's Self-Direct Large volume customer program be continued (see below under topic 5), a target will be required. **Under the prior guidelines Union's annual targets were set for the Large Volume program based on a formula which uses actual past year savings and the available budget in the upcoming year to set a target. In the current circumstances GEC submits that continuing this approach would be appropriate for 2016 and beyond.**

[22] See 'a' above and see L.GEC.1, pp 22-24
[23] Enbridge acknowledged this at V.5, p. 34 and altered its method in responding to subsequent IRRs.

d) 2017 Targets

GEC proposes an increased budget for 2017 (and for 2018 if the mid-term review is not advanced), as discussed below under Topic 3 (budgets). In his evidence at pages 26 to 28 Mr. Neme notes that there are opportunities for significantly increased savings in numerous programs including the small commercial direct install program, home retrofits, large custom C&I, continuous energy management and of course in Union's self-direct industrial program. GEC also advocates a move toward upstream targeted programs (see below under Program Types). If the Board accepts some or all of these recommendations, it will be necessary to adjust targets in accord with realigned portfolios. **GEC submits that a decision by the Board fixing increased budget levels for the period leading up to the mid-term review and determining the issue of the continuation of Union's large volume customer self-direct program would pave the way for a productive stakeholder process that would likely produce a consensus on suitable targets. The Board could then consider the matter in a streamlined process similar to that utilized for the adjustment to the low income programs several years ago.**[24]

The Board does have some information available to it on which to base directional instructions to the utilities. In order to optimize where additional funds are directed the Board could take guidance from the relative cost-effectiveness of the programs on offer. For example from Enbridge's cost-effectiveness tables we see the TRC ratio for the proposed 2017 portfolio of 2.4 to 1.[25] However for the non-residential offerings we see ratios of 3, 7, 10, or even 28 to 1. Given that the utility witnesses on the final joint panel indicated that with further resources the commercial sectors are where to go, **GEC recommends that the Board direct the utilities to allocate extra funds to C&I program areas and propose revised targets for 2017 and beyond.**

We also note the relatively low spending by Union in its residential programs. In Section 4(a)(v) below we discuss the need to increase Union's Resource Acquisition targets to allow for greater participation in its Home Retrofit program.

GEC observes that other parties have raised a concern about the portion of budget and the relatively low targets attached to behavioural programs, in particular the OPower residential programs. **While the OPower program would increase the number of participants in any given year, the Board may wish to see that program deemphasized given its relatively high**

[24] The government directed increased low income program activity in 2010 and the utilities filed supplemental plans providing for these incremental programs, in Enbridge EB-2010-0175 and Union EB-2010-0055.
[25] Exhibit B, Tab 2, Schedule 3, Page 4. Note as well that the PACT cost effectiveness results (in the right hand columns) provide further guidance In terms of extra benefits per utility program dollar spent.

cost and small effect. Adjusting metrics to reflect a shift of some of those resources to the residential retrofit programs would encourage long-term upgrades to building shells and substantial savings to the participants.

As both Mr. Neme and Mr. Woolf noted, setting targets in a consultative setting has advantages. Setting targets in a hearing process without a settlement stage is extremely challenging due to the number of interrelated moving parts. A settlement discussion that allows iterative discovery and continued communication between stakeholders and the companies enables a more nuanced and iterative consideration of the complex issues. However, the key to success in that forum is for the Board to give direction on the most divisive issues. At this juncture the divisive issues are budget and industrial customer participation. **GEC submits that the current hearing has produced a record that would allow the Board to determine overall budget and the question of LVC program continuation for 2017 and, if needed, for 2018 (though we submit that numerous uncertainties and data unavailability dictate against setting budgets for 2018 and beyond at this time). This would enable a streamlined target setting process for 2017 and possibly 2018.**

If the Board accepts our submissions on advancing the date of the mid-term review, the target for 2018 should be treated in the same manner as the targets for 2019 and 2020 (see subsection 'e' immediately below).

e) 2018 to 2020 Targets

The conservation potential study requested by the Minister is now getting underway and is intended to inform future budgets and targets. GEC submits that the mid-term review will provide an opportunity to review DSM performance, consider changes to the context such as the evolution of carbon compliance rules, and consider new measure and program opportunities that have arisen. Accordingly, **it is GEC's submission that the Board should refrain from setting targets for the 2019-2020 period at this time**. **It is GEC's submission that 2018 would best be dealt with in a similar fashion if the timing of the mid-term review can be accelerated to accommodate that.**

3) DSM Budgets

Throughout the oral hearing and in GEC's pre-filed evidence there were numerous examples of measures and programs that could provide increased savings if budget were not a constraint[26]. Both Mr. Neme's report and Mr. Chernick's report cite the recently announced GHG reduction goals for the proposition that the gas distribution sector will need to promptly do more to address government priorities. With cap and trade likely in 2018 and the government discussing credit for early action (which in that scenario would have to apply in 2017), waiting until 2019 for the impact of a mid-term review would be far from optimal. Utility witnesses agreed that a steady ramp up is preferable for both rate impact and program delivery efficiency[27]. The utilities have both filed plans with a near doubling of budget for 2016, demonstrating that the companies are confident they can rapidly ramp up programs. However, beyond 2016, constrained by a rate impact cap of $2 for the gross budget impact, the growth in DSM portfolios slows and then virtually stops. Accordingly, GEC has focussed considerable attention in this proceeding to the proper analysis of rate impacts.

a) The Impact of DSM on Non-Participant Rates

Mr. Neme's 'Table 3' which addresses the issue of net versus gross impact on non-participant rates, drew much attention throughout this hearing. Before turning to the specifics of the *net* rate impacts of DSM, there are several contextual points that should be borne in mind:

- Even if the $2 guideline is interpreted as a net impact limit, it is likely an inappropriately tight limit given the imperatives of carbon mitigation;
- That said, the $2 cap, if implemented on a net basis is unlikely to be a constraint in 2017-18;
- Even if rate impacts are analysed on a gross basis, a reasonable approach would include an analysis of how many customers are so impacted over a reasonable timeframe and no such analysis has been provided;

[26] See for example the discussion of Union's Home retrofit program at V.1, p.61, and at V.2, p. 98-99 agreement that higher customer incentives for C&I programs could increase results but are budget limited. At TC V1. p.61 Enbridge indicates that even with its higher residential retrofit participation targets (relative to Union's) it would require additional budget to get higher savings.

[27] V.5, pp 44-45

- An undue focus on current year gross rate impacts leads to absurd results. Even DSM participants may see rate increasing impacts that exceed their first year savings. Non-participants share in benefits from past DSM and will enjoy benefits from current DSM for many years. Mr. Chernick's analogy makes the point well: To ignore past and future DSM rate reducing benefits that a non-participating customer will enjoy is like the fellow who begrudges the bus fare to get to work on a Wednesday. His pay will far exceed his bus fare but "that's not till Friday". But what about last Friday's paycheck we ask? "That was last week", he responds.
- Leading jurisdictions have rates of DSM spending per residential customer that are double what is being proposed in Ontario[28].

i) Re-interpreting the Rate Impact and Budget Cap Guidelines for 2017 and 2018

GEC's principal concern in this proceeding is the narrow interpretation that the utilities have given to the Board's '$2 rate impact guideline' and the budgets that result therefrom. While a literal reading of the guideline might suggest that it is to be calculated simply on the DSM budget gross rate impact, the purpose of the guideline is clearly to mitigate impacts on non-participants, and gross rate impacts are not a meaningful measure of that impact. The only rational way to assess rate impacts is to derive the net rate impact from budgeted spending as well as the several effects of DSM that lower rates. Union and Enbridge witnesses both agreed that net impact is an appropriate consideration as did Mr. Woolf[29]. However, the companies have all but ignored offsetting rate reducing impacts, be they from persisting benefits of past DSM, from immediate benefits of current DSM spending, or from future benefits from current programs, even for those effects that they have attempted to include in avoided costs[30].

GEC does not ask that the companies be sent back to the drawing board. It is late in the day for 2015, and 2016 budgets are already ramping up significantly. However, **GEC submits that there is adequate evidence to support a further ramp up of budget (on the order of 30-40% above the levels proposed) for 2017 that would not offend the $2 guideline if it is interpreted as a net impact limit.**

In the longer term, i.e. for the post 2017 period, the Board should insist on an analysis of the combined impact on rates of the DSM budget plus the various rate lowering impacts of DSM informed by the specifics of the forthcoming carbon regulations, updated DRIPE studies, and by more informed and more complete avoided cost analyses. As discussed below under topic 9 (Avoided Costs) and topic 13 (Other Matters), awaiting a mid-term review in 2018 which

---

[28] V.10, p. 123
[29] Union at V.2, p. 48 – 49, Enbridge at V.5, p19 and Mr. Woolf at V.12, p.6
[30] Union at B.T10.Union.GEC.37, EGDI at I.T3.EGDI.GEC.28, and V.5, pp. 19,20 & 24

would affect plans no earlier than 2019 is simply too late in the context of the government's policy goals and the Board's obligation to regulate in the public interest and to achieve least cost energy services for gas customers. **GEC submits that the Board should either move the mid-term review ahead to enable implementation in 2018 or raise the budget caps for 2018 at this time through the mechanism we have suggested for 2017 adjustments. The appropriate rate impact and spending cap for 2018 to 2020 could then be addressed in the mid-term review (or for 2019-20 if the mid-term review is not advanced).**

GEC submits that the $2 rate impact cap and resulting budgets are arbitrary and out of date given recent policy announcements such as the 37% target for carbon reduction by 2030.[31] **While it is not necessary for the purpose of considering budget increase in 2017 to go beyond reinterpreting the rate impact cap as net rather than gross, the $2/month cap should be reconsidered in the mid-term review based on a broad consideration of the benefits of DSM to all customers, to participants, to society and in light of government policy goals. If the mid-term review is not advanced, the Board should at this time specify a budget increase for 2018.**

ii) Rate Impacts in Future Years from Current DSM

Table 3 of the evidence of Chris Neme provides an estimate of the net present value of the future stream of rate reducing impacts due to one year of each company's DSM program.

Table 3: Efficiency Benefits that Put Downward Pressure on Rates

		NPV of Lifetime Benefits per Annual m^3 Saved		Average Annual Value from Utilities'2016-2020 DSM Plans (millions $)		Benefits as a % of Average Annual (2016-2020) DSM Plan Budget	
	Benefit	**Enbridge**	**Union**	**Enbridge**	**Union**	**Enbridge**	**Union**
1	Avoided carbon regulation costs	$0.98	$0.98	$73.2	$73.9	101%	129%
2	Price suppression effects	$0.08	$0.08	$6.2	$6.3	9%	11%
3	Reduce purchase of most expensive gas	$0.10	$0.18	$7.2	$13.3	10%	23%
4	Avoided distribution system costs	$0.38	$0.24	$28.1	$18.2	39%	32%
	Total	**$1.54**	**$1.49**	**$114.7**	**$111.7**	**158%**	**195%**

Each of the mechanisms that are reflected in Table 3 is discussed in detail in the evidence of Mr. Chernick and is addressed below under topic 9 (Avoided Costs).

[31] L.GEC.1 p.16, line 1 and footnote 31.

The combined effect on rates of both the rate increasing DSM budget spending and the system-wide benefits they produce (at the spending and savings levels the Companies have proposed) would be more than a $1 per month *reduction* over the life of the efficiency measures installed.

