GAS SUPPLY OVERVIEW AND INTEGRATION

1. INTRODUCTION

Enbridge Gas is committed to undertaking a thorough review of gas supply planning during the deferred rebasing period. The plans were developed to continue to serve the three rate zones: EGD, Union North and Union South, and in that regard are substantially aligned. While bringing the plans together, any residual differences in processes and procedures, and regulatory approach will be resolved over time.

Due to the differences in approach between the two utilities[1], it is important for Enbridge Gas to undertake a complete review to fully understand the implications of integration of the gas supply portfolios. The requirement for a comprehensive assessment is underscored by the utilities' combined gas commodity, transportation and storage expenditures of $2.672 billion in 2017[2,3]. Any detailed review of Enbridge Gas's gas supply planning must consider the Board's *Report of the Ontario Energy Board: Framework for the Assessment of Distributor Gas Supply Plans* ("the Gas Supply Framework"), dated October 25, 2018[4], and how to maximize regulatory effectiveness and efficiency. The Gas Supply Framework addresses filing requirements which will impact the format and content of future rates filings. The timelines specified within the Gas Supply Framework call for two 2019 submissions; a five year plan in January and an annual

[1] EB-2015-0238 Staff Report to the Board, Distributor Gas Supply Planning, August 12, 2016, Appendix A.
[2] EGD's gas costs in 2017, prior to being normalized for weather, were $1.641 billion as per EB-2018-0131 Application and Evidence, Exhibit B, Tab 4, Schedule 1, page 1.
[3] Union's cost of gas in 2017 was $1.031 billion as per EB-2018-0105 Exhibit A, Tab 2, Appendix B, Schedule 1.
[4] EB-2017-0129.

update in May. As stated in EGD and Union's letter to the Board, the utilities intend to file five year gas supply plans in May of 2019 in order to allow for the development and delivery of plans which are inclusive of all of the requirements set forth in the Gas Supply Framework.[5] This filing date will allow the utilities to prepare more complete filings and align with the Board's stated timeline in a manner that maximizes regulatory efficiency for all parties. Following the initial filing of five year gas supply plans, annual updates will be filed in May of each of the following four years.

Enbridge Gas's 2019 gas supply evidence largely represents a continuation of the current approaches to gas supply planning for the EGD and Union rate zones, for the following reasons:

i. important differences existing between gas supply planning processes, methodologies, recovery mechanisms and regulatory constructs at EGD and Union;
ii. the timing of the amalgamation and rate-setting proceeding in EB-2017-0306/0307, as well as the timing of integration execution, relative to established gas supply planning processes; and
iii. the recent issuance of the OEB Gas Supply Framework (EB-2017-0129).

In this Application, Enbridge Gas is seeking OEB approval of the cost consequences of the EGD rate zone 2019 Gas Supply Plan and associated gas cost forecast for 2019. Consistent with Union's past approach, Enbridge Gas is filing the Union rate zones 2018/19 Gas Supply

[5] EB-2017-0129, Letter to the Board, November 20, 2018.

Memorandum for information purposes and the cost consequences for 2019 are subject to treatment within established deferral and variance accounts as further described below.

2. Important Differences between EGD and Union's Gas Supply Planning

EGD and Union operated under different rate setting mechanisms prior to amalgamation and recovered gas costs differently. While both utilities produced annual Gas Supply Memoranda as part of the annual rate setting proceeding, these documents formed only one part of a broader array of quarterly, annual and multi-year submissions relevant to gas supply that each utility made in order to recover their respective gas costs. These differences are apparent in EGD's use of a Custom Incentive Regulation (Custom "IR") and Union's use of a Price Cap IR, and in their respective Board-approved QRAM processes and establishment and clearance of deferral accounts. The side-by-side comparison prepared in the gas supply planning consultation outlines many of the differences in approach.[6]

EGD operated under a Custom IR construct from 2014 to 2018 and sought annual approval of forecast cost consequences of gas supply costs. EGD's annual gas supply plan and supporting exhibits were filed in each year's Rate Adjustment Application.

EGD's OEB approved gas supply plan established key inputs to each of EGD's QRAM Applications for quarterly updates of the approved reference price and clearing the Purchase Gas Variance Account ("PGVA") forecast variances for volume and price. In addition, variances in

[6] EB-2015-0238 Staff Report to the Board, Distributor Gas Supply Planning, August 12, 2016, Appendix A.

storage and transportation costs are cleared through the Storage and Transportation Deferral Account ("S&TDA").

In operating under a Price Cap IR from 2014 to 2018, Union requested approval of a detailed gas supply plan within its 2013 Cost of Service Application (EB-2011-0210) with variances subject to treatment within deferral and variance accounts.

Union's deferral process is designed to capture the difference between actual gas supply costs and the rate reference price, ensuring pass through of gas supply costs to customers negating the need for annual approval of the cost consequences.

Both of the rate setting mechanisms described above have been reviewed and approved by the OEB on multiple occasions. As noted, Enbridge Gas will be investigating how and whether these two regulatory approaches can eventually be integrated; such integration will take time to fully analyze and any approach that makes changes to the QRAM and deferral processes must be ultimately approved by the OEB.

3. Timing of Amalgamation Decision and Execution

Due to the differences in gas supply approaches between EGD and Union and the timing of the amalgamation, Enbridge Gas is providing separate gas supply evidence for each of the EGD and Union rate zones.

On August 30, 2018 the OEB issued its Decision and Order which approved the amalgamation of EGD and Union. On October 15, 2018, EGD and Union filed a letter with the OEB indicating the utilities' intention to proceed with amalgamation effective January 1, 2019.

Because advance planning and implementation of long-term gas supply transactions is required, both EGD and Union made or implemented all significant gas supply decisions impacting the 2018/2019 winter prior to receiving the OEB's Decision and Order on August 30, 2018.

For 2019, Enbridge Gas will continue to operate gas supply planning separately for EGD and Union rate zones as there are already comprehensive plans in place, largely implemented, to meet the needs of customers in each delivery area.

The nature of gas supply planning is such that as integration of gas supply planning evolves, changes to Enbridge Gas's gas supply portfolio will take place on a gradual basis, taking into account existing gas supply, transportation and/or storage contracts held by the two legacy utilities.

4. FRAMEWORK FOR THE ASSESSMENT OF DISTRIBUTOR GAS SUPPLY PLANS (EB-2017-0129)

The creation of the Gas Supply Framework is the culmination of a series of regulatory initiatives following the extremely cold winter of 2013/2014 in which natural gas demand and prices across a large portion of North America rose significantly. These regulatory initiatives included a review of EGD and Union's respective approaches to QRAM (EB-2014-0199), the 2014 Natural

Gas Market Review (EB-2014-0289), a stakeholder consultation on Distributor Gas Supply Planning (EB-2015-0238), and an OEB Staff Report to the Ontario Energy Board issued on August 12, 2016. On March 16, 2017 the OEB initiated a consultation to develop a Framework for the Assessment of Distributor Gas Supply Plans. Following three stakeholder consultation meetings in the first half of 2017, the OEB issued a draft of the Gas Supply Framework on April 12, 2018. Stakeholder comments in response to the draft Gas Supply Framework were received on June 1, 2018.

On October 25, 2018, the OEB released the final Gas Supply Framework. As discussed above, EGD and Union filed a joint letter with the Board, dated November 20, 2018, noting concerns with the timeline specified in the framework.

The amalgamation of EGD and Union precipitates a comprehensive review of the approach to gas supply planning, execution and regulatory treatment. To begin this significant undertaking prior to receiving the OEB's direction in the Gas Supply Framework would have been premature.

5. STRUCTURE OF 2019 GAS SUPPLY EVIDENCE

For the reasons outlined above, Enbridge Gas provides this 2019 gas supply evidence in a form that represents a continuation of past practices for each of the EGD and Union rate zones. More specifically, the evidence includes the following, where the Exhibit E, Tab 4 exhibits present the EGD 2019 gas supply evidence and resulting gas costs:

- Exhibit E1, Tab 2, Schedule 1 – Enbridge Gas Distribution Inc.: Gas Supply Memorandum
- Exhibit E1, Tab 3, Schedule 1 – Union Gas Limited: Gas Supply Memorandum
- Exhibit E1, Tab 4, Schedule 1 – EGD: 2019 Gas, Transportation & Storage Costs
- Exhibit E1, Tab 4, Schedule 2 – EGD: 2019 Unbilled & Unaccounted for Gas Volumes
- Exhibit E1, Tab 4, Schedule 3 – EGD: Summary of Gas Cost to Operations Year Ended December 31, 2019
- Exhibit E1, Tab 4, Schedule 4 – EGD: Summary of Storage and Transportation Costs Fiscal 2019
- Exhibit E1, Tab 4, Schedule 5 – EGD: 2019 Forecast Peak Day Supply Mix
- Exhibit E1, Tab 4, Schedule 6 – EGD: Gas Supply/Demand Balance
- Exhibit E1, Tab 4, Schedule 7 – EGD: Status of Transportation and Storage Contracts
- Exhibit E1, Tab 4, Schedule 8 – EGD: Monthly Pricing Information
- Exhibit E1, Tab 4, Schedule 9 – EGD: Gas Supply Future Considerations

2019 Gas Supply Memorandum

October 2018

Contents

Introduction

The purpose of this evidence is to provide an overview of the gas supply planning process used by Enbridge Gas Distribution prior to amalgamation with Union Gas Limited ("Union Gas") and that Enbridge Gas Inc. will continue to use for the EGD Rate Zone for 2019. Enbridge Gas Inc. is therefore referred to as "Enbridge" or the "Company" in this evidence. The Company considered all of the information herein when developing its 2019 fiscal year gas supply plan, the results of which – including supply, transportation and storage sources and costs – can be referenced in Exhibit E1, Tab 4, Schedules 1 through 9.

The objective of gas supply planning is to develop a portfolio of natural gas supply, transportation, and storage assets that provide for the safe, reliable, and cost effective delivery of natural gas to customers.

A gas supply plan is unique to every Local Distribution Company ("LDC"). As such, specific details on Enbridge and its franchise area must be understood in order to comprehend its gas supply plan.

Prior to amalgamation with Union Gas, Enbridge was the largest natural gas LDC in Canada, providing natural gas distribution services to over 2.1 million residential, commercial and industrial customers located in the Greater Toronto Area ("GTA"), the Niagara Peninsula, Barrie, Midland, Peterborough, Brockville, Ottawa, Gatineau (via Gazifère Inc.), and other Ontario communities (collectively the current "EGD rate zone").

The Enbridge System is divided into two distinct regions for gas supply planning purposes: The Eastern Delivery Area ("EDA"), containing Brockville, Ottawa, Gatineau and the surrounding area; and Central Delivery Area ("CDA"), containing the GTA, the Niagara Peninsula, Barrie, Midland, Peterborough, and the surrounding area.

The geographic location of the Enbridge System has a significant impact on the Company's gas supply plan for a variety of reasons, including: climate and weather seasonality; population and customer makeup; and access to natural gas production basins, storage facilities and supply hubs.

Climate and Customer Makeup

The CDA and EDA regions are two of the most densely populated areas in Canada, and the vast majority of residential homes in both regions use natural gas for home and water heating. This fact is evident in the Company's customer makeup, as over 90% of Enbridge's 2.1+ million customers are from the residential sector. While residential customers tend to use gas consistently throughout the year for water heating, the bulk of their usage is for space heating in the winter. The seasonal consumption profile of residential customers is amplified by the particularly seasonal weather patterns experienced in the Enbridge franchise area (i.e., cold winters and hot summers). Pairing this largely residential customer base with especially seasonal weather patterns has a dramatic impact on gas consumption.

On the day of peak consumption, Enbridge customers consume approximately nine times the volume of gas than on a day of low (i.e., baseload) consumption.[1]

There are few LDCs that share these unique characteristics. The simplest comparisons to the EGD rate zone are two nearby utilities that experience similar weather seasonality: Union Gas (as it was before amalgamation with Enbridge), in southern and northern Ontario; and Énergir Limited Partnership ("Énergir"), in Montréal and surrounding areas. Although Union Gas' rate zones experience the same weather seasonality, the population density in Union Gas' rate zones are far less than that served by Enbridge and, as a result, Union Gas has fewer residential customers spread across larger geographic delivery areas. In addition, the industrial sector in the Union Gas rate zone are more pronounced than Enbridge's, resulting in a higher percentage of industrial customers on their system (i.e. lower proportion of weather-sensitive load). Alternatively, the population in Énergir's franchise area – particularly in Montreal – is a closer match to that of Enbridge, but the uptake of natural gas use for home and water heating is significantly lower due to the competitive price of electricity in Québec, resulting in a lower concentration of residential customers on the Énergir system as compared to Enbridge.

These climate and customer makeup differences emphasize why there is no "one-size-fits-all" solution to gas supply planning.

Access to Natural Gas Supply

Another element defined by the geographic location of the Enbridge System is its access to natural gas production basins. Enbridge does not have access to any significant local natural gas production within its franchise area, with less than 1% of its annual gas supply requirement locally produced within Ontario. In order to provide safe, reliable, and cost effective distribution of natural gas to its customers, Enbridge procures supply from basins and liquid hubs around North America. These supplies are transported to the markets served by Enbridge through contracted capacity on several upstream natural gas transmission systems that ultimately connect to the Enbridge franchise area and storage facilities[2].

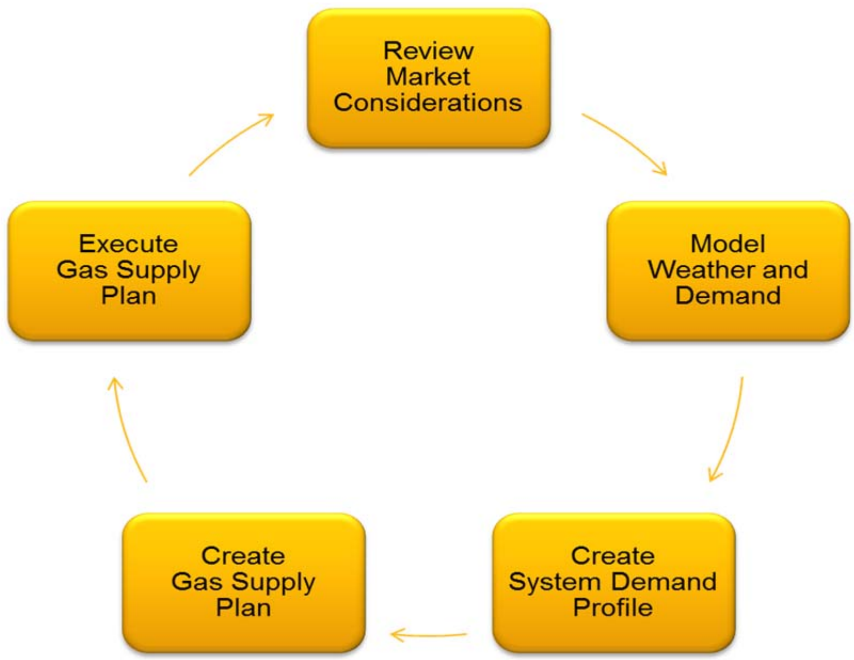
[1] Weather-normalized peak day consumption is approximately 4,000 TJ/d while baseload is approximately 430 TJ/d.

[2] Enbridge owns and leases storage assets near the Dawn Hub near Sarnia, ON; owns storage assets near Niagara Falls, ON; and leases storage assets near the CAN/US border. See Exhibit E1, Tab 4, Schedule 7, pp. 2 for details.

Gas Supply Planning Cycle

Establishment and execution of the gas supply plan is summarized in Figure 1 as a cycle of phases.

Figure 1: Gas Supply Planning Cycle



2.1 Review

The cycle begins with a review of recent and expected future market conditions. As mentioned in Section 1, less than 1% of the Company's annual gas supply requirement is locally produced within Ontario, while the rest needs to be procured from various liquid hubs around North America. The North American natural gas market is evolving at a rapid pace, constantly creating new procurement opportunities. It is therefore imperative that the Company start its annual gas supply planning cycle by reviewing market conditions. A review of current market conditions considered in the 2019 fiscal year planning process is addressed in Exhibit E1, Tab 4, Schedule 1 (Gas, Transportation and Storage Costs), while future market considerations are addressed in Exhibit E1, Tab 4, Schedule 9.