These rate reducing impacts arise from four mechanisms. Both companies challenged Mr. Chernick's and Mr. Neme's assessments of these factors. In cross, Enbridge provided an 'alternative table 3' based on current carbon auction prices and its own partially corrected distribution infrastructure avoided costs, however it failed to account for the carrying cost of allowances bought in 2015 but applicable to the 2018 year, and it omitted price suppression effects. Mr. Neme was asked to recalculate his table with Enbridge's values for avoided distribution and current carbon auction prices and provided the following results that correct for these failings in Enbridge's table:

Alternative Table 3: Efficiency Benefits that Put Downward Pressure on Rates[32]

		NPV of Lifetime Benefits per Annual m^3 Saved		Average Annual Value from Utilities'2016-2020 DSM Plans (millions $)		Benefits as a % of Average Annual (2016-2020) DSM Plan Budget	
Benefit		Enbridge	Union	Enbridge	Union	Enbridge	Union
1	Avoided carbon regulation costs	$0.58	$0.58	$42.9	$43.3	59%	75%
2	Price suppression effects	$0.08	$0.08	$6.2	$6.2	9%	11%
3	Reduce purchase of most expensive gas	$0.10	$0.18	$7.2	$13.3	10%	23%
4	Avoided distribution system costs	$0.12	$0.08	$8.9	$5.8	12%	10%
	Total	$0.88	$0.91	$65.2	$68.7	90%	120%

As is evident from this "alternative table 3", *even with Enbridge's minimal avoided T&D values and lower carbon estimates* the rate reducing impacts offset all of Union's and virtually all of Enbridge's rate increasing budget impacts. In other words, *even if the budget doubled and produced no extra savings*, the $2 per month guideline would be met on a net basis. Of course, increased budget spending would produce more net benefits for ratepayers with added downward effect on rates.

iii) Rate Impacts in the Current Period from Past DSM

As discussed with Ms Frank (at V.10, pp.98-105), while the net present values noted above are an important indicator of the rate reducing benefits that non-DSM participants will enjoy over time due to measures installed in the current year, the values are not equivalent to the impact

[32] Footnotes explaining the derivation of these values can be found at J.10.4

that will be felt within the particular year. Conceivably some non-participants may not remain gas customers to enjoy this stream of future savings. Immediate affordability for customers can also be a concern, though it is muted by the low commodity prices currently being experienced. These concerns suggest that it is instructive to consider the rate reducing benefits from past years' programs that are holding down rates *today,* or more precisely, that will hold down rates in 2017 when GEC proposes that added budget should flow.

Several approaches to quantifying this effect of past DSM on current rates emerged during the hearing. One approach was to apply Mr. Neme's and Mr. Chernick's 'table 3' values for rate reducing impacts to the volumes saved in past years. A second, more conservative approach is to substitute the carbon price and distribution avoided costs that Enbridge used in its illustrative 'alternative table 3' and apply that to past volumes. Yet another conservative approach is to give no value to carbon compliance cost avoidance in 2017 (despite government indications that credit will be given for early action).

Both Mr. Neme and Mr. Woolf of Synapse noted that this is a complex matter to analyse but Mr. Neme was able to provide rough estimates for each approach. Using the first approach, applying Mr. Chernick's values to past volumes saved, he estimated that the rate reducing impact from past DSM that will be experienced in current rates in 2017 is roughly $100 million dollars for each company[33].

Mr. Neme went on to note that even utilizing "Mr. O'Leary's values" (i.e. the lower carbon and distribution avoided cost values that Enbridge posited in cross in its alternative Table 3) the rate reducing effect from past DSM would be on the order of $43 million annually for each utility. (Since Union utilized Enbridge's avoided distribution values the impacts would be comparable for Union.)

Thus, assuming that carbon pricing will start to impact rates in 2017, a non-DSM participant will be experiencing no rate impact in 2017 from DSM. Or, if Enbridge's alternative assumptions for carbon and distribution savings are used, the budgets could double in 2017 without hitting the $2 mark.

Even if we were to ignore carbon pricing, Mr. Neme estimates that the offsetting rate impact from past DSM (i.e. the offsetting rate impacts in 2017 due to past DSM with the items covered on table 3 other than carbon) is on the order of $45 million in each year for each utility, which would more than offset the added ramp up of DSM budget that Mr. Neme proposes for 2017

[33] These three scenarios were discussed at V.11, p. 167 *et seq*.

(though we note that an early action mechanism will likely give credit for carbon avoidance in 2017).

Details of these various factors are discussed further under Topic 9 (Avoided Costs) but in the following sections we provide several observations that are relevant to a discussion of rate impacts as opposed to avoided costs.

iv) Carbon Pricing Will Affect Rates Not Just Avoided Costs

Mr. Sloan suggested that it was not clear whether reducing carbon compliance costs would benefit non-participants. Mr. Chernick explained that there are two likely scenarios for how the gas LDCs will be charged for carbon allowances as evidenced by the practices in California, Quebec and the Regional Greenhouse Gas Initiative (RGGI), both of which will provide rate reducing benefits to non-participants.

In California the gas distributors are given approximately 90% of their forecast need for allowances (based on past emissions) at no cost and during the period in question must purchase 10% (or less if DSM is successful) at the full auction price. DSM that affects marginal emissions in the period will thus avoid the need to purchase allowances at the margin. The avoided allowance costs will then be an adjustment to rates enjoyed by all customers. As Mr. Chernick explained, this results in non-participants enjoying rate reductions due to DSM equivalent to 90% of the full carbon price that would otherwise attach to all of the emissions avoided by DSM. If for example the carbon price remains at $16:

> "So for every tonne of carbon that DSM avoids, the utility would save a full allowance, say $16. The participant in the program would save the amount -- the 10 percent that's in rates, which would be $1.60, and the remaining $14.40 would go to all the other customers."[34]

In other words 10% is embedded in the commodity price to the participant who avoided gas, and 90% goes through the QRAM process to all customers who will share the benefit of topping up or selling off marginal allowances.

The second approach is that taken in the RGGI jurisdictions, where gas distributors pay for 100% of the forecast need for allowances but the government then uses some or all of the revenues to fund energy efficiency programs, thus either reducing DSM costs otherwise in rates or funding increased targets without further ramp up of DSM budgets from ratepayers. In this regard we note that the Provincial government has made clear that as a part of its cap and trade program the money raised will be reinvested into GHG reducing projects including energy

[34] V.9, p. 167 and see V.11, p. 174

efficiency.[35] At one point while questioning Mr. Chernick, Ms. DeMarco seemed unclear as to whether Ontario had the power to do this. [36] New clauses in the Ontario Environmental Protection Act allow for regulations that authorize the allocation of these funds to sectors covered by the cap and trade system.[37]

Accordingly, so long as the Board retains the ability to adjust DSM budgets in light of the actual mechanism selected, regardless of which approach is taken, avoided carbon compliance costs are likely to be a benefit to non-DSM participants. The regulatory approach in Ontario is likely to be announced in the coming weeks and finalized by the summer of 2016[38]. However, as Enbridge noted, the next compliance period in Ontario's linked Western Climate Initiative partner jurisdictions starts on January first of 2018, and as described in the Ontario government's consultation slides, an early adoption mechanism is planned, so it is reasonable to assume these benefits to non-participants will start to accrue as early as 2017[39].

v) Price Suppression Effects (DRIPE) are Already Lowering Rates

The second item on Table 3, price suppression or DRIPE, is for continental commodity DRIPE. Both Mr. Quinn and Mr. O'Leary cross-examined on Basis or transportation DRIPE, for which storage and other local factors must be considered. Mr. Chernick was quite clear, he has not proposed a value for Basis DRIPE -- he simply suggests that it be studied. He was also quite clear about the impact of storage and balancing at Dawn on continental commodity DRIPE – "it is irrelevant".[40]

As Mr. Chernick noted, the DRIPE effect is in accord with the most basic writings of Adam Smith from the 1700s. Mr. Sloan of ICF agreed that DRIPE has a rate lowering effect[41]. Clearly zero is the wrong number. Mr. Chernick's DRIPE evidence is the only evidence before the Board quantifying this effect. He was careful to utilize the more conservative coefficient derived from the more recent U.S. office of Energy Information Administration model runs which account for the significant impacts of shale gas development. An alternative approach suggested by Board Staff in the technical conference was analysed and found to lead to even higher estimates of price suppression effects[42].

---

[35] M.GEC.ED.12 Attachment 2 page 1
[36] V.9 p.192-193.
[37] http://www.ontario.ca/laws/statute/90e19/v27?search=environemtal+protection+act See clauses 176.1 and subsection 9
[38] K5.2, p. 31
[39] K.5.2, p.29 and I.T2.EGDI.GEC.31
[40] V.11, p.58-62
[41] V.1, p.27, l.27
[42] JT3.7 and JT3.8

vi) Reduced Purchase of Expensive Gas Estimates from Enbridge's SENDOUT Model

It is important to note that the third line of table 3, Reduced Purchase of Expensive Gas, is the difference between Enbridge's SENDOUT marginal gas price runs and the average commodity costs included in Enbridge's rates. Thus it was surprising to read Ms. Oliver-Glasford sitting on the joint company panel suggesting that Mr. Welburn, who she called "an expert", feels the value is too high. Quite apart from Mr. Welburn not being qualified as an expert witness, it was Mr. Welburn's SENDOUT runs that are the very data source Mr. Chernick relied upon!

This effect is already in play and will be enhanced by added DSM.

vii) T&D Savings Lower Rates for Everyone

In section 9 (g) under the topic Avoided Costs we address the matter of the utilities' systematic underestimation of avoided infrastructure costs. Whatever conclusion the Board might reach on the actual ratio of DSM savings to infrastructure savings, surely it is inconceivable that reducing gas use on the order of 7% has not already deferred or avoided infrastructure and surely it is clear that DSM will continue to do so[43]. Any such deferral or avoidance lowers rates for all customers. To ignore this effect in considering rate impacts as the utilities have done is a form of willful blindness.

viii) Amortization Could Address First Year Rate Impact if a Concern

If first year rate impacts remain a concern to the Board despite the rate lowering effects of past DSM and despite the rate lowering future benefits that non-participants will enjoy, the Board could use its discretion to amortize DSM expenses in rates to match benefits. In T.U. J10.5 Mssrs. Chernick and Neme provide a detailed analysis of the effect on rates of amortizing DSM expenditures utilizing differing financing assumptions and including or excluding the effect of carbon compliance costs. Notable is their observation that a deferral account with assured recovery would negate any adverse impact on the utilities' cost of capital contrary to Mr. O'Leary's unsupported assertion.

Their results are summarized in the following table:

[43] Union has persisting savings of approximately 8% of its current throughput to retail customers. (See J4.8: total of column a/ 14,204,104.) Enbridge has persisting savings approximating 6.7% of its throughput. (See V.5, p.26 where the last 12 years of annual savings are taken as an approximation of persisting savings given the average 15 or 16 year measure life and compared to throughput.)

Portion of 1st Year Budget Impacts Offset by Benefits Putting Downward Pressure on Rates

	Enbridge		Union	
	Bond (4%)	WACC (7.75%)	Bond (4%)	WACC (8.43%)
Impacts including avoided carbon emission reduction benefits	146%	111%	175%	128%
Impacts excluding avoided carbon emission reduction benefits	71%	54%	80%	58%

The reduction in rate impact in subsequent years is also analyzed in the response and in all years the combined effect of spending and benefits is to lower rates if one includes carbon benefits and to significantly mitigate rate increases from DSM spending even if one were to exclude consideration of carbon benefits.

GEC does not view the rate impact of the scale up we advocate for 2017 and 2018 as undue given the resulting net savings and offsetting rate reductions DSM drives. However, if rate impact remains a concern to the Board, an amortization approach can address it and allow better adherence to the Minister's all cost effective DSM Directive[44].

b) Budgets and Targets Do Not Reflect Best Practices in All Achievable Conservation Jurisdictions

As a result of the Minister's Directive of March 2014 Ontario is an "all cost-effective conservation" jurisdiction. The Directive is tempered by reference to "such other factors as the Board considers appropriate". In the case of DSM budgets obvious considerations include the need for cost-effective delivery, the need for an appropriately paced ramp up (a sub-set of the need to ensure cost-effective delivery), and the need to avoid undue rate impacts. Our submissions above address the latter concern. With respect to cost-effective delivery, GEC has several suggestions for improvement that can be found under topic 3 (Program Types). As to the pace of ramp up, **GEC accepts the pace of budget escalation that the companies have proposed for 2015 to 2016. However, we submit that the ramp up can continue past 2016 without undue *net* budget impacts and must do so to be commensurate with leading**

[44] Note Mr. Neme's caution at V.11, p. 31-32, that if rate basing displaces the need for shareholder incentives this may create an incentive to spend money rather than to save gas. Mr. Chernick then discusses how careful design can avoid that outcome.

jurisdictions, with the electricity sector CDM budgets, and to address the Minister's Directive for achievement of all cost-effective DSM. As discussed above, under Topic 2 (Targets) the forecast savings from Enbridge's and Union's proposed DSM plans are simply not in accord with even the current savings being achieved in leading jurisdictions.