2.2 Weather and Demand

Before developing a gas supply plan, the Company needs to understand the demand profile of its customers throughout the year. As previously mentioned, residential customers make up over 90% of the Enbridge System in terms of customer count. An individual residential customer has a lower average use than a commercial or industrial customer, but has a lower load factor due to the weather sensitivity from space heating. Commercial customers tend to follow a similar consumption profile to residential customers, but most industrial customers tend to have higher base load consumption related to process or operational requirements, and have a more consistent usage pattern.

As per Board-approved methodologies, the Company's Financial Planning & Analysis group forecasts annual demand using variables such as projected heating degree days ("HDD")[3] and customer additions, as well as information from large volume customers. The annual demand budget and HDDs are provided to the Company's Energy Supply and Gas Storage department, where development of the gas supply plan for the upcoming test year can begin. A flow chart of the gas supply budget process is provided as Appendix D; these steps take place in Column 1, Rows 2 and 3.

2.3 Demand Profile

In the demand profile phase, Design Criteria approved by the Board are used to distribute the annual demand budget into a daily demand profile. Much of the information below appears in the pre-filed evidence and Settlement Agreement to EB-2011-0354[4], where the current Design Criteria was approved. In the flow chart at Appendix D, the Design Criteria is depicted in Column 1, Row 1.

For a natural gas utility, Design Criteria refer to one or more statistical or probabilistic conditions and assumptions about weather – usually in the form of HDDs. Design criteria are used to develop gas supply plans to meet forecast utility demand and account for the risk of an extreme weather event or multiple extreme weather events occurring. For gas utilities in cold climates with weather-sensitive loads, such as Enbridge, developing natural gas supply plans to meet expected winter demand including the crucial peak day, or day of highest demand, is extremely important. Peak day demand is derived from the HDDs on a peak day assumed within the Design Criteria. Failing to assume an appropriate level of demand on peak day exposes a utility's gas supply plan to the risk of needing to procure high priced peaking services on short notice, or not being able to meet demand as a result of not contracting for sufficient transportation and storage capacity or ensuring appropriate levels of gas in storage.[5] The inability to meet peak day demand can result in low distribution system pressure or, in extreme cases, system outages along with the economic implications of not having natural gas available for consumption.

Utility Design Criteria generally fall into one of the following two categories:

1) Single Peak Design Criteria, which incorporates statistical conditions about weather applied to a single day, namely, the peak day. Accordingly, developing a gas supply plan based on peak day alone becomes the most important element in supply planning; or
2) Multi-Peak Design Criteria, which, in addition to incorporating the crucial single peak day weather criteria, include statistical conditions about weather applied to other days in the winter season.

[3] A heating degree day is a statistic measuring a given day's average temperature in the number of degrees below a base temperature. In the case of the Ontario natural gas industry, 18 degrees Celsius is used as the base temperature and any degree below 18 degrees Celsius is recorded as a heating degree day. For example, a day on which the average temperature is -2 degrees Celsius would be measured as 18 – (-2) = 20 heating degree days.
[4] Pre-filed evidence can be found at Exhibit D1, Tab 2, Schedule 3, to EB-2011-0354.
[5] Specifics on how Enbridge utilizes storage is discussed in Section 3.3.

The statistical conditions associated with Design Criteria can range from a predetermined recurrence interval to the coldest day on record for the service area or areas in which a utility operates.

A recurrence interval is defined as the average frequency, in years, in which an actual weather event or HDD level is expected to occur. For example, a 1 in 10 recurrence interval would mean that the HDD level assumed on peak day is expected to at least be experienced once every ten years. Another way to express this statement is that there is a 10% probability that the specified peak day HDD value would at least be achieved in any given year. All else equal, the longer the recurrence interval, the higher the peak day HDD assumption in a given year, and the more conservative the gas supply plan.

If the coldest day method is utilized, the peak day HDD value is selected by choosing the coldest day on record and utilizing this HDD value to derive peak day demand that is used to establish the gas supply and transportation portfolio.[6]

In addition to temperature or HDD values, utilities may include other weather variables in their Design Criteria such as wind speed, humidity, sunlight intensity, and cloud coverage. In evidence filed in EB-2011-0354, Navigant Consulting, Inc. (on behalf of Enbridge) identified two weather parameters that affect load: temperature and wind speed. Other variables were not found to have significant influence.

The Company's current Design Criteria utilize a 1 in 5 recurrence interval and 18 multi-peaks representing the coldest temperatures that are expected to occur over the winter season of the planning period, covering January through to the end of March. Multi-peaks are developed for each of the Central, Eastern and Niagara regions of Enbridge's franchise area.

When the temperatures are plotted on a graph, they fit a bell curve distribution. From a statistical perspective, there are a number of bell curve distributions that have different characteristics. With respect to the multi-peak weather conditions, the curve that most closely represents the temperature data is a lognormal distribution. The 18 multi-peaks in the current Design Criteria correspond to a recurrence interval of 1 in 5 years and are derived assuming a lognormal distribution of degree days.

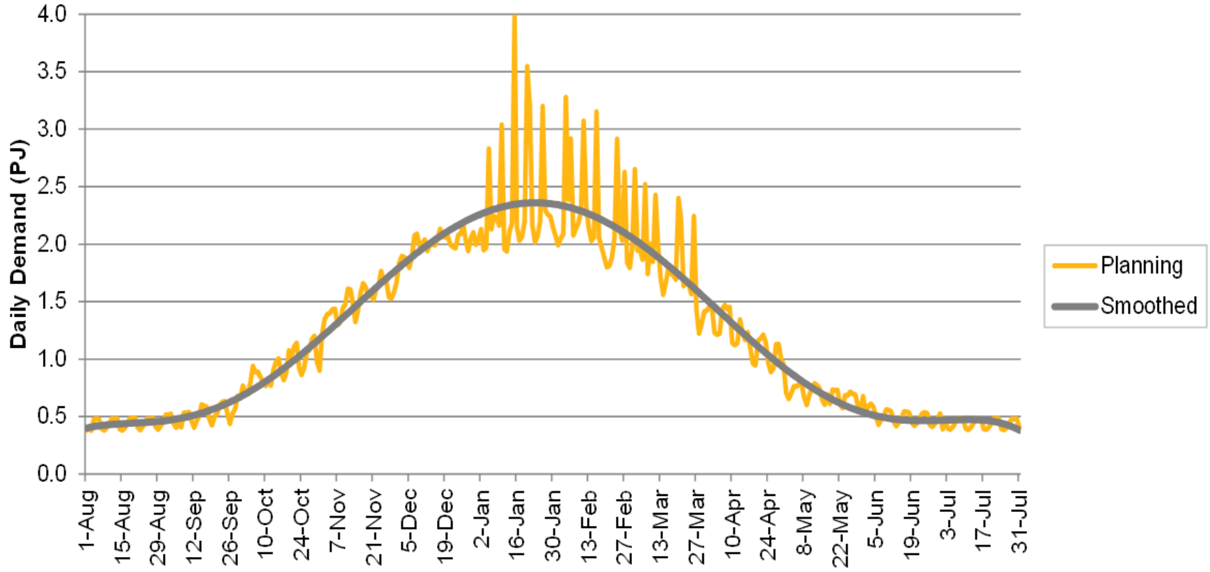
Table 1 below shows the peak day HDD values used in the current Design Criteria for each region. Figure 2 illustrates the resulting daily demand profile used in developing the gas supply plan.

Table 1
Peak Day HDD Value for Each Region under Existing Design Criteria

Central Weather Zone	Eastern Weather Zone	Niagara Weather Zone
41.4	48.2	38.8

[6] Note that the recurrence interval method can produce the same result as the coldest day method by picking a recurrence interval sufficiently long, according to underlying distribution assumptions, so as to match the resultant HDD value to the coldest day on record HDD value.

Figure 2: Illustrative Daily Demand Profile



The demand profile in Figure 2 represents natural gas demand on the entire Enbridge System. It is an amalgamation of demand from residential customers, commercial businesses and institutions, and large and small industrial facilities. Every customer has its own profile and they vary dramatically across customer classes. A residential customer profile is typically the “peakiest”, with demand in winter most impacted by weather. Alternatively, an industrial customer using natural gas as part of its day-to-day operations may be un-phased by weather and have a completely flat profile all year. These varying profiles are often described in terms of “load factor”, a statistic measuring average demand as a percentage of peak demand. In the examples above, an industrial customer using natural gas consistently throughout the year would have a very high load factor, since its average consumption would be nearly equivalent to its peak consumption. Residential customers typically have very low load factors since their low summer demand contributes to lower average annual demand. Load factors and demand profiles of various customer classes are important to understand, but a gas supply plan is ultimately designed for the system as a whole, and in accordance with the one amalgamated demand profile illustrated in Figure 2.

The level of risk, as measured by the recurrence interval assumed in the Design Criteria, has a significant impact on the development of the demand profile and, subsequently, the gas supply plan. A more conservative level of risk (i.e., a longer recurrence interval) produces a gas supply plan with a higher design day that requires higher upfront budget costs to procure storage and transportation assets but it also mitigates the need for higher costs when executing the gas supply plan should actual demand exceed budgeted demand, reducing price volatility on customer bills. The converse is true when a less conservative approach (i.e., a shorter recurrence interval) is used to develop the gas supply plan. Figure 3 provides a qualitative assessment of cost impacts on a gas supply plan resulting from different levels of risk assumed in the Design Criteria.

Figure 3: Design Criteria Risk Matrix

Design Criteria	Demand Variance Above Budget	
	Minimal	High
Risky	Low Budget Cost Neutral Execution Cost	Low Budget Cost High Execution Cost
Conservative	High Budget Cost Neutral Execution Cost	High Budget Cost Low Execution Cost

Gas Supply Plan

Once the demand profile is established, the gas supply plan can be developed. The gas supply plan includes a portfolio of natural gas supply, transportation, and storage assets required to meet demand and a strategy for how those assets will be utilized over the gas supply planning period. The gas supply portfolio is developed and assessed using four gas supply planning principles:

- *Reliability* – As the "supplier of last resort", Enbridge mitigates delivery interruption by sourcing supplies from established liquid hubs and transporting to the Enbridge franchise area on firm transportation contracts;
- *Diversity* – Enbridge mitigates reliability and cost risks by procuring supplies from multiple procurement points and transporting supplies to market and/or storage through several different paths;
- *Flexibility* – The Company manages shifting demand requirements through differentiated supply procurement patterns and provides operational flexibility through service attributes and contract parameters; and
- *Landed Cost* – Enbridge balances gas supply costs with the other principles and ensures low cost natural gas supply for customers.

With the lack of local natural gas production within its franchise area, Enbridge has long relied upon the delivery of natural gas from various basins around North America to its franchise area. The ways in which the Company has natural gas delivered to its franchise area are explored in the following three sections: Section 3.1 discusses the various basins and hubs where Enbridge typically acquires natural gas; Section 3.2 describes the transportation paths and services Enbridge employs to transport gas to the franchise area; and Section 3.3 discusses the Company's utilization of storage assets to manage seasonal swings in demand.

3.1 Gas Supply Sources

The following sub-sections outline the gas supply sources typically utilized by Enbridge in its gas supply plan. The sources correspond to those listed elsewhere in the Company's evidence, particularly Exhibit E1, Tab 4, Schedule 3, Page 1 ("the Summary of Gas Costs to Operations").

3.1.1 Western Canadian Supplies

Historically, the dominant source of natural gas supply for Enbridge has been the Western Canadian Sedimentary Basin ("WCSB"), which spans most of Alberta as well as parts of British Columbia and Saskatchewan.[7] The Company typically refers to WCSB sources as supplies received at Empress, Nova Inventory Transfer ("NIT" also commonly referred to as the Alberta Energy Company ("AECO")), or Alliance Trading Pool location ("ATP").

The Empress trading point of the TransCanada PipeLines Limited ("TCPL") Mainline is near the border of Alberta and Saskatchewan. Gas purchased at, or delivered to, Empress can be transported on the TCPL Mainline to both the Enbridge CDA and Enbridge EDA. A further description of the TCPL Mainline is provided in Section 3.2, Transportation.

AECO/NIT is a point notionally located in the center of the Nova Gas Transmission pipeline system in Alberta. AECO/NIT purchases can be transported on the Nova Transmission system to Empress, and onwards to the Enbridge franchise area via the TCPL Mainline.

ATP supply presents an alternative to Empress and AECO/NIT for procuring WCSB natural gas. This supply can be transported on the Alliance Pipeline to the Chicago Market Hub where it meets the Vector Pipeline. The Company does not currently procure supplies from ATP.

3.1.2 Peaking Supplies

Peaking contracts source gas from third-party suppliers for delivery to Enbridge during the winter season. These supplies are required for only a few days per year (contracts are typically for a maximum of 10 days per year) but are traded at a premium to supplies committed to for lengthier periods. The agreed upon supply must be available to Enbridge on the days the Company chooses to call on the peaking service.

3.1.3 Ontario Production

Gas produced locally within Ontario is immaterial in relative terms.

3.1.4 Chicago Supplies

The central location of the Chicago Hub allows connection to several major gas production regions including Alberta and the Gulf of Mexico, making it another liquid natural gas hub for Enbridge to access. Gas procured at the Chicago Hub can be transported to the Dawn Hub on the Vector Pipeline, where it can be stored or continue its flow to the Enbridge franchise area on paths described in Section 3.2.

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[7] The WCSB is identified by a purple region in Appendix A.

3.1.5 Dawn Supplies

Dawn is the largest underground storage facility in Canada and one of North America's most liquid natural gas trading hubs. Its proximity to the Enbridge CDA as well as its direct access to natural gas supply basins makes it an integral part of the Enbridge gas supply plan. Gas acquired at Dawn can be transported to the Enbridge franchise area on transmission pipelines owned and operated by Union Gas, TCPL, and Enbridge. The Company also stores gas at the Dawn Hub and nearby in Michigan, adding flexibility for gas delivered to Dawn throughout the year.

3.1.6 Niagara Supplies

The Niagara and Chippawa delivery points near the Canadian border with the United States import natural gas primarily from shale plays such as the Marcellus and Utica basins[8]. Gas only started flowing north into Canada at Niagara in November 2012[9], as this was previously an export point for gas on the TCPL Mainline. In its 2015 Rate Application (EB-2014-0276), Enbridge included the Niagara interconnect on TCPL as a receipt point for the first time, with 200,000 GJ/day of supply effective November 1, 2015.

The Niagara Hub is close and well connected to the Enbridge CDA and Company storage facilities near the Dawn hub. Gas procured at Niagara can be transported to the Enbridge franchise area or storage facilities, using transmission pipelines owned and operated by TCPL and Enbridge Gas (formerly Union Gas).

3.1.7 Link Supplies

Enbridge can procure gas at a point referred to as "MichCon Generic", part of the DTE Energy system in and around Detroit, Michigan. Gas delivered to MichCon Generic can be transported on the Vector and Link pipelines to Dawn and Enbridge Gas Storage facilities, respectively.

For the purposes of its gas supply exhibits, these supplies are referred to as "Link Supplies".

3.1.8 Dominion Supplies

As seen in Appendix B, shale gas basins are spread across the continent, with some of the largest and most prolific deposits located in the United States Northeast, such as Marcellus and Utica. The development of infrastructure connecting these plays to the Enbridge franchise area is in the early stages, with several projects in progress.[10] Most relevant to Enbridge is the NEXUS Gas Transmission Project ("NEXUS"), which is a natural gas transmission pipeline that will transport up to 1.5 Bcf per day of supply to northern Ohio, southeastern Michigan, the Chicago Hub in Illinois and Dawn. This project is further discussed in Section 3.2.5.

3.1.8 Delivered Service

Delivered Service refers to contracts with third-party providers typically used throughout the winter season to balance increased seasonal demand. Depending on the arrangement made with the supplier, these supplies can be delivered to Dawn or directly into the CDA or EDA.