Mr. Neme references the ACEEE efficiency scorecard and notes that the top 8 states in 2013 spent an average of $91 CDN per residential customer, more than double what both Enbridge ($35) and Union ($41) are forecasting for the 2016-2020 period[45].

c) Added Budget in 2016 - 2017 or 2018 for Union's Large Volume Self-Direct Program

We discuss Union's LVC program below under topic 5. Union's current large volume customer program which includes Rate T1 customers, has a budget of $4.5 million[46]. The Self-Direct "program spend" portion delivered to R100/T2 customers represents $3.3 million of this in 2014 and Union notes that similar results could be achieved in 2016 for a total budget of $4 million.[47] Union acknowledges that doubling the budget would lead to roughly double the savings.[48] **If the T1 customers are to be moved to the regular Commercial/Industrial program as proposed by Union, and to accord with the ramp up of the overall budget which almost doubles from 2015 to 2016, it would be appropriate for the 2016 Self-Direct portion of the budget to be doubled.** Even maintaining the existing budget for 2016 would preserve the program infrastructure and benefits it produces for all ratepayers until the free rider study is completed and the carbon cap and trade details are clear, at which point the program could be reviewed.

d) Budgets for 2017

In addition to the added budget for Union's LVC self-direct program, Mr. Neme has proposed a 2016 to 2017 ramp up of 30 - 40%[49]. GEC suggests a $20 million dollar increase of the proposed

---

[45] L.GEC.1, p. 15
[46] A/T2/p. 7, Table 4
[47] B.T3.Union.ED.4 shows T2/R100 spending in 2014 at $3.3 million.
[48] B.T3.Union.ED.4
[49] L.GEC.1, p. 46 & V.9, p. 181

budgets which would raise Enbridge's 2017 budget by 27% and Union's by 36%. As discussed above, such a ramp up would not offend the $2 guideline on a net basis. **The Board should stipulate a budget ramp up for 2017 adding $20 million to each of the companies' proposed budgets in that year to enable a tractable multi-stakeholder discussion of suitable commensurate targets and program improvements.**

e) Budgets for 2018 - 2020

GEC has suggested that the mid-term review occur in 2017 to allow it to have effect in the period starting in 2018. **To address plans for 2018 to 2020 the Board should make clear that growing budgets and targets in pursuit of cost-effective savings are expected and require 3 year plans to be filed in early 2017 allowing for an adequate review period before the start of 2018. The Board should articulate that its default expectation is that the utilities proposed savings levels will be at least as high as the top several gas DSM jurisdictions in North America. Deviations from that expectation should be required to be justified through demonstration that the savings levels are not cost-effective, cannot be achieved, and/or produce undue rate impacts (after consideration of the rate mitigating factors discussed above). DSM proposals from the companies should include rate impact analyses comprised of the DSM budget and the rate reducing impacts of carbon compliance cost reduction, DRIPE as well as improved avoided costs including T&D deferral or avoidance, reduced expensive marginal commodity and transmission, and a revised non-energy benefits adder that is commensurate with the 15% CDM adder on an energy equivalent basis.**

If the mid-term review is not advanced to capture 2018 spending, the Board in the current proceeding should approve 2018 budgets that are each at a level $25 million above our 2017 proposals.

4) Shareholder Incentive

a) Scorecard Concerns

i) Balancing Flexibility and Policy Goals

Both Mr. Neme and Synapse have identified a concern about the extent to which the companies can redirect funds and effort between items within a scorecard. The example of Enbridge's residential retrofit program was referenced throughout the hearing and Mr. Shepherd raised a similar example with Union.[50] The 2014 scorecard and results show how Enbridge achieved 1296% of its participation metric for retrofits (that had a weight of 8%) while not even reaching the lower (75%) threshold for cubic meter savings from resource acquisition (that had been weighted 92%)[51]. Clearly the capability to shift resources to that extent invites gaming and can defeat the attainment of policy goals.

Mr. Neme acknowledged that it is a balancing act to give the right degree of flexibility to the companies while constraining rewards in a manner that respects priorities of the Board and stakeholders. To preserve flexibility he suggested a cap on reward generation for overachievement of 150% but acknowledged that 200% may be acceptable given the policy trade-offs involved[52]. **GEC submits that reward achievement for each metric within a scorecard be limited to 175% of target for that metric.**

ii) Enbridge's Low Income Metric

Enbridge proposes to add high efficiency furnace upgrades to its roster of measures for the low income program (as Union has done)[53]. Mr. Neme notes that this is both extremely expensive and not cost-effective[54]. While the Board has allowed measures to fall below the acceptable cost-effectiveness threshold (1 for most programs, 0.7 for low income programs), GEC submits that significant reliance on this approach does not serve the low income community well. While there may be reasons to occasionally include a measure that does not meet the 0.7 threshold, the routine inclusion of a very cost-ineffective measure like high efficiency furnace replacements, in the context of a capped budget, simply deprives more low income customers of more savings. **Dropping the high efficiency furnace measure from Enbridge's L.I. program would enable allocation of this budget to more cost-effective L.I. measures enabling broader**

---

[50] V.2 pages 17-23.
[51] I.T2.EGDI.STAFF.3 pages 4 & 7
[52] L.GEC.1, p.34 and footnote 73
[53] B/2/s1, p.44
[54] L.GEC.1, p. 37

participation, more equity and more savings for low income customers. This should enable a higher target in 2017 and beyond.

iii) Enbridge's MT and EM Metrics

Mr. Neme observed that Enbridge includes eight different initiatives in its Market Transformation and Energy Management (MTEM) portfolio. Each of those, except for the residential new construction program (Residential Savings by Design) is assigned a single performance metric as part of the Company's proposed MTEM scorecard; Residential Savings by Design is given two metrics. Of the eight initiatives, only three appear to be truly intended to transform markets: Residential Savings by Design, Commercial Savings by Design and Home Ratings. The other five programs appear designed to either educate consumers and/or to test new program design concepts.

While many educational or resource acquisition programs can over time support market transformation, true MT programs are intended to change specific market practices in a measurable way and allow the discontinuance of program support. Success for MT should be measured by rising market shares whereas programs that are primarily about resource acquisition should be measured by cubic meters or participants, or, if new, as pilots, and be captured in the relevant scorecard. Educational programs that are not tightly tied to volume or market share changes, if to be rewarded, should be treated in a distinct scorecard, thus avoiding the potential for large deviations from expectation as we have discussed above in subpart (i) of this section[55].

In accord with Mr. Neme's recommendation, **GEC submits that all metrics associated with Enbridge's Home Health Reports, School Energy Competition, Run it Right, Comprehensive Energy Management and New Construction Commissioning programs be removed from the Company's Market Transformation scorecard. The weight of the remaining metrics can be increased proportionally to account for those removals.**

In regard to the three MT programs that should be maintained in the scorecard, Mr. Neme expressed concerns about the proposed targets for two of them[56]:

- The market share for commercial new construction projects starts off reasonably after the new code is introduced – 15 projects in 2017 out of roughly 170 annual projects,[57] or close to 10% - but hardly grows at all. In fact, three years later, in 2020, the target is only 21 projects. That is not a path to market transformation.

[55] Discussed at: V. 5, p. 66 *et seq.*
[56] L.GEC.1, p. 36
[57] JT1.12.

- The number of home ratings in 2016 (596) is lower than what was actually achieved in 2014 (662).[58] That clearly makes no sense. Moreover, it is only projected to roughly double by 2020. Again, that is not a path to market transformation.

Accordingly, **GEC submits that Enbridge's target for home ratings should be increased by 1000 homes immediately and as part of the 2017 deliberations the Commercial New Construction target should be increased.**

If Enbridge's CEM program is to be rewarded in any scorecard, we note Mr. Neme's observation that the target grows very slowly, especially in the later years (growing to only 10 participants in 2020). This target should be adjusted as part of 2017 deliberations.

iv) Enbridge's C&I Direct Install Metric

Enbridge's cost per lifetime m^3 is roughly 20% higher than other utilities. Mr. Neme suggested that this could be due to a different measure mix but Enbridge offered no explanation for this deviation. At the end of the hearing Enbridge did acknowledge that it may have been conservative in setting its target for this program.[59] **GEC recommends that Enbridge's small volume customer CCM metric be increased by 10% in light of the relatively low m^3/$ forecast for the Direct Install program.**

v) Union's Declining RA Metrics

Union proposes home retrofit program participation at roughly half the level that Enbridge is assuming (on a normalized basis). Union's relatively lower targets were defended based on the fact that Union is assuming deeper savings per home in its home retrofit program than Enbridge. GEC sees no reason that depth should limit breadth. Enbridge's targets are themselves a factor of 2-3 lower than the participation level previously achieved in Ontario at the end of the ecoEnergy program or in other leading jurisdictions[60]. Thus it appears that Union's lower participation rate is simply a reflection of budget constraint. **GEC has called for a budget increase for 2017 and beyond and submits that participation in the home retrofit program should grow (beyond the increase Union is already targeting) commensurate with that increase.**

[58] JT1.36 Attachment 1.
[59] J6.5 p.3
[60] L.GEC.1, p. 26

vi) Union's Low Income Metrics

Union's low income spending per unit of savings is projected to increase by an average of 60% relative to 2014[61]. Mr. Neme suggests that approximately 20% of this increase is due to the inclusion of furnace efficiency upgrades which he indicates are both extremely expensive and not cost-effective. However no explanation for the rest of the increase was forthcoming. While the Board has allowed measures to fall below the acceptable cost-effectiveness threshold (1 for most programs, 0.7 for low income programs), GEC submits that significant reliance on this approach does not serve the low income community well. While there may be reasons to occasionally include a measure that does not meet the 0.7 threshold, the routine inclusion of a very cost-ineffective measure like high efficiency furnace replacements, in the context of a capped budget, simply deprives more low income customers of more savings. Dropping the measure would enable reallocation of this budget to more effective spending and broader participation, more equity and more savings. Accordingly, **GEC submits that Union's low income performance metric be increased by 50%.**

vii) Union's Performance Based Programs

Like several of Enbridge's MTEM programs, Union's RunSmart and Strategic Energy Management programs offer some support for market transformation but are really about resource acquisition. They are better measured by cubic meters than by market share. Accordingly, they should be treated as RA programs or as pilots for scorecard purposes[62]. **Union's performance-based scorecard should be eliminated though the programs should still be funded.**

viii) Adjusting Union's Scorecard to Accommodate the Self-Direct Program

As noted above in Section 2 (c), **under the prior guidelines Union's annual targets were set for the Large Volume program based on a formula which uses actual past year savings and the available budget in the upcoming year to set a target. In the current circumstances GEC submits that continuing this approach would be appropriate for 2016 and beyond.**

Further, as discussed in Mr. Neme's report, allowing the self-direct funds to be spent over a multi-year period would provide customers greater flexibility to plan large projects and should enable larger savings. Union suggested that this would be complicated to track. GEC suggests that any such the complication is a trivial objection to a program improvement that could lead to greater savings, increased customer acceptance, and a shift to larger projects that are less likely to suffer from high free-ridership. **GEC submits that the shareholder reward for the self-direct program should be structured to enable a multi-year approach.**

---

[61] L.GEC.1, p. 37
[62] See L.GEC.1 at p. 37

ix) Shareholder Incentive Level and Reallocation

We have proposed several changes or program deletions above. Consistent with past practice, the available shareholder incentive should be reallocated among the remaining scorecards.

As budget increases in the latter years of the multi-year plan the Board may wish to consider whether an increase of the total available shareholder incentive is warranted. This should be considered in the mid-term review.

5) Program Types

We address inadequate targets for programs that have been proposed above under topic 2 (Targets) and Shareholder Incentive Scorecards (topic 4). Here, we address gaps in program coverage.

a) Cancellation of Union's Large Volume Program

One of the two aspects of the DSM framework that GEC asks be reconsidered is the discontinuation of Union's Large Volume Program. Our rationale for requesting a reconsideration of this direction is primarily that the Board erred in its consideration of this matter in the framework review. In short, the stated reasons for a retreat from the program are not supported by any evidence – to the contrary, all the available evidence suggests that large volume customers, despite their sophistication, do not remotely pursue all cost effective efficiency and are not significantly cross-subsidizing their competitors.