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[8] Appendix B displays shale basins around North America; Marcellus and Utica are in the Northeast United States
[9] https://www.neb-one.gc.ca/nrg/sttstc/ntrlgs/rprt/archive/ntrlgssmmr/2012/smmry2012-eng.html
[10] Exhibit E1, Tab 4, Schedule 9 covers projects Enbridge is following in the United States northeast.

3.2 Transportation

Enbridge has contracted for varying levels of capacity on all of the pipelines described in the supply discussions above, including: TCPL, Alliance, Vector, Union rate zone[11], Link, and NEXUS[12]. To maintain diversity and flexibility, Enbridge acquires contracts with varying durations, capacities, and paths. Different paths include long haul (for example, Empress to the Enbridge franchise area) or short haul (for example, Dawn to the Enbridge franchise area). For all transportation contracts, Enbridge pays a demand toll – a fixed monthly charge applied to the Contract Demand (i.e., the reserved capacity on the pipeline) that does not vary according to actual utilization. All TCPL Mainline services contracted for by Enbridge are subject to an abandonment surcharge, and shippers must provide fuel in kind based on posted monthly fuel ratios.

Most transportation contracts are for Firm Transportation ("FT") service (i.e., highest priority service that cannot be cut) throughout the year while other contracts may provide service on a seasonal basis. Contracts that are firm for the entire year present challenges to the gas supply process since Enbridge customers demand significantly more natural gas in the winter than in the summer. To ensure adequate transportation capacity is available to meet peak day demand, the Company acquires a high-level of FT service as part of its portfolio. However, this FT capacity could go unutilized in the summer period when demand is lower. This concept, called "Unabsorbed Demand Charge," is an important consideration in transportation and storage planning. As such, the Company will balance the amount of FT in its portfolio and will utilize other tools (e.g. Storage Transportation Service "STS") to manage seasonality in demand.

Another consideration in transportation planning is a requirement to nominate its transportation contracts within +/- 2% of the Company's demand on a daily basis, or be subject to Limited Balancing Agreement ("LBA") penalty charges. Avoiding LBA charges requires substantial planning and care from the Company's Gas Control team to ensure sufficient volumes are nominated over the course of the day. Nominations can be made in accordance with the North American Energy Standards Board ("NAESB") standard nomination cycles, which include five nomination windows. Two windows, at 1:00pm and 6:00pm, are used to nominate gas for delivery at the start of the next gas day (9:00am the following morning); three windows, at 10:00am, 2:30pm, and 7:00pm, are intraday windows used to nominate gas to be delivered later in the same gas day[13]. Additional windows exist for STS, described in 3.2.1.

The following sub-sections outline the transportation paths typically utilized by Enbridge in its gas supply plan. These paths correspond to those listed elsewhere in the Company's evidence, particularly Exhibit E1, Tab 4, Schedule 7, Page 1 ("Status of Transportation & Storage Contracts") and Exhibit E1, Tab 4, Schedule 3, Page 1 ("the Summary of Gas Costs to Operations").

[11] Transportation, storage and other contracts between EGD and Union cease to exist beyond January 1, 2019. The capacity set out in existing contracts will continue to be used for EGD rate zone customers pursuant to appropriate operating protocols and cost allocation.
[12] NEXUS contract begins October 1, 2018.
[13] All times in Central Standard Time.

3.2.1 TCPL

The 14,101 km TCPL Mainline transports natural gas from Empress (near the Alberta/Saskatchewan border), through the prairies, north of the Great Lakes, and branches off into two lines which form two sides of what is known as the "Eastern Triangle". One branch is directed south towards the Enbridge CDA; the other continues east towards the Enbridge EDA and into Québec. The remaining side of the triangle connects to the Mainline near the Enbridge CDA in the west and near the Enbridge EDA in the east, running parallel to the Canadian border with the United States between the two points.

TCPL also has multiple Transmission by Others ("TBO") agreements. One such TBO is with the Great Lakes Gas Transmission Limited Partnership ("GLGT") – a pipeline that connects with the Mainline near Emerson, Manitoba in the west and St. Clair, Ontario, near the Dawn Hub, in the east. Other TBO agreements TCPL has are on Union Gas's Dawn-to-Parkway System and with Enbridge Gas Distribution Inc.'s Albion Pipeline.

The TCPL Mainline and GLGT are both displayed as blue lines on the map in Appendix A, with the Mainline running north of the Great Lakes and the GLGT south of the Great Lakes.

The following is a list of services Enbridge has historically contracted for through TCPL.

Long Haul Firm Transportation

Enbridge receives long haul FT service with a primary receipt point of Empress and primary delivery point of the Enbridge CDA, Enbridge EDA, or Iroquois[14]. The flexibility of FT service allows for optimization through diversions (i.e., delivery to a delivery point different from the contracted delivery point) and assignments (i.e. the release of contracted transportation capacity to a third-party).

Short Haul Firm Transportation

The Company contracts for short haul FT service on a variety of paths with primary receipt points of Dawn, Parkway[15], Chippawa and Niagara Falls; and primary delivery points of the Enbridge CDA, Enbridge Parkway CDA, Enbridge EDA, and Iroquois. This service provides the same flexible attributes as long haul FT service but along shorter paths.

In its 2018 gas supply plan, Enbridge included the conversion of a portion of its long haul FT service to short haul FT service, concurrently with contracting for additional short haul FT capacity. The conversion capacity and new capacity have primary delivery points of the Enbridge CDA and Enbridge EDA. As of November 2018, the conversion of long haul FT service to short haul FT service was completed and no conversions are planned for the 2019 gas supply plan. The 2019 gas supply plan does include 75,000 GJ per day of new short haul FT service from Parkway to the Enbridge CDA, which has an expected in-service date of November 1, 2019. This capacity is required to manage design day

[14] The Iroquois delivery point on the TCPL Mainline is near Waddington, New York, on the Canada – United States border.

[15] The Parkway delivery point is located near Milton, Ontario, at the south end of the TCPL Mainline and east end of the Union Gas Dawn-Parkway system.

demand growth expected in January 2020 and to help manage the amount of peaking and delivered services held in the portfolio. Details can be referenced in Exhibit E1, Tab 4, Schedule 12 [the Gas Costs, Transportation and Storage Evidence].

Storage Transportation Service (CDA and EDA)

TCPL's Storage Transportation Service ("STS"), in conjunction with long haul FT service, provides transportation to and from a storage location to help the Company manage both seasonal and daily fluctuations in market demand. The service allows for firm long haul injections to be delivered to the Company's storage location all year, and for firm withdrawals out of the storage location to the Company's market in the winter.

For EGD, STS is a companion service to its long haul contracts from Empress to the Enbridge CDA and Enbridge EDA. To inject gas into storage, the Company nominates an Injection Quantity off of its long haul contracts to Parkway/Dawn (EGD's deemed injection location). To withdraw gas from storage, a Withdrawal Quantity is nominated from the storage location (Parkway/Kirkwall) to the applicable market using the STS contract. Enbridge is charged a firm demand toll on the Withdrawal Quantity.

These contracts provide Enbridge flexibility through its three additional nomination windows (eight, in total, versus the typical five windows on other transportation services) which allow intraday, or daily, load balancing. The additional nomination windows are particularly important in the winter, since weather fluctuations can cause significant demand swings throughout the day. In those cases, STS helps avoid LBA charges.

Short Term Firm Transportation

TCPL's Short Term Firm Transportation ("STFT") service has the same reliability as other FT services (long haul or short haul) but is used to fill short term or seasonal transportation needs. The term of service can be a minimum of seven days up to a maximum of one year less one day.

The STFT toll is a biddable toll expressed as a percentage of the applicable FT toll in effect at time of service. In its Decision to RH-003-2011, the National Energy Board gave TCPL full discretion to determine the bid floors for STFT at 100 percent of the corresponding FT rate or higher.

In EB-2012-0459, Enbridge determined it was more cost effective to contract for full year FT service instead of five months of STFT service in the winter of 2014-2015.[16] The Company has not contracted for STFT since that time.