When Ms Long asked the joint panel what is the single most important market for program expansion, Ms Lynch responded: commercial-industrial[63]. GEC agrees.

Environmental Defence took the lead on cross-examination on this issue and in accord with the Chair's request for parties to cooperate on submissions we will also rely in large measure on Mr. Elson's submissions on this matter. However, GEC wishes to address a few key points.

i) Free Ridership:

There is underway a net-to-gross study that will revise free ridership, possibly propose free driver values, and will allow for refinements in program design or delivery that can lower free ridership. Given that one of the primary arguments of large users opposed to the program is that they would pursue efficiency on their own, it would surely be advisable to await actual updated evidence addressing that very matter before reaching a final conclusion on free ridership. At present, all the evidence (as opposed to mere assertions) clearly supports a finding that large volume users do not come close to pursuing all cost effective conservation. Union's witnesses were clear that there are numerous barriers at play including competition for capital, but not limited to that. Numerous studies by experts confirm that view[64]. Every expert

[63] V. 13, pp. 49-50
[64] M.Staff.GEC.12

who spoke to this matter during the hearing agrees[65]. Audited results, accepted by the Board in past reviews, demonstrate significant savings to date *net of free riders*.

To lower free ridership further, Mr. Woolf suggested a payback threshold of 1 to 2 years, however, Mr. Neme, who is far more familiar with the Ontario utilities and the evaluation and audit results has proposed a threshold payback period of 1.5 years, *but only for O&M measures* (as opposed to capital investment). However, Mr. Neme acknowledges that there is a cost to such an approach as it will sacrifice some non-free rider savings. As Mr. Woolf noted and Mr. O'Leary cited in his argument, adding a threshold should improve the free rider rate and these adjustments should go hand in hand. Accordingly, **GEC suggests that the option of a payback period threshold for LVC O&M measures of 1 or 2 years be considered after the current free ridership study is complete.**

If, due to the introduction of carbon cap and trade in 2017 or 2018 industrialists step up their dedication to efficiency, it will be appropriate to continue refinement of free ridership and other inputs and adjust the program accordingly. Union agreed that there would still be opportunity for added conservation[66]. But that should surely await the mid-term review or the next multi-year DSM portfolio and updated free-ridership studies.

Virtually all of Union's LVCs have participated in the self-direct program.[67] It is conceivable that at some point a customer may say that they have exhausted the cost-effective opportunities for efficiency. **GEC supports the approach of LVC programs elsewhere that allow a customer to opt out (or receive a rebate) if they can demonstrate that all cost effective conservation with a payback of 8 or 10 years has been implemented.** The reality is that no customers in those jurisdictions have so demonstrated, confirming the studies which speak to the untapped opportunities for efficiency in the sector[68].

ii) Cross Subsidization of Competitors:

Industrial customer groups (LVCs) do not object to DSM budgets for low income programs. They do object to cross-subsidizing their competitors. But the self-direct program ensures that the majority of the industrial customer DSM payments that are not earmarked for low income programs are not redirected to competitors. So the only objection that withstands scrutiny is a concern about the pure administrative overheads of the program. Of the 0.3% of LVC gas costs

[65] L.GEC.1, p. 30, M.Staff.GEC.12
[66] V.4, p. 160-161, and B.T3.Union.ED.4
[67] L.GEC.1 p.32.
[68] L.GEC.1, p. 31

that go to this program, 68% are self-directed, a further portion is for technical assistance, leaving much less than 0.1% of gas costs that are for common, purely administrative costs[69].

LVCs also suggest that having to spend money on efficiency, and in particular on DSM overheads, hurts their bottom line. But it is clear that the program funds efficiency measures that pass the participant cost test with flying colours, so they reduce customer costs. Moreover the various rate reducing mechanisms that we have discussed above that are not presently captured in avoided costs (reduced carbon compliance costs, DRIPE, etc.) serve to lower industrial rates and bills for participants as well as non-participants. As these effects offset much or all of the entire DSM budget, it is apparent that they more than offset the common cost administrative portion. Industrial customers therefore have nothing to complain about.

iii) Differing Cost-Effectiveness Perspectives:

APPrO and IGUA suggest that the effect of the program is to impose a differing definition of cost-effectiveness on large volume customers. They are correct. The program nudges these customers toward an economic model that considers the system costs avoided. That is precisely what all DSM programs in all sectors do – they overcome the market failure that disconnects customers from the costs they are imposing on the larger system and society by their consumption. That differing perspective is a rationale for maintaining DSM not cancelling it.

iv) Cancellation is Contrary to the Minister's Directive:

Union has acknowledged that continuation of the program could be expected to continue to produce savings at the rate of $39 of TRC benefits for every dollar of program cost[70]. They have also acknowledged that a doubling of the budget would roughly double the results[71].

The Minister has called for an alignment of DSM with CDM[72]. He has called for the achievement of all cost-effective DSM and, as Union's witnesses agreed, we can assume he was using a broad system or societal definition of 'cost-effective'[73]. The IESO is funding large industrial (transmission connected) customer CDM programs at a rate that is 100 times higher than the current gas DSM effort[74]. Gas consumption in Ontario is almost double that of

[69] V.4, p.155 and J.4.1
[70] V.4, p.9
[71] V.4, p.11
[72] Minister's Directive of March 26, 2014 at item 4(ii)
[73] V.4, p.150
[74] V.4, p.15

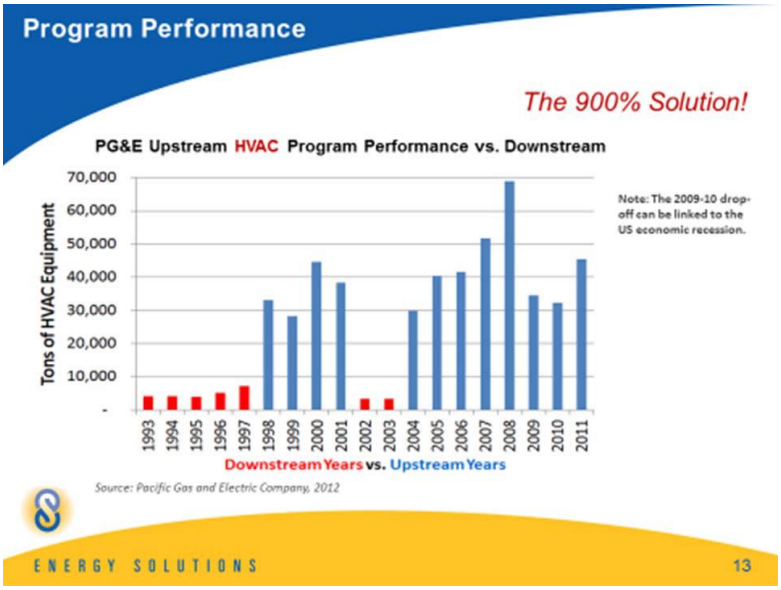
electricity on an energy equivalent basis[75]. DSM program costs to large volume customers are only 3/10s of 1% of their gas bill[76].

Discontinuation of the LVC program is unsupported by the facts and entirely counter to the intent of the Directive and accordingly, GEC submits that Union's Self-Direct Industrial program should be continued.

Further, as discussed in Mr. Neme's report, **GEC supports allowing the self-direct funds to be spent over a multi-year period which would provide customers greater flexibility to plan large projects and should enable larger savings.**

b) Upstream Incentives

The graphic presentation of the effect of upstream incentives in California included in Mr. Neme's report is worth a thousand words[77]:



The approach offers dramatic potential for added savings and is a logical candidate for joint effort by the gas companies.

[75] V.4, p.15
[76] V.4. p. 18
[77] L.GEC.1 Fig. 3, p. 25

There was much hand waving by the companies when asked whether they had and would consider the approach[78]. The reality is that the approach can increase the cost-effectiveness of DSM, reducing the required payout of incentives per cubic meter, and offering dramatic economies of scale. The prospect of dramatically increased participation rates does suggest that a higher budget would be required, but it would lead to a dramatic increase in results, and would likely lead to accelerated market transformation as distributors feature more efficient products, offering the prospect of a reduced need for program support in future years. Mr. Neme identified specific examples of commercial measures that the utilities offer where they have extremely low participation levels. (See his tables 1 & 2 reproduced above under topic 2.) Most of these equipment replacement offers are examples where upstream program designs would work well.

We can only speculate as to why the companies are shy about embracing the approach[79]. It may be that such significant savings disturb their parent corporations that prosper by selling and transporting gas. It may be that the loss of end-use customer incentives will reduce P.R. benefits or that market transformation would end access to shareholder incentives for 'more of the same'. It may be that the companies will take advantage of flexibility and move to this approach mid-term, thereby dramatically easing their access to shareholder incentives. Most likely, the reason is that the utilities are just risk averse and value the direct contact with their customers more than their ability to increase participation and savings. In any event, the Board should not tolerate delay in pursuing such a powerful and cost-effective approach. **GEC submits that the Board should direct the utilities to begin to implement the upstream incentive approach for 2017** and that targets should be revised in the process we have outlined to reflect this. There is very little risk of lower results for the companies if they start in those areas where they have minimal participation to date. Ultimately the Board can take comfort raising budgets and targets knowing that this highly effective program technique is available for the utilities to utilize such funding effectively.

c) On Bill Financing

Mr. Elson took Mr. Woolf through a list of benefits of on bill financing at V.12, p. 82[80]. GEC understands that the utilities have indeed been investigating the approach but it is clear they

[78] See V.2, p. 88-92
[79] In its Argument in Chief Union does commit to exploring the option at V.14, p. 27
[80] See K12.2: "Benefits Of On-Bill Financing"

have done so with little enthusiasm. There can be no doubt that on bill financing can sometimes effectively address both cost and hassle barriers, particularly for larger customers who could then avoid capital requisitions.

As a result, **GEC agrees with the Synapse recommendation that on bill financing be investigated more meaningfully.**

d) New Program Opportunities with Higher Avoided Costs

The Board has appropriately prioritized the broad availability of DSM as a means to enhance equity while increasing overall savings. This concern is particularly important in the residential sector where the initial broad program reach of water heating measures is reaching saturation. While expansion of the home retrofit weatherization programs can certainly increase the number of participants, it is an expensive program on a per participant basis. Mr. Neme pointed out how more accurate avoided costs could reveal new cost effective measures and programs that could have wide application in the residential sector. He included tankless water heaters and triple glazed windows as potential candidate measures depending on the results of improved avoided cost analyses[81]. Assuming water heaters turn over every 15 years, roughly 33% of all residential customers will experience a turnover and would be eligible to benefit from improved water heater efficiency over a five year period.

Accordingly, **GEC submits that added measures and program areas that promise higher participation should be considered for 2017 based on the results of updated avoided cost analyses.**

e) Union's Failure to Address Market Transformation

Union proposes to abandon MT programs. It acknowledges that there are market transformation activities that they could pursue but explains that this was not a priority[82]. GEC submits that a retreat from MT programming for any given measure perpetuates the need for ongoing program and incentive support at a far greater cost and with less result. This is not in

[81] V.10, pp.134-135
[82] V.2, p. 86-87

the interest of anyone but the utility shareholder who wants to reap shareholder incentives but limit the reduction in gas throughput.

GEC submits that the Board should require Union to maintain and update MT programming for 2017 and beyond (see specifics below in section f(i))**.**

f) Union's Failure to Reach New Construction Markets

i) Residential New Construction:

Union proposes to end its residential new construction program at the end of 2016 when the new code comes into effect. Enbridge plans to continue its program adapting to the new code and inspiring the next level of performance. Union suggests this is a matter that could be considered in the mid-term review[83]. We must disagree. This is a classic lost opportunity market. Abandoning the program for the intervening years will miss opportunities, will lock in lost savings for years, will sacrifice visibility and momentum for the program and slow market transformation. The Board's Framework prioritizes avoidance of lost opportunities.

Union's notion that the change of building code must mean an end to the program was specifically refuted in the 2013 audit process. Union's 2013 Auditor recommended that Union design its program to operate through cycles in the Ontario Building Code and begin preparing for the next Code right away[84].

> **Recommendation #20**
> There should be an indication of what the plans are to support attainment of "above code" efficiencies as the codes themselves improve. Whenever possible, the Optimum Home program/Union Gas should promote a set of building techniques that will prepare builders to both meet and exceed the next round of the code.
>
> **Status Update:**
> **Resolved** – Union has taken this recommendation under advisement in next generation planning of the Optimum Home program.

Given this history, Union's reluctance is inexplicable. **GEC submits that the Board should direct Union to maintain its Residential New Construction Program post 2016.**

---

[83] V2, p.84

[84] B.T13.Union.GEC.28 Attachment 1 page 102 Recommendation 20.

ii) Commercial New Construction:

Union has no program dedicated to improving new construction in the large customer segments. Yet Union has approximately 1400 to 1500 commercial new attachments per year, an immense lost opportunity market deserving of a well-designed and targeted effort[85]. Under cross examination it agreed the company completed only 10 new construction projects as part of its general custom program in 2014 and has three so far on the go in 2015, demonstrating another example of extremely low participation rates.[86] Mr. Neme testified that the gas utilities in Massachusetts in 2014 got roughly one-third of their ICI savings from their commercial new construction programs. [87] Again, we note how the Board's Framework prioritizes avoidance of lost opportunities.

Union should be directed to amend its Plan for 2017 to create a Commercial building new construction program.

[85] J2.2
[86] V.2 p.94
[87] L.GEC.1 p. 26

6) Program Evaluation (including Adjustment Factors)

a) Improving the Information Base

Two suggested improvements for evaluation that were discussed in this proceeding were market participation tracking and more frequent free ridership analysis.

i) Market Participation Rates:

In his Tables 1 and 2 (reproduced above under topic 2) Mr. Neme developed estimates of the annual market sizes and participation rates for a few commercial program measures. In his recommendations he stated:

> "Require future DSM Plan filings to include analyses of the size of eligible markets for all proposed measures and programs. This will facilitate evaluation of the proposals and facilitate subsequent evaluation of performance as well. This could be required as added information in the Technical Resource Manual (TRM) for each measure."[88]

Union was asked whether they agreed that tracking participation rates over time would be valuable for planning and evaluation of progress and whether including market size in the TRM would be an acceptable way of doing so. They agreed it would[89]. Enbridge also acknowledged the importance of this information though questioning whether the TRM is the right place[90].

GEC urges the Board to improve its ability to monitor and evaluate program progress by requiring that current market size (not necessarily potential in future) be added to the ongoing project of updating the TRM manual now in production.

ii) Free Ridership Studies

Throughout the hearing free ridership was at the centre of discussions about the value of programs in all sectors. It has been a constant issue in the context of custom C&I programs and has on occasion necessitated extended Board review of savings claims. Auditors of utility results have again and again recommended regular free ridership studies.[91] **GEC submits that annual free ridership studies of custom C&I projects would avoid regulatory disputes and**

---

[88] L.GEC.1, p. 45
[89] V2, pp. 101-102
[90] V.5, p. 72-79
[91] E.g. Union's 2013 Auditor's Report in EB-2014-0273 Exh B/T2 p.34 Recommendation 5

improve the accuracy of results, and would help focus program design and delivery thereby improving both the cost effectiveness of programs and their targeting.

iii) Adjustment Factors

There was lengthy discussion during the hearing of the mechanism for adjustments of targets in light of changes to assumptions. Mr. Neme agreed with the logic for locking in prescriptive savings assumptions and therefore that there should not be retroactive adjustments to targets. **GEC accepts the concept of non-retroactivity of adjustments but submits that non-retroactivity should not affect targets in subsequent years.** As Synapse suggests, the companies should be encouraged to adjust for changes in circumstances.

Mr. Neme distinguished assumptions that are under the influence of the companies such as the free rider rate in custom projects from those that are not. It would be highly problematic if the companies could lower their performance requirements by reliance on their poor program delivery that has for example led to high free ridership. **GEC submits that non-retroactivity of assumption changes should be restricted to assumptions over which the companies have no control.**

The companies propose no formal review mechanism for target changes resulting from assumption changes[92]. If the distinction in treatment between prescriptive assumptions and those within the influence of the companies is accepted, GEC is concerned that there is potential for misapplication of the adjustment. Accordingly, **GEC submits that any change to targets due to assumption changes should be accompanied by a stakeholder comment opportunity that allows for disputes to be brought before the Board for resolution in a simple written process.**

[92] V. 13, p. 4

7) Input Assumptions

See our comments on adjustment factors, above.

8) Cost-Effectiveness Screening

Union has interpreted the Board's 'roll-over' guidance for 2015 to avoid updating its approach to avoided costs as required by the Board under the new Framework. The Board has spelled out its TRC Plus test which includes using a 4% discount rate and including the non-energy benefits adder. **Union should be required to report the results of its 2015 year using the TRC Plus test and a 4% discount rate.**

Please see our submissions on Avoided Costs to be used in screening.

9) Avoided Costs

Avoided costs are a fundamental building block of DSM. They establish the value of energy efficiency to inform utility planning. In its Framework and Filing Guidelines, the Board properly requires that all avoidable costs be included in utility avoided-cost estimates. Failure to include all avoidable costs can lead to a series of errors which undervalue conservation and lead to underinvestment in energy efficiency and an overinvestment in more expensive supply.

As discussed below GEC submits that the avoided cost analyses of both utilities are fundamentally flawed in a variety of ways including:

- A lack of transparency in their development
- Inadequate valuation of non-energy benefits relative to the 15% CDM adder
- Failure to include foreseeable carbon regulation compliance costs
- Failure to acknowledge commodity price suppression benefits
- Failure to capture avoidable local transmission costs in either SENDOUT upstream analysis or Navigant's distribution analysis
- Navigant's inappropriate implicit carrying charge
- Missing or understated values for load related projects
- Failure to adjust design day peak load for growth accommodated by non-load growth driven projects
- The use of normal peak load rather than design peak load impacts
- The assumption that there are absolutely no O&M savings when infrastructure is deferred
- The failure to properly account for supply costs

The importance of avoided cost analysis cannot be overstated. As Mr. Chernick noted:

> "For example, if estimates of avoidable costs used in conservation potential studies are too low then measures and program options that should be included in the study would be considered not cost-effective and would be rejected, reducing the study's conservation potential results. Subsequent program planning may leave out measures and program options that are cost-effective, again resulting in lower energy efficiency targets. Ultimately, an under-investment in cost-effective energy efficiency requires additional higher-cost supply, increasing consumers' costs of natural gas services unnecessarily."

The impacts that Mr. Chernick noted then have follow on effects:

- If measures are screened out fewer customers can participate and equity is reduced.
- If system-wide benefits are reduced rate impacts for all customers, including non-DSM participants increase.
- Underestimation of avoided costs which leads to an underestimate of broad benefits leads to a miscalculation of the appropriate budget caps.
- The failure to include measures and the miscalculation of the appropriate budget caps leads to a failure to address the Minister's Directive to achieve all cost effective conservation.

We address the various flaws in the utilities' approach to avoided costs in the following sub-sections:

a) Access to Information

Like the patricidal child asking for leniency as an orphan, the utilities, after denying access to their models and assumptions repeatedly challenged Mr. Chernick's findings on avoided distribution costs as being based upon an incomplete picture.

Nor did the utilities provide adequate information to their external consultants for their review. Both ICF and Navigant simply accepted the upstream avoided costs generated by the utilities' running of SENDOUT without checking what was included and what assumptions were being made[93]. As we discuss below, for both utilities, local transmission fell through the gap between SENDOUT and the downstream analysis. It is apparent that these external reviewers did not in fact review the adequacy of the utilities' approaches.

GEC sought information in the IR process and then sought to fill the gaps in the technical conference without much success[94]. By the time that was evident it was too late to pursue this matter by contested motion. It is of course both inefficient and sub-optimal to descend into the detail of avoided cost modelling in the hearing room. Mr. Chernick's suggestion of a Board mandated technical committee process for oversight of the derivation of avoided costs seems an eminently reasonable solution to this problem of accountability. **GEC submits that the Board should require the utilities to develop avoided costs in collaboration with an expert**

[93] See for example L.GEC.2, p. 58-61 re: data provided to ICF and see V. 7, p.58 where it is confirmed that Navigant did not review Enbridge's use of SENDOUT and at p.62-63 where it is confirmed it wasn't Navigant's role to determine what is included in distribution costs.
[94] See L.GEC.2 at pp. 44-53 for a review of the problems GEC's experts encountered with disclosure.

working group. This is not a matter for lawyers or generalists. **Stakeholders should be given the opportunity to nominate experts on the avoided costs working group and those experts should be accountable to stakeholders, not to the companies.**

The details of the judgements that have been made in applying the SENDOUT model to DSM or in the listing of projects that are load related have never been subject to external review[95]. Despite a denial of access to the live company spreadsheet models and to the assumptions driving the models and even to the setting of 'switches' in the models, Mr. Chernick was able to isolate several errors and omissions in Enbridge's and Union's avoided cost analyses (see below).

In that Union utilized Enbridge's results for its own estimation of distribution infrastructure savings, the errors in Enbridge's approach to avoided distribution costs infect Union's results as well.

While some of the particular problems identified might be amenable to adjustment in this hearing, the larger problem facing the Board is that there is no way to know to what extent the admitted errors found amidst the information that Mr. Chernick was able to glimpse are representative or not of a pattern of inadequacy. When asked why we should not presume so, Enbridge's witnesses were unable to provide a response – they simply say the work was done in a compressed timeframe[96].

Because the derivation of avoided costs informs measure screening, rate impact analysis and budget setting it is important for this foundational analysis to be transparent, complete and accurate. The problem warrants a procedural solution that will ensure transparency and accountability going forward. It was during the GTA pipeline case that we learned that the utilities had at some point in the past *removed* distribution avoidable costs from the avoided costs they once used. The Board's endorsement of integrated resource planning in that case was a clear indication that ignoring infrastructure cost avoidance is not acceptable. The utilities continue to inadequately recognize these impacts and the Board should insist on a better result.

b) Inadequacy of the 15% Non-Energy Benefits Adder

The Minister has directed the utilization of a 15% adder for non-energy benefits of electricity CDM including environmental, economic and social benefits.

---

[95] V.7, p.56, l.14
[96] V.7, p.69

In his February 4th, 2015 letter to the Board, after noting that the Board had adopted the non-energy benefits adder in gas regulation, the Minister referred to his directive calling for a potential study to be completed by June 2016, and added:

> *"Building on the principle of the non-energy benefit adder, I request that the Board consider, in that study, how such potential DSM benefits as carbon reduction and natural gas price suppression may be used to screen prospective DSM programs and inform future budgets."*

The Minister's recognition of these two factors as building upon the benefits in the adder makes clear that the adder was not intended to substitute for a proper and full inclusion of these factors both in avoided costs and rate impact analyses.

Further, as Mr. Chernick has pointed out, the extent to which the Minister's adder captures carbon does not affect his conclusion that the Board's choice of a 15% adder for gas DSM is simply not commensurate with the Minister's 15% adder for electricity CDM[97].

Mr. Chernick's observation flows from the fact that gas avoided costs are much lower in absolute terms for a given reduction in energy use than are electricity avoided costs. 15% of gas avoided costs is a fraction of the absolute value of 15% of electricity avoided costs for a given energy reduction. A conservation measure that reduces a BTU of electricity use versus the same measure that reduces a BTU of gas use avoids more costs on the electricity system. Utilizing the same *percent* adder for gas DSM dramatically understates the value of the non-system benefits which should be comparable for the same measure in a gas or electrically heated home. Job creation from the measure won't differ. Investment in the Ontario economy to purchase and install the measure will not likely differ dramatically. Customer comfort, health and safety improvements are if anything higher on the gas side. Reduced reliance on imports rather than Ontario resources will, if anything, also be a higher benefit for gas DSM.