3.2.2 Nova Transmission

The 23,500 km Nova Gas Transmission pipeline system gathers natural gas in Alberta and delivers to Empress where it meets the TCPL Mainline. Acquiring gas at AECO/NIT and transporting to Empress via the Nova Gas Transmission system adds diversity and reliability to the Enbridge gas supply portfolio, as it allows the Company to move upstream of the Empress delivery point. On the map in Appendix A, many

[16] EB-2012-0459, Exhibit N1, Tab 2, Schedule 1, Page 17-19.

of the interconnecting pipelines within Alberta, labeled in blue, are part of the Nova Gas Transmission system.

3.2.3 Alliance Transportation[17]

The 3,848 km Alliance Pipeline system originates near northeastern British Columbia and transports WCSB natural gas southeast to the Chicago Hub. The Company does not currently contract on Alliance but the service presents another option for Enbridge to bring WCSB gas to the franchise area.

3.2.4 Vector Pipeline

The Vector Pipeline is a 348 mile pipeline that links the Chicago Hub to the Dawn Hub, and interconnects with several important points, including the Alliance Pipeline in Illinois, Bluewater Storage in Michigan, and Enbridge Gas Storage in Ontario.

3.2.5 Nexus Pipeline

Enbridge signed a precedent agreement with Nexus for 110,000 Dth per day of firm transportation service commencing on the later of November 1, 2017 or the in-service date from Kensington, Ohio to the Milford Junction interconnect with Vector Pipeline. EGD has commenced service on the pipeline November 1, 2018. The Nexus capacity will enable the Company to diversify its gas supply portfolio while improving the reliability of supplies being transported to Dawn at a competitive landed cost. In EB-2015-0175, the Board granted Enbridge pre-approval for the cost consequences of their respective long-term transportation contracts for Nexus capacity[18]. See Appendix C. Treatment of Nexus costs can be referenced in Exhibit E1, Tab 4, Schedule, 1, section 11.

3.2.6 Texas Eastern Transmission Pipeline

With 9,029 miles of pipeline, Texas Eastern Transmission connects Texas and the Gulf Coast with high demand markets in the northeastern United States. Texas Eastern can transport 11.71 Bcf/d and offers approximately 74 Bcf of gas storage. Texas Eastern also connects to East Tennessee Natural Gas and Algonquin Gas Transmission. Texas Eastern is a major pipeline in the United States and connects Nexus to Marcellus supply through the Texas Eastern Appalachian Lease (“TEAL”) Project. To gain access to a diversified set of secure and reliable supply options for Enbridge’s Nexus capacity, the Company has contracted for 55,000 Dth per day of firm transportation service on TEAL beginning November 1, 2018, for a term of 15 years. TEAL costs can be referenced in Exhibit E1, Tab 4, Schedule 7, item 25.

3.2.7 Link Pipeline

The Link Pipeline extends from a point on the United States – Canada border under the St. Clair River to Enbridge storage assets near Sarnia, allowing the Company access to supply procured at MichCon Generic.

[17] Alliance is visible as a red line on the map in Appendix A.
[18] EB-2015-0166/EB-2015-0175 Decision and Order, December 17, 2015.

3.2.8 Union Gas Transportation[19]

Union Gas M12 Transportation Service connects the Dawn Hub to delivery points at Parkway, Lisgar, and Kirkwall, including a direct connection to the Enbridge CDA. Gas flowing to these points also connects to the Enbridge CDA and Enbridge EDA through services offered by TCPL such as short haul FT, STS and short notice firm transportation (“FT-SN”). The 2019 gas supply plan contains 75,000 GJ per day of new M12 service capacity with an expected in-service date of November 1, 2019. This capacity is required to utilize the same capacity of new short haul FT service on TCPL’s system and allow for delivery to the Enbridge CDA, as discussed in section 3.2.1 above.

In addition to the M12 service, Union Gas offers two other services on this path. The first is the Union Gas C1 service which transports gas from east to west, the opposite direction of the M12 service. This service is used to transport gas delivered to Kirkwall or Parkway (from Niagara or WCSB, for example) for injection into storage in the summer. The second service is a bi-directional M12X service which allows the Company to transport gas from Dawn to Parkway in the winter and from Parkway to Dawn in the summer, corresponding with the periods during which gas is typically withdrawn from storage and injected into storage, respectively.

3.3 Storage

Storage is a cost effective and reliable way to manage variances in annual supply and seasonal demand. In the summer, gas deliveries via upstream pipelines to the Enbridge franchise area exceed customer demand, allowing for excess supply to be injected into the storage facilities that the Company owns or leases from storage providers. Conversely, during the winter season, franchise demand exceeds incoming supply, and this supply deficiency is made up for primarily with storage withdrawals. Storage helps lower gas supply costs by utilizing annual transportation contracts at a higher load factor[20] and enabling supply to be procured at more cost effective times of the year. Storage gas also provides the Company a reliable and flexible source of supply.

Enbridge has underground storage of its own at Enbridge Gas Storage facility near Sarnia in southwestern Ontario and at Crowland near Welland in the Niagara Region. The Enbridge Gas Storage facility is a large multiple-cycle facility, whereas Crowland is a small peak shaving facility. The Company also has, in the past, contracted for unregulated storage from Union Gas and will continue to receive these storage services after amalgamation.[21] The Company contracts for additional market-based third party storage capacity to supplement its storage requirements. The size of the contracted capacity and the term of the contracts vary such that every year Enbridge will enter the market place via a blind RFP process seeking to replace the contracted capacity scheduled to expire March 31 of that year for physical storage, or April 31 of that year for synthetic storage.

In EB-2014-0276, the Board approved a change in how Enbridge manages its storage targets. Historically the Company had established storage targets to maintain maximum deliverability from

[19] See footnote 11.
[20] In terms of transportation contracts, Load Factor = Average Daily Demand / Daily Contract Demand.
[21] The EGD rate zone receives 19.5 PJ of Enbridge Gas’s unregulated storage (formerly Union Gas).

storage until late January to early February in order to meet design or near design demand requirements. As demand declined so too would storage deliverability throughout the winter. To offset the decline in deliverability, the Company would purchase additional Dawn supplies if demand was greater than budgeted. This methodology is adequate in conditions close to or slightly below budget, but the exceptionally prolonged cold winter of 2013-2014 required significantly higher volumes of gas purchased at Dawn during periods of high price volatility resulting in increased gas supply rates being charged to customers. In 2015, in order to avoid this situation from occurring again, the Company began forecasting storage targets such that maximum deliverability from storage could be maintained until the end of February and such that deliverability from storage would be sufficient to meet March peak day as late as March 31. As a consequence of maintaining higher storage balances until end of February and March, this has meant an overall increase in forecasted Dawn discretionary requirement needed in the winter period, when compared to the changes made prior to Enbridge's 2015 Rate Application (EB-2014-0276).

3.3.1 Physical vs. Synthetic Storage

The nature of the Enbridge Gas Storage service described above is an example of "physical storage." Natural gas is typically physically injected into storage in the summer and physically withdrawn in the winter; and there are physical assets such as wells and compressors involved in the injection and withdrawal process.

An alternative type of storage service is referred to as "synthetic storage." In this case, the Company agrees to deliver natural gas to a third-party in the summer period and the party will deliver back the same volume of gas in the winter. Synthetic storage contracts are simple to manage and serve the same purpose as physical storage contracts, but can lack the operational flexibility of physical storage. Other gas supply arrangements with a counter party can have service attributes that are a hybrid of supply exchanges and peaking supplies. These hybrid services can offer enhanced operational flexibility to the Company.

Test year storage contracts, including both physical and synthetic contracts, are identified in Exhibit E1, Tab 4, Schedule 7, Page 2 ("Status of Transportation & Storage Contracts").