Mr. Chernick calculated that if the Minister's CDM adder were assumed to be 100% for carbon, the implied value of carbon was $53/tonne. As Mr. Chernick pointed out to Ms. DeMarco, if one assumes a lower rate of marginal gas burn on the electricity generating system (as she posited) the implied cost of carbon in the Minister's adder rises higher, to over $100/tonne[98]. Given these high values, it is reasonable to assume that the Minister intended much or perhaps all of the adder to reflect other societal benefits not already captured in avoided costs. To demonstrate the effect on the gas adder, Mr. Chernick calculated that if the Minister's CDM adder were 50% attributable to carbon (an implied price of $26.6/tonne) the balance of the

[97] V.9, p. 165 and V.11, p. 171 *et seq.*
[98] V.9, p. 190

CDM adder for other social impacts would equate to a gas DSM adder for matters other than carbon of 9.4 cents/m^3, or roughly 65% of Union's avoided cost per m^3.[99] If the adder is assumed to exclude carbon, this result would double! Clearly, the 15% gas adder is woefully inadequate if guidance is to be taken from the Minister's adder for the electricity adder. At the very least, if the gas adder is to remain at 15%, it should not be degraded further by assuming it also includes carbon and DRIPE. **GEC submits that the non-energy benefits adder should be deemed to exclude carbon compliance costs.**

Indeed, **carbon compliance cost, similar to DRIPE and avoided T&D, is an "energy benefit" rather than a non-energy benefit because it is an actual internalized monetary cost that should be captured in core avoided costs for applicable years.** Thus interpreting the Minister's Directive and letter to treat these items as beyond the adder is entirely consistent with the point of an "adder" for externalities and in GEC's submission is consistent with a logical reading of the Minister's correspondence.

As part of the mid-term review the Board should revisit the adequacy of its proposed non-energy benefits adder in light of the much higher CDM adder (on an energy equivalent basis) directed by the Minister.

c) Carbon Compliance Costs

Mr. Woolf, an expert on DSM and a former regulator, was unequivocal about the need to consider future carbon compliance costs in avoided costs.[100] Measures with an average 16 year life can only be properly evaluated by reference to the best available evidence of avoided costs. Like the forecast of commodity costs that dominates avoided costs, there is uncertainty in a forecast of carbon compliance costs, but we know that zero is the wrong number for the mean value on which to centre the curve of likely values.

Mr. Chernick has taken the medium range of Synapse's analysis of expected carbon values and Mr. Neme has utilized that value (starting at US$20/ton in 2020 and adjusting for the exchange rate, the time value of money and for inflation). That value, roughly Cdn$28 is higher than the current forward market trading price in the Quebec/California auctions. The 2018 value in that

[99] L.GEC.2 p.25 and M.GEC.ED.11.
[100] M.Staff.GEC.2 and V.12 p.3-5.

auction is $16.10 which Mr. Chernick estimated is equivalent to approximately Cdn $19 or 20/tonne adjusted for the carrying cost of pre-purchasing credits for use in future years[101].

Based on Mr. Chernick's values derived from Synapse's median estimates, Mr. Neme in turn estimated that carbon related avoided costs would offset 101% of Enbridge's average annual DSM budget and 129% of Union's. Energy Probe requested the values for alternative Synapse scenarios and these were provided in JT3.1.

While the Board will want to determine which if any of these values to rely upon or what blend of these forecasts might be a reasonable basis to plan upon, in GEC's submission, the companies' approach of using a zero value is simply unsupportable given the Ontario government's explicit commitments and the information available as to the specifics being proposed by the government[102].

Even if the lower current trading prices are utilized, corrected for carrying cost, as set out in J.10.4 the impact on avoided costs would offset 59% and 75% of Enbridge's and Union's DSM budgets, respectively, and would more than offset a ramp up of the 2017 budget to the extent that GEC has advocated.

Enbridge has noted, that the next compliance period in Ontario's linked Western Climate Initiative partner jurisdictions starts in 2018 and as described in the Ontario government's consultation slides, an early adoption mechanism is planned. **GEC submits that it is reasonable to assume that carbon compliance related avoided costs (and the related benefits to non-participants) will start to accrue as early as 2017 and avoided costs should be adjusted accordingly.**[103]

d) Price Suppression (Continental Commodity DRIPE)

Mr. Sloan's firm, ICF, offers this definition of DRIPE:

> *Market price suppression effects represent a potential decrease in natural gas prices resulting from efficiency programs reducing the total demand for natural gas. Also known as the Demand-Reduction-Induced Price Effect (DRIPE), this is a measure of the*

[101] V.11, p. 173
[102] See K2.2 pp. 11-20
[103] M.GEC.IGUA.1 Attachment 1 page 8

> *value of efficiency measures in terms of the reductions in the wholesale market prices of gas seen by all customers (Synapse Energy Economics Inc., 2013). A reduction in the quantity of gas used in one region will reduce the overall demand for gas and therefore reduce the market price for gas supply in all regions supplied by the same natural gas producers. DRIPE will have little impact on the market price of energy, but very small impacts on market prices can result in large absolute dollar amounts when applied to all energy being purchased in the market*[104].

ICF goes on to note how regional impacts can be greater. This is due to "basis DRIPE" that would be in addition to continental commodity DRIPE. The Board should note that both Mr. Quinn's and Mr. O'Leary's cross examinations appeared to conflate Basis and Commodity DRIPE. Mr. Welburn similarly conflated the issues[105].

Mr. Chernick has calculated the impact of price suppression. Mr. Chernick's calculation is based on a coefficient derived from the more recent U.S. office of Energy Information Administration model runs which account for the significant impacts of shale gas development. Alternative approaches suggested by Board Staff in the technical conference were analysed in JT3.8 and found to lead to even higher price suppression effects.

The Minister has called for the Board to consider the impact of DRIPE in time to inform the conservation potential study due in April but the utilities have failed to provide the Board with any study of the effect. Accordingly, Mr. Chernick's report is the only evidence available. **GEC submits that the Board should direct the utilities to utilize Mr. Chernick's and Neme's values for DRIPE in their forthcoming avoided cost updates pending further study that may incorporate the added effect of Basis DRIPE as well.**

e) Basis DRIPE

As noted above both Mr. Chernick and ICF acknowledge the effect of Basis DRIPE which can add to the impact of commodity DRIPE. However, Basis DRIPE must reflect local conditions and is therefore complicated by the complexities of storage, balancing and downstream wholesale users. No value for the effect in Ontario is proposed by Mr. Chernick but he recommends that study be conducted to include the effect in future efforts to refine avoided costs and rate

---

[104] Exhibit A, Tab 2, App. C, page 4
[105] V.7, p. 88 *et seq.*

impact analyses. Mr. Chernick confirmed that these complicating factors that affect Basis DRIPE are not applicable to commodity DRIPE[106].

f) Reduced Reliance on Expensive Gas

As noted above, Mssrs. Neme and Chernick's analysis of the value of reducing reliance on gas supply at the margin that is at a higher price than average gas costs in rates was based on gas costs used in avoided costs as produced by SENDOUT runs conducted by the companies as compared to average gas costs in rates. Thus these impacts are already captured (however imperfectly) in avoided costs. They are however not captured in the rate impact analyses conducted by the companies[107].

g) Avoided Distribution Infrastructure Costs

i) Issues Common to Both Utilities

ICF's review of Union's avoided costs criticised Union for failing to include avoided T&D costs. Union responded by relying on Enbridge's analysis of its avoided distribution infrastructure costs. ICF did not review Enbridge's analysis[108]. Accordingly, our comments on Enbridge's approach apply to both utilities.

In Exhibit L.GEC.2 Mr. Chernick identified six ways in which Enbridge has underestimated avoidable distribution costs[109].

- Failure to capture avoidable local transmission costs in either SENDOUT upstream analysis or Navigant's distribution analysis
- Navigant's inappropriate implicit carrying charge
- Missing or understated values for load related projects
- Failure to adjust design day peak load for growth accommodated by non-load growth driven projects[110]

---

[106] V.7, p. 170
[107] V.7, p. 95-96
[108] V.1, p. 30
[109] L.GEC.2, pp. 28-42
[110] In addition to pointing out gaps in the historical listing of load related infrastructure investment, and in the options for the future to lay off costs should load be reduced, Mr. Chernick pointed out how Enbridge has

- Navigant's use of normal peak load rather than design peak load impacts
- Navigant's assumption that there are absolutely no O&M savings when infrastructure is deferred

Enbridge responded to some of this critique in the oral evidence-in-chief of its panel one. The Board held that Mr. Winstone, the Navigant witness and author of Enbridge's Distribution avoided costs analysis was not qualified to be an expert witness on avoided costs. Mr. Chernick responded to Enbridge's critique in his oral evidence-in-chief[111].

Two themes emerged from this debate. First, Enbridge's refusal to provide information leaves us all in the dark and was not cured in its oral evidence. We have addressed this matter above in sub-part (a).

Second, Enbridge appears to have failed to fully understand and consistently apply its own approach to estimating these avoidable costs. Enbridge's technique is to identify capital additions in recent years and forecast additions for the near future that are 'load related' and then to reflect that in a ratio to load growth. The result is dollars of load related investment per cubic meter of load growth[112]. The concept allows a calculation of how much distribution investment should be avoidable by DSM that reduces load growth. To do this analysis one must look at what has been invested or will shortly be invested. Where Enbridge (and Mr. O'Leary in his cross) go off the rails is in assuming that because a project was not avoided by DSM it was not deferred by DSM and that similar investments in future will be unavoidable and non-deferrable.

The largest example is the GTA project. The Board in the GTA facilities proceeding found that DSM was not a viable alternative to the project at that late stage.[113] But the Board made a point of directing the utilities to consider DSM in facilities planning going forward.[114] The clear implication is that had DSM been considered earlier it could have played a greater role in

---

systematically compounded the error by not deducting from the denominator of the 'facilities investment to load growth ratio' the load growth that they say has been served as a side effect of investments needed for other reasons. This inflated denominator reduces the ratio and therefore the avoided costs thereby derived (see L.GEC.2 p.37 line 10 et seq.)

[111] V.9, p. 162 *et seq.*

[112] Described at V.7, p.64 *et seq.*

[113] "The Board accepts the company's evidence ***related to the timing*** in which the reliability and load growth issues must be addressed, given the physical system risks involved, and concludes that DSM and/or rate design options are not a sufficiently viable alternative in these circumstances to warrant denial of the project." EB-2012-0451 Decision at p. 45 (emphasis added)

[114] Ibid at p. 47

avoiding or deferring some of the infrastructure investment[115]. Mr. O'Leary suggested to Mr. Chernick that the finding suggests that the facilities were not 'load related' and therefore it was not a mistake to leave them out of the derivation of the ratio of facilities investment to load growth. Mr. Chernick, quite rightly, could barely contain his astonishment at the suggestion that pressure buildup was not load related[116]. Mr. O'Leary's conclusion that a pressure problem is not load related does not bear scrutiny. The fact that the GTA project proceeded does not mean it was not load related or deferred by past DSM or that similar future projects are not being deferred by current DSM. The reality is that Enbridge has simply failed to analyse the possibility of systematic infrastructure deferral or avoidance from DSM apart from the project-specific, short horizon, (i.e. when it's too late) approach that they took during the GTA hearing. This was frankly admitted by Ms. Thompson at Volume 7 page 63 where the following exchange occurred:

MR. POCH: Let me just ask, so let's be clear then. There's -- none of segment A was in your -- is in your distribution avoided costs.

MS. THOMPSON: That's correct, but that is because it is not directly linked to load growth.

MR. POCH: I understand what you're saying. If load in Toronto was 7 or 10 percent lower, so that there wasn't this deadline to deal with the pressure problem in segment D [SIC should read Segment B] -- I'm sorry, let's put it the other way. ***If load in Toronto was 10 percent higher than what you've experienced on peak days, would you have had to accelerate the GTA project, much of the GTA project?***

MS. THOMPSON: We'd have to do specific analysis to confirm timing of it. However, generally speaking, when there's an increase in load growth,that does reduce the available capacity, in principle.

MR. POCH: Okay.

MS. THOMPSON: But I'm unable to confirm the specifics without doing specific runs.(emphasis added)

---

[115] See V.11, p. 176 where Mr. Chernick discusses how Enbridge failed to address DSM that could have deferred GTA investments.
[116] V.11 p.101-103.

The hypothetical we offered was not all that hypothetical. Union has conserved 7.5 billion cubic meters [117]. Enbridge has in fact saved 8.8 billion cubic meters of gas over the course of its multi-year program. Union has persisting savings of approximately 8% of its current throughput to retail customers[118]. Enbridge has persisting savings approximating 6.7% of its throughput[119]. The majority of Enbridge's savings came from reducing space heating loads that would otherwise disproportionately add to system peak[120]. But Enbridge and Union witnesses seem reluctant to acknowledge that any infrastructure has actually been deferred or avoided[121].

When we asked Mr. Woolf if he thought this stance by the utilities was credible, he had no difficulty concluding that the position lacks credibility. [122]

Further, looking forward, if Enbridge was able to reduce load it could release some of its GTA Segment A facilities from distribution service and allocate the costs to downstream users or TCPL assuming they could utilize the facilities. (The costs are currently allocated 60:40.) But this option was not even considered in Mr. Welburn's SENDOUT runs:

MR. POCH: Now, isn't it an avoidable cost if you can lay off some of that GTA segment A capacity, for example, at some point? So, for example, we heard that there's been a 60-40 allocation of costs on that portion of the GTA project.

If you can somehow free up with DSM the need for some of that and sell it off to TCPL to resell to other utilities, that's -- to the extent that could happen, that's an avoidable cost? I'm not...

MR. WELBURN: Well, I guess the first thing I would point out is the GTA project wasn't a consideration when we did this SENDOUT run. There was no view into the future as to that even being a possibility at that.

---

[117] V.2, p.77 referring to Exhibit B, T13.Union.VECC.2
[118] See J4.8 total of column a/ 14,204,104
[119] See V.5, p.26 where the last 12 years of annual savings are taken as an approximation of persisting savings given the average 15 or 16 year measure life and compared to throughput.
[120] A review of the TRC spreadsheets documenting all savings from 2012 through 2014 found at I.T8.EGDI.GEC.8 shows that Enbridge's savings were between 50% and 62% space heating savings during those years.
[121] At V.13, p. 34 Ms Lynch did allow that "*certainly there could have been an impact from past results.*"
[122] V.12 p.8 lines 14-27.

Nor was the possibility captured in the data given to Navigant for distribution:

MR. WELBURN: What I am referring to there is segment A is a single pipeline that is going to be used for two purposes, one for transmission and one for distribution. The distribution component will certainly be utilized by ourselves; the transmission component of that will be contracted out to third parties.

MR. POCH: Okay.

MR. WELBURN: And not utilized by Enbridge.

MR. POCH: Okay, I think we were just having a semantics issue here. The part of segment A that you're going to use for your distribution is -- you're calling it not transmission; you're calling it distribution, is I think is what you've just said, and that's the -- I don't know if it's the 60 or the 40, but it is one of those.

MR. WELBURN: That's correct.

MR. POCH: All right, and am I correct that the possibility of reallocating part of segment A is not in the downstream costs that Navigant has tried to quantify because it wasn't in your tally of reinforcement projects and, in keeping with the scope of their study, it wasn't their job to decide what's upstream and what's downstream?

MS. THOMPSON: Correct, it wasn't their role to identify what reinforcement projects were in versus out.

In summary, from what little information is available it is apparent that Enbridge has systematically understated its avoided distribution costs and the rate reducing impacts of DSM and that Navigant was not put in a position to review or correct this, nor were intervenors.

ii) Union's Application of Enbridge's Distribution Avoided Costs

Union, as a proxy for avoided distribution costs, took Enbridge's avoided distribution costs but instead of utilizing Enbridge's various load shape dependent avoided costs for the same category of load shapes, (e.g. space heating avoided costs for space heating) Union calculated a single weighted average value for all types of savings. This single value was based on the

weighted share of Union's estimated 2013 savings. But Union's 2013 savings are dominated by the flatter and therefore lower avoided costs of industrial load and are not representative of loads throughout the 2016-2020 period[123]. Thus Union uses a 2% adder when something more reflective of the 4.3% adder (since updated by Enbridge to 5.5%[124]) for heat sensitive loads is appropriate.

If the other corrections Mr. Chernick suggested for Enbridge's values are considered the value should be 12 to 20%[125]. That range would be more consistent with the 11% that Union's much earlier (1997) analysis would render once updated to 2015 dollars[126].

iii) Union's Failure to Include Local Transmission Avoidance

Analogous to Enbridge's failure to count the possible reduced use of the GTA segment A, Union failed to include the portion of its transmission facilities downstream of Dawn that are partly used for distribution loads and could similarly be reallocated to wholesale transmission users. It indicated that these facilities are not needed for its SENDOUT 'upstream' gas costs analysis and clearly they were not included in Enbridge's distribution infrastructure avoided costs that Union adapted and adopted as its 'downstream' costs[127]. Therefore Union clearly did not capture these costs in its avoidable costs.

Using the old Union avoided cost study as an indicator, Mr. Sloan agreed that these local transmission costs alone would be larger than the entire 2% adder Union has adapted for distribution avoided costs[128].

So, like Enbridge, Union's distribution avoided costs significantly understate its true avoidable costs and that in turn results in an understatement of the benefits that DSM generates for non-participants.

h) Problems with Enbridge's Gas Price Forecast

Mr. Chernick identified two problems with Enbridge's gas price forecasting[129]. First Enbridge has ignored price escalation forecasts from standard sources such as NYMEX forwards after

---

[123] Discussed at V. 1, p. 32 *et seq.*
[124] K11.2 page 50, footnote 7 Enbridge indicates the increase in distribution avoided costs it agrees with is 27% rather than the factor of 4 found by Mr Chernick. The 4.3% therefore becomes 5.5%.
[125] L.GEC.2, p.43
[126] *ibid*
[127] V.1, p. 50-51
[128] V.1, p. 51-53
[129] L.GEC.2, p. 53-55

2024 thus ignoring the best estimates. Second, Enbridge utilizes monthly rather than daily gas price inputs in its modelling which understates the decrement to be expected from DSM that addresses weather sensitive load. Enbridge should correct these failings in future avoided cost analyses.

i) Adjustments to Avoided Cost Pending Improvements

In the above sections we have noted how Mr. Chernick has provided values or corrected values for various aspects of avoided costs. GEC has also called for a technical working group to improve T&D avoided costs. **GEC submits that while awaiting further refinement of avoided costs in the mid-term review and the technical working group process that we have proposed, the adjustments to avoided cost values proposed by Mr. Chernick in Exhibit L.GEC.2 should be utilized to enable more accurate screening of measure and program changes[130].**

- **Both utilities should incorporate the value of supply-level gas-cost suppression at 0.76¢/m^3, as an additional component of avoided costs.**
- **Both utilities should incorporate a market value of carbon, starting at about 5.1¢/m^3 in 2017 and rising over time.**
- **Both utilities should include an interim adder of about 9.5¢/m^3 in their avoided costs, to reflect the non-energy benefits of DSM other than carbon mitigation.**
- **Both utilities should include an interim avoided distribution cost of $3,500/$10^3 m^3$ of design-day peak, or about 4.9¢/m^3 of annual space-heating use and 1.4¢/m^3 of annual base load. This would both correct the understatements in Enbridge's analysis and correct Union's error in failing to differentiate avoided distribution costs among load shapes.**
- **Enbridge should revise its avoided costs to include real gas escalation after 2024, of approximately 2% annually above inflation.**

[130] See L.GEC.2, p.5:

10) Accounting Treatment: Recovery and Disposition of DSM Amounts

No Submissions

11) Integration and Coordination of Natural Gas DSM and Electricity CDM Programs

No Submissions

12) Future Infrastructure Planning Activities

Mr. Neme reviewed and agreed with Enbridge's case study approach, suggesting that it be extended to actual on the ground trials. Enbridge witnesses did not disagree with that proposal[131].

In contrast, Union has postponed development of even a transition plan and has not addressed the Board's GTA Decision directive to consider DSM in infrastructure applications. As is apparent from Ms. Lynch's remarks at TC2 pp. 103-104, it has been business as usual:

> MR. NEME: Okay. One last thing related to -- to this question: Have you -- have you had any leave to construct projects come up since the GTA case was completed?
>
> MS. LYNCH: Yes.
>
> MR. NEME: And in those, did you consider the role that DSM could play in deferral?
>
> [Witness panel confers]
>
> MS. LYNCH: We haven't explicitly considered it. We've outlined what we have done.
>
> MR. NEME: Sorry, what does that mean?
>
> MS. LYNCH: So we have outlined what our current approach to DSM is, and how that is captured in our demand forecast. As I said, not specific.
>
> MR. NEME: But you haven't considered what role -- whether additional geographically-targeted DSM could do in those cases?
>
> MS. LYNCH: That's correct.

Given Union's reluctance to moving forward quickly, **GEC submits that Union be instructed to work with Enbridge and within Enbridge's protocols for IRP development. Further, there's no reason to give the utilities four years to study the matter pending the mid-term review. To ensure progress on transition planning for IRP, the Board should require that at least one on the ground case study is launched by each utility as a pilot program by the end of 2016.**

---

[131] V.7, p. 103

In accord with its GTA Decision, the Board should indicate that it will not consider the approval of rate base additions for infrastructure projects where DSM has not been evaluated as an alternative in whole or part.

Mr. Neme has identified research on hourly and daily load shapes as an immediate priority for IRP work as it is the hourly and daily shapes that affect system expansion needs. Enbridge agreed[132]. **GEC asks the Board to highlight the need for immediate progress on hourly and daily load shapes as part of IRP development.** Mr. Chernick observed that Enbridge likely has extensive data available from its load research work over the years that should provide this kind of information.[133] On the possibility that the left hand is not talking to the right hand the Board should direct the Company to investigate existing load research information before spending extra time and money reinventing the wheel.

[132] V.5, p.71
[133] V.11 p.140

13) Other

a) 2017 and 2018 and Mid-Term Review Processes

As discussed by Ms. Frank with the joint panel, the utilities envision results of the mid-term review in the summer or third quarter of 2018, in time to affect plans for 2019. Both suggested that the mid-term review would not require a full oral hearing. This suggests to GEC that the mid-term review, as envisioned by the utilities, will be both too late and inadequate to deal with the numerous matters that need to be addressed.

Too late because a 2018 process the results of which won't be implemented until 2019 does not respond to the government's policy drivers on a timely basis. If the DSM programs, targets and budgets are to take account of carbon pricing and DRIPE findings due in April 2016 (as the Minister requested in his letter of Feb. 4th, 2015) and are to maintain steady progress toward the Directive goal of achieving all cost-effective conservation, the relatively flat budget and savings targets post 2016 must be addressed far sooner than 2019.

A non-hearing process in 2018 will also be inadequate to wrestle with the numerous matters that will have to be addressed including, *inter alia*:

- appropriate measures and programs to be added, altered or discontinued following the conservation potential study now underway
- potential new budgets informed by updated avoided costs and rate impact analyses
- potential new targets
- new avoided costs
- review of gas utility collaboration and gas electric collaboration
- review of progress on Integrated Resource Planning
- consideration of the impacts of carbon regulation
- potential adjustment to the shareholder incentive available

As noted above, the timing with respect to 2015 and the already significant ramp up in budgets for 2016 suggests that it is as of 2017 that a further significant change to the portfolios (apart from Union's industrial program) becomes an issue. With suitable direction from the Board, changes to the 2017 portfolios could be handled in a streamlined manner. **GEC submits that the Board in this proceeding should specify an increased budget level for 2017 and specify whether Union's industrial self-direct program should extend beyond 2015 and require the**

utilities to file new targets for 2017 in time for an ADR and hearing or written process during 2016.

However, for the reasons outlined above **GEC further submits that the mid-term review should occur in 2017 rather than 2018 to allow adjustments for three of the six years of the plan[134]. If the Board is reluctant to accelerate the mid-term review, then 2018 targets and budget should be set in the manner we have suggested for 2017.**

[134] This would still align to the Minister's language on the electric side: "the OPA shall *no later than* June 1st, 2018."

14) Summary of Recommendations

1. Guiding Principles and OEB Priorities

In GEC's submission the $2 residential rate impact guideline (and budget caps based thereon) should be refined to explicitly recognize the net rate impacts from both DSM budgets and the rate lowering effects of DSM, enabling a further ramp up of budgets in 2017 and thereafter.

GEC is asking the Board to reconsider its guideline cancelling Union's large volume customer DSM program and to direct a refinement of that program in light of the results of the forthcoming net to gross study.

2. DSM Targets

The sensitivity analyses of the companies are superficial, seriously flawed, and cannot be relied upon to inform targets should the budget increase post 2016 as GEC has suggested. For the period post 2016 revised targets should be required and subject to review by both intervenors and the Board. Targets for 2017 and possibly 2018 could be developed in a streamlined process a year hence.