3.4 Customer Types

3.4.1 Direct Purchase Customers

Enbridge customers have the option to choose between multiple service types with varying degrees of sophistication. Distribution services, including the receipt of gas at the Enbridge franchise area and delivery to a customer's terminal location are provided to all customers. However, customers may elect to procure natural gas supply and/or transportation to the Enbridge franchise area using other means. The following is a list of the five types of services offered to Enbridge customers:

- Sales Service –the Company to provide gas supply, transportation, and load balancing services to customers;

- Western Transportation Service (“WTS”) – customers deliver gas supply to the Company at the Empress Hub in Alberta and the Company provides transportation and load balancing services to the Enbridge franchise;
- Ontario Transportation Service (“OTS”) – customers deliver gas supply to the Company at the Enbridge franchise area and the Company provides load balancing services to the Enbridge franchise;
- Dawn Transportation Service (“DTS”) – customers deliver gas supply to the Company at the Dawn Hub in southwestern Ontario and the Company provides transportation and load balancing services to the Enbridge franchise;[22]
- Unbundled Service – customers do not require gas supply, transportation, or load balancing services from Enbridge, and are considered outside of the gas supply plan.

Customers that elect to purchase their natural gas requirements directly from an entity other than the Company or who are brokers or agents for an end user are referred to as Direct Purchase customers, and subscribe to one of the WTS, OTS, or DTS services above. Direct purchase customers are obligated to deliver each day to the Company, at a specified delivery point[23] and a Mean Daily Volume (“MDV”)[24] of gas. Fluctuations in the demand for gas at the customer’s terminal location are balanced by the Company and, therefore, it is important to consider what additional storage and transportation assets may be required. For example, a direct purchase customer with a low load factor, such as a residential customer, would be required to deliver the same MDV to Enbridge every day of the year, but their consumption profile could vary dramatically depending on weather. The Company may need to acquire additional capacity to serve this customer in winter, when demand exceeds MDV.

3.4.2 Interruptible Customers

Certain Enbridge rate classes feature interruptible service, whereby customers may be required to curtail their natural gas consumption at the Company’s request. These interruptible customers, and their “curtailment volumes”, are an important component to the system and provide a necessary advantage to the rest of the Company’s customers through the optimal operation of the distribution network. On certain design or near-design days, the Company is able to call curtailment. Once curtailment has been called, interruptible customers must cease consumption of gas, providing Enbridge with the flexibility of additional supply and reduced demand on the distribution system.

3.5 Evaluation

The gas supply planning principles are taken into consideration when evaluating the gas supply portfolio and the resulting gas supply plan. For example, the following questions could be asked about a gas supply plan in any given year:

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[22] This description is specific to Phase 2 of DTS. Details on all phases and conditions of DTS are outlined in the Dawn Access Application & Settlement Agreement, filed under EB-2014-0323.

[23] Delivery points include: Empress, for Western Transportation Service customers; Dawn, for Dawn Transportation Service customers; or the Enbridge CDA/EDA for Ontario Transportation Service customers.

[24] An entity’s MDV is established at the start of a contract year as the average daily consumption over a period (typically 12 months).

Reliability: Does the supply plan source gas from established liquid hubs and contract for firm transportation for delivery of natural gas?

Diversity: Does the supply plan acquire natural gas from a variety of hubs and utilize multiple transportation paths or does it rely on one source of supply and transport?

Flexibility: Is the Company signed into multiple long-term contracts that cannot be changed or will expiring contracts provide for flexibility to make changes if required?

Landed Cost: Taking into account the previous three principles, is the portfolio balanced against the landed cost?

These principles are readdressed in Exhibit E, Tab 4, Schedule 1 for the purposes of evaluating the test year gas supply plan.

For the purposes of balancing the gas supply portfolio cost with the other principles, the gas supply portfolio is evaluated through an iterative process using a modeling application called SENDOUT. Enbridge uses SENDOUT, a software program provided by ABB Inc., to determine the optimal use of its existing gas supply portfolio of resources to meet projected demand requirements. Any solution provided by SENDOUT is achieved by satisfying the objective function of meeting a planned level of demand in a manner that minimizes portfolio costs. SENDOUT is capable of simultaneously evaluating thousands of time-dependent constraints across a forecast period.[25]

3.6 Execution

Once the gas supply plan is established, the execution phase of the cycle takes place. Decisions related to the execution of the gas supply plan are made during operational planning meetings that are typically conducted on a weekly basis during the winter season and bi-weekly during the summer season. These meetings are held more frequently if required. Operational planning meetings are overseen by the Director of Energy Supply and Gas Storage and include a diverse cross-functional team represented by Gas Supply Planning, Gas Supply Procurement, Gas Costs and Budgets, Gas Control Operations, Gas Storage Operations, Distribution Planning, and Key Customer Contract Management. These meetings determine how the gas supply plan is to be executed and include decisions on gas supply procurement and transportation capacity utilization.

In the April 2014 and October 2014 QRAM proceedings (EB-2014-0039 and EB-2014-0191), the Company explained its long term practice of using a seven-day ahead forecast of degree days, along with budgeted weather beyond seven days, to guide gas procurement decisions. This practice changed beginning in 2015. While the Company continues to rely on a seven-day ahead forecast of degree days for making gas procurement decisions for the upcoming week, Enbridge now includes a medium term weather forecasts as a means of assessing medium term demand impacts in order to decide whether or not to adjust its supply plan for the upcoming month or for the remainder of the season. The use of

[25] Information on the SENDOUT software can be found at the ABB website: http://new.abb.com/enterprise-software/energy-portfolio-management/commercial-energy-operations/sendout

medium term weather forecasts provides Enbridge with the ability to adjust planned month-ahead supplies sooner, reducing the probability of daily spot purchases. Conversely, in a warmer than normal year, the medium term forecast gives the Company the opportunity to reduce planned purchases sooner.

3.6.1 Transactional Services

The purpose of Transactional Services ("TS") is to generate revenue from transportation and storage assets that are surplus to the utility's needs on a short term or seasonal basis. Since Enbridge contracts for transportation and storage assets to meet design demand, there are periods of lower demand during which assets go unutilized. TS transactions optimize the use of contracted assets to the benefit of the Company and its customers. To be considered TS, the transaction opportunities must be unplanned, a third-party must be requesting a service, and Enbridge must have temporarily surplus capacity.[26]

Storage Transactions

An example of storage optimization is as follows: A third-party has supply at its disposal in April but does not have a market for that supply until August. The third-party approaches Enbridge about storing gas until August. If Enbridge can accommodate such a request – an injection in April with a withdrawal in August – then Enbridge will do so. The fee for this service will be based upon the price differentials between April and August and the proceeds will be designated as TS revenue.

Transportation Transactions

Transportation optimization occurs when a third-party has gas available at a particular point and needs gas at another point to which they do not have adequate capacity. For example, if Enbridge is approached by a third-party requesting delivery at Iroquois in exchange for delivery at Dawn, the Company would determine if it can accommodate the request without impacting its ability to meet customer demand. If so, Enbridge would implement a point-to-point exchange of gas through the use of one of its transportation contracts and recover TS revenue as part of the transaction.

In both the Storage and Transportation optimization examples above, there is no impact on the Company's ability to meet the needs of its customers, while the transactions generate additional TS revenue by utilizing assets to their maximum potential.

Since the assets used to enter into these optimization transactions are paid for by customers, the majority of TS revenue flows back to customers. However, to incent the Company to maximize TS revenue and, therefore, maximize the benefit to customers, a sharing mechanism exists where a portion of optimization revenues generated is kept by Enbridge. Specifically, 90% of the net revenue from TS transactions is returned to customers while 10% is kept by the Company.

[26] These elements are discussed in detail in EB-2012-0046, Exhibit C, Tab 1, Schedule 6, Page 7 (the 2012 Earnings Sharing Mechanism and Other Deferral and Variance Accounts Clearance Review).