Under the prior guidelines Union's annual targets were set for the Large Volume program based on a formula which uses actual past year savings and the available budget in the upcoming year to set a target. In the current circumstances GEC submits that continuing this approach would be appropriate for 2016 and beyond.

GEC submits that a decision by the Board fixing increased budget levels for the period leading up to the mid-term review and determining the issue of the continuation of Union's large volume customer self-direct program would pave the way for a productive stakeholder process that would likely produce a consensus on suitable targets. The Board could then consider the matter in a streamlined process similar to that utilized for the adjustment to the low income programs several years ago.

GEC recommends that the Board direct the utilities to allocate extra funds to C&I program areas and propose revised targets for 2017 and beyond.

While the OPower program would increase the number of participants in any given year, the Board may wish to see that program deemphasized given its relatively high cost and small effect. Adjusting metrics to reflect a shift of some of those resources to the residential retrofit programs would encourage long-term upgrades to building shells and substantial savings to the participants.

GEC submits that the current hearing has produced a record that would allow the Board to determine overall budget and the question of LVC program continuation for 2017 and, if needed, for 2018 (though we submit that numerous uncertainties and data unavailability dictate against setting budgets for 2018 and beyond at this time). This would enable a streamlined target setting process for 2017 and possibly 2018.

It is GEC's submission that the Board should refrain from setting targets for the 2019-2020 period at this time. It is GEC's submission that 2018 would best be dealt with in a similar fashion if the timing of the mid-term review can be accelerated to accommodate that.

3. DSM Budgets

GEC submits that there is adequate evidence to support a further ramp up of budget (on the order of 30-40% above the levels proposed) for 2017 that would not offend the $2 guideline if it is interpreted as a net impact limit.

In the longer term, i.e. for the post 2017 period, the Board should insist on an analysis of the combined impact on rates of the DSM budget plus the various rate lowering impacts of DSM informed by the specifics of the forthcoming carbon regulations, updated DRIPE studies, and by more informed and more complete avoided cost analyses.

GEC submits that the Board should either move the mid-term review ahead to enable implementation in 2018 or raise the budget caps for 2018 at this time through the mechanism we have suggested for 2017 adjustments. The appropriate rate impact and spending cap for 2018 to 2020 could then be addressed in the mid-term review (or for 2019-20 if the mid-term review is not advanced).

While it is not necessary for the purpose of considering budget increase in 2017 to go beyond reinterpreting the rate impact cap as net rather than gross, the $2/month cap should be reconsidered in the mid-term review based on a broad consideration of the benefits of DSM to all customers, to participants, to society and in light of government policy goals. If the mid-term review is not advanced, the Board should at this time specify a budget increase for 2018.

GEC accepts the pace of budget escalation that the companies have proposed for 2015 to 2016. However, we submit that the ramp up can continue past 2016 without undue net budget impacts and must do so to be commensurate with leading jurisdictions, with the electricity sector CDM budgets, and to address the Minister's Directive for achievement of all cost-effective DSM.

GEC does not view the rate impact of the scale up we advocate for 2017 and 2018 as undue given the resulting net savings and offsetting rate reductions DSM drives. However, if rate impact remains a concern to the Board, an amortization approach can address it and allow better adherence to the Minister's all cost effective DSM Directive

If the T1 customers are to be moved to the regular Commercial/Industrial program as proposed by Union, and to accord with the ramp up of the overall budget which almost doubles from 2015 to 2016, it would be appropriate for the 2016 Self-Direct portion of the budget to be doubled.

The Board should stipulate a budget ramp up for 2017 adding $20 million to each of the companies' proposed budgets in that year to enable a tractable multi-stakeholder discussion of suitable commensurate targets and program improvements.

To address plans for 2018 to 2020 the Board should make clear that growing budgets and targets in pursuit of cost-effective savings are expected and require 3 year plans to be filed in early 2017 allowing for an adequate review period before the start of 2018. The Board should articulate that its default expectation is that the utilities proposed savings levels will be at least as high as the top several gas DSM jurisdictions in North America. Deviations from that expectation should be required to be justified through demonstration that the savings levels are not cost-effective, cannot be achieved, and/or produce undue rate impacts (after consideration of the rate mitigating factors discussed above). DSM proposals from the companies should include rate impact analyses comprised of the DSM budget and the rate reducing impacts of carbon compliance cost reduction, DRIPE as well as improved avoided costs including T&D deferral or avoidance, reduced expensive marginal commodity and transmission, and a revised non-energy benefits adder that is commensurate with the 15% CDM adder on an energy equivalent basis.

If the mid-term review is not advanced to capture 2018 spending, the Board in the current proceeding should approve 2018 budgets that are each at a level $25 million above our 2017 proposals.

4. Shareholder Incentive

GEC submits that reward achievement for each metric within a scorecard be limited to 175% of target for that metric.

Enbridge:

Dropping the high efficiency furnace measure from Enbridge's L.I. program would enable allocation of this budget to more cost-effective L.I. measures enabling broader participation, more equity and more savings for low income customers. This should enable a higher target in 2017 and beyond.

GEC submits that all metrics associated with Enbridge's Home Health Reports, School Energy Competition, Run it Right, Comprehensive Energy Management and New Construction Commissioning programs be removed from the Company's Market Transformation scorecard. The weight of the remaining metrics can be increased proportionally to account for those removals.

GEC submits that Enbridge's target for home ratings should be increased by 1000 homes immediately and as part of the 2017 deliberations the Commercial New Construction target should be increased.

If Enbridge's CEM program is to be rewarded in any scorecard, we note Mr. Neme's observation that the target grows very slowly, especially in the later years (growing to only 10 participants in 2020). This target should be adjusted as part of 2017 deliberations.

GEC recommends that Enbridge's small volume customer CCM metric be increased by 10% in light of the relatively low m3/$ forecast for the Direct Install program.

Union:

GEC has called for a budget increase for 2017 and beyond and submits that participation in the home retrofit program should grow (beyond the increase Union is already targeting) commensurate with that increase.

GEC submits that Union's low income performance metric be increased by 50%.

Union's performance-based scorecard should be eliminated though the programs should still be funded.

Under the prior guidelines Union's annual targets were set for the Large Volume program based on a formula which uses actual past year savings and the available budget in the upcoming year

to set a target. In the current circumstances GEC submits that continuing this approach would be appropriate for 2016 and beyond.

GEC submits that the shareholder reward for the self-direct program should be structured to enable a multi-year approach.

5. Program Types

Union's Large Industrial Program:

GEC suggests that the option of a payback period threshold for LVC O&M measures of 1 or 2 years be considered after the current free ridership study is complete.

GEC supports the approach of LVC programs elsewhere that allow a customer to opt out (or receive a rebate) if they can demonstrate that all cost effective conservation with a payback of 8 or 10 years has been implemented.

Discontinuation of the LVC program is unsupported by the facts and entirely counter to the intent of the Directive and accordingly, GEC submits that Union's Self-Direct Industrial program should be continued.

GEC supports allowing the self-direct funds to be spent over a multi-year period which would provide customers greater flexibility to plan large projects and should enable larger savings.

Enbridge and Union:

GEC submits that the Board should direct the utilities to begin to implement the upstream incentive approach for 2017

GEC agrees with the Synapse recommendation that on bill financing be investigated more meaningfully.

GEC submits that added measures and program areas that promise higher participation should be considered for 2017 based on the results of updated avoided cost analyses.

Union (apart from the LVC program):

GEC submits that the Board should direct Union to maintain its Residential New Construction Program post 2016.

Union should be directed to amend its Plan for 2017 to create a Commercial building new construction program.

6. Program Evaluation (including Adjustment Factors)

GEC urges the Board to improve its ability to monitor and evaluate program progress by requiring that current market size (not necessarily potential in future) be added to the ongoing project of updating the TRM manual now in production.

GEC submits that annual free ridership studies of custom C&I projects would avoid regulatory disputes and improve the accuracy of results, and would help focus program design and delivery thereby improving both the cost effectiveness of programs and their targeting.

GEC accepts the concept of non-retroactivity of adjustments but submits that non-retroactivity should not affect targets in subsequent years.

GEC submits that non-retroactivity of assumption changes should be restricted to assumptions over which the companies have no control.

GEC submits that any change to targets due to assumption changes should be accompanied by a stakeholder comment opportunity that allows for disputes to be brought before the Board for resolution in a simple written process.

7. Input Assumptions

(See recommendations on adjustment factors, above)

8. Cost-Effectiveness Screening

Union should be required to report the results of its 2015 year using the TRC Plus test and a 4% discount rate.

9. Avoided Costs

GEC submits that the Board should require the utilities to develop avoided costs in collaboration with an expert working group. Stakeholders should be given the opportunity to nominate experts on the avoided costs working group and those experts should be accountable to stakeholders, not to the companies.

GEC submits that the non-energy benefits adder should be deemed to exclude carbon compliance costs.

Carbon compliance cost, similar to DRIPE and avoided T&D, is an “energy benefit” rather than a non-energy benefit because it is an actual internalized monetary cost that should be captured in core avoided costs for applicable years.

As part of the mid-term review the Board should revisit the adequacy of its proposed non-energy benefits adder in light of the much higher CDM adder (on an energy equivalent basis) directed by the Minister.

GEC submits that it is reasonable to assume that carbon compliance related avoided costs (and the related benefits to non-participants) will start to accrue as early as 2017 and avoided costs should be adjusted accordingly.

GEC submits that the Board should direct the utilities to utilize Mr. Chernick's and Neme's values for DRIPE in their forthcoming avoided cost updates pending further study that may incorporate the added effect of Basis DRIPE as well.

GEC submits that while awaiting further refinement of avoided costs in the mid-term review and the technical working group process that we have proposed, the adjustments to avoided cost values proposed by Mr. Chernick in Exhibit L.GEC.2 should be utilized to enable more accurate screening of measure and program changes.

- Both utilities should incorporate the value of supply-level gas-cost suppression at 0.76¢/m^3, as an additional component of avoided costs.

- Both utilities should incorporate a market value of carbon, starting at about 5.1¢/m^3 in 2017 and rising over time.

- Both utilities should include an interim adder of about 9.5¢/m^3 in their avoided costs, to reflect the non-energy benefits of DSM other than carbon mitigation.

- Both utilities should include an interim avoided distribution cost of \$3,500/10^3m^3 of design-day peak, or about 4.9¢/m^3 of annual space-heating use and 1.4¢/m^3 of annual base load. This would both correct the understatements in Enbridge's analysis and correct Union's error in failing to differentiate avoided distribution costs among load shapes.

- Enbridge should revise its avoided costs to include real gas escalation after 2024, of approximately 2% annually above inflation.

10. Accounting Treatment: Recovery and Disposition of DSM Amounts

No recommendations

11. Integration and Coordination of Natural Gas DSM and Electricity CDM Programs

No recommendations

12. Future Infrastructure Planning Activities

GEC submits that Union be instructed to work with Enbridge and within Enbridge's protocols for IRP development. Further, there's no reason to give the utilities four years to study the matter pending the mid-term review. To ensure progress on transition planning for IRP, the Board should require that at least one on the ground case study is launched by each utility as a pilot program by the end of 2016.

In accord with its GTA Decision, the Board should indicate that it will not consider the approval of rate base additions for infrastructure projects where DSM has not been evaluated as an alternative in whole or part.

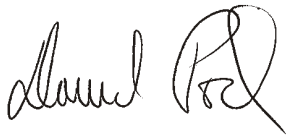
GEC asks the Board to highlight the need for immediate progress on hourly and daily load shapes as part of IRP development.

13. Other

GEC submits that the Board in this proceeding should specify an increased budget level for 2017 and specify whether Union's industrial self-direct program should extend beyond 2015 and require the utilities to file new targets for 2017 in time for an ADR and hearing or written process during 2016.

GEC further submits that the mid-term review should occur in 2017 rather than 2018 to allow adjustments for three of the six years of the plan. If the Board is reluctant to accelerate the mid-term review, then 2018 targets and budget should be set in the manner we have suggested for 2017.

ALL OF WHICH IS RESPECTFULLY SUBMITTED THIS 2nd DAY OF OCTOBER, 2015



David Poch

Counsel to GEC