Gas Costs & Budgets

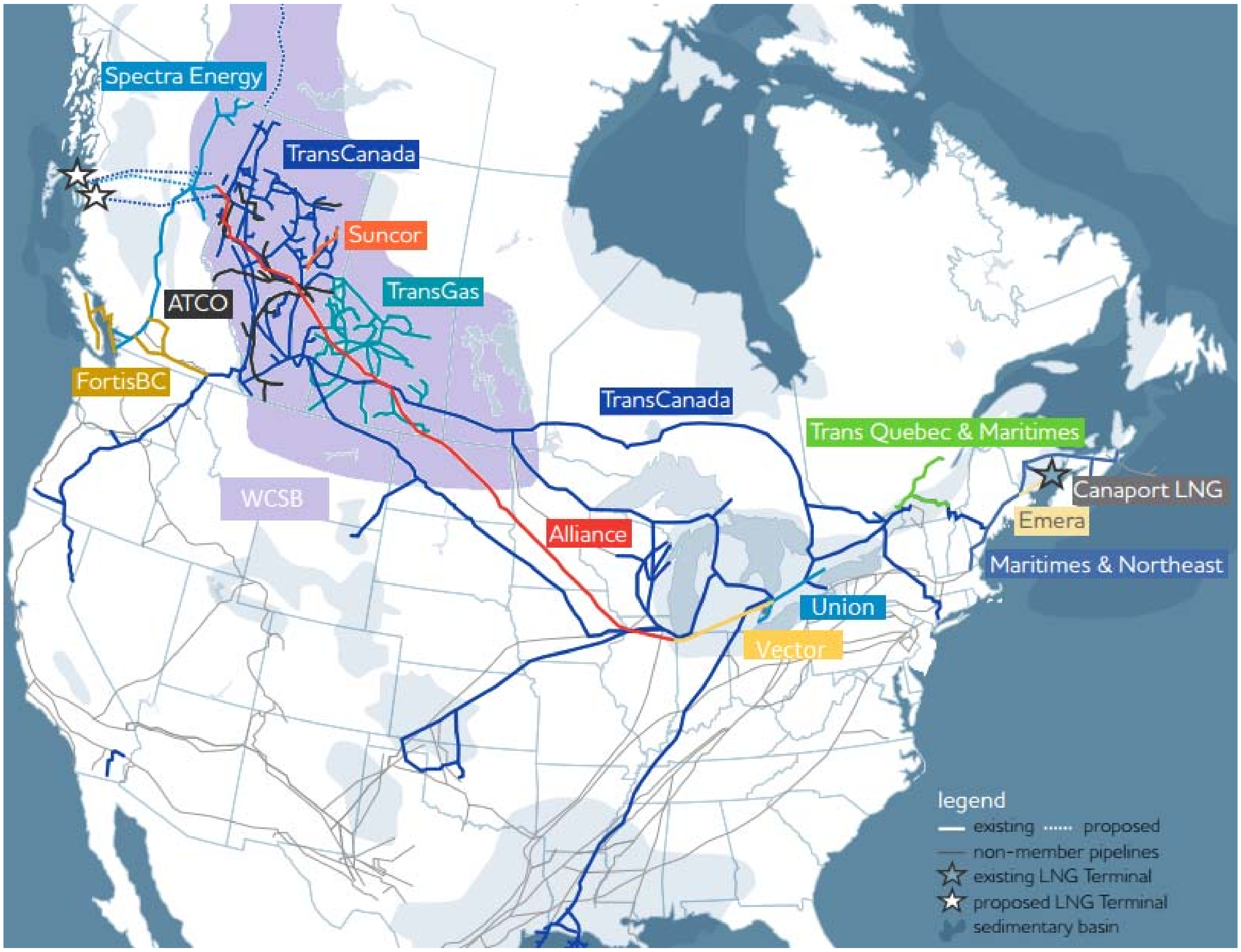
Once the monthly supply portfolio and storage targets have been established, gas costs can be calculated. Enbridge currently purchases all of its gas on an indexed basis, meaning the price is set relative to the price at a particular hub, over a particular period of time (for example, the price could be set relative to the daily spot price or the average price over a month).

Price assumptions reflect the market's assessment (at the time evidence is prepared) of the various expected delivery points in the Company's gas supply plan. The market's assessment can be determined at any point in time by the use of a simple average of forward quoted prices as reported by various media and other services, over a period of 21 business days for a basket of pricing points and pricing indices that reflect the Company's gas supply acquisition arrangements.

Any variance between the actual commodity cost and the forecasted prices of the 2018 gas supply portfolio is captured in the Purchased Gas Variance Account ("PGVA"). Any variation in the forecasted transportation tolls and the actual tolls is also captured in the PGVA. The balance of the PGVA is cleared to customers through a volumetric line item, calculated on a rolling 12-month basis and updated each quarter. Details on the PGVA are filed in the Rate Design evidence of each QRAM.

The cost consequences of the 2019 gas supply plan are produced in Exhibit E1, Tab 4, Schedule 1.

Appendix A

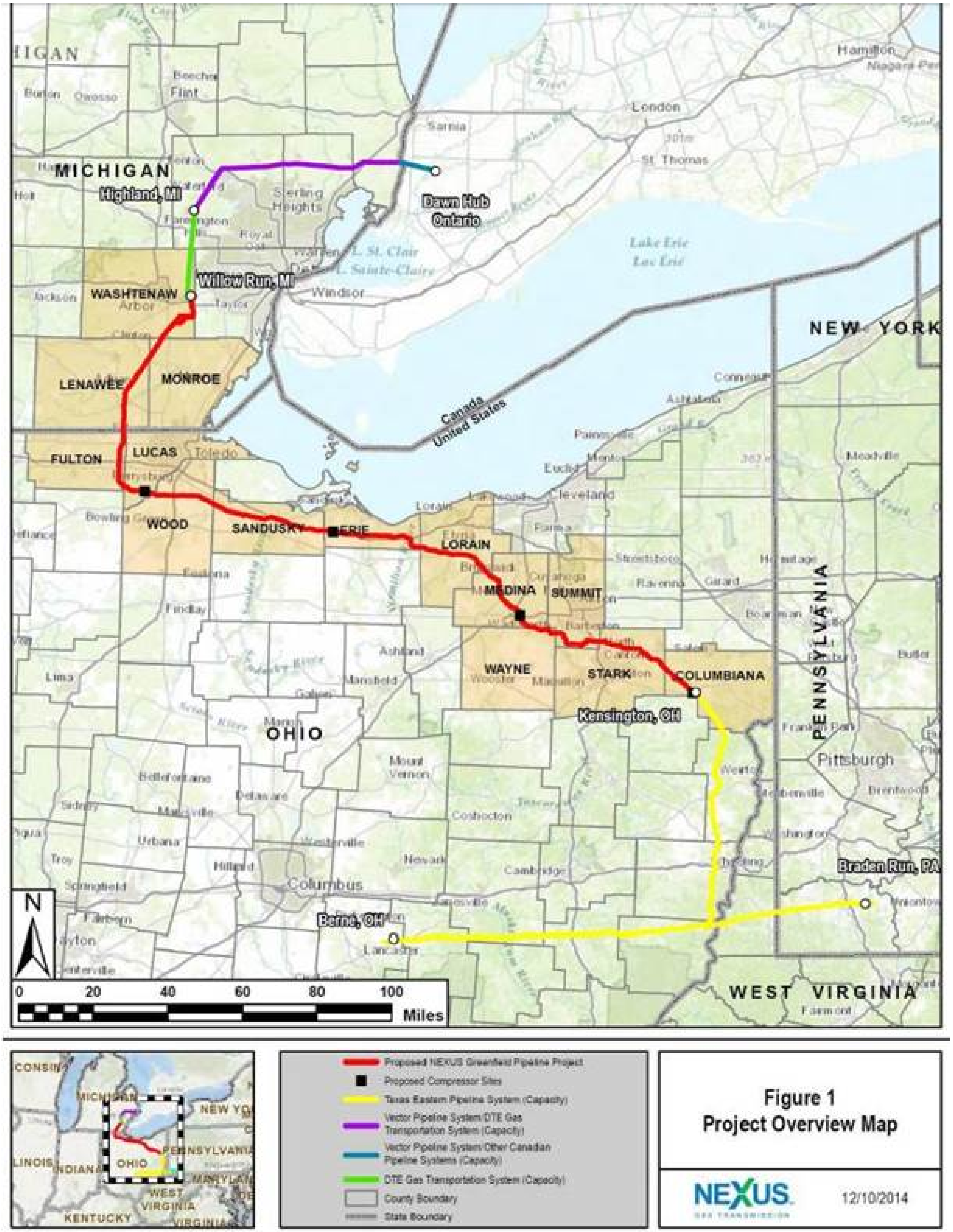


Source: CEPA & Enbridge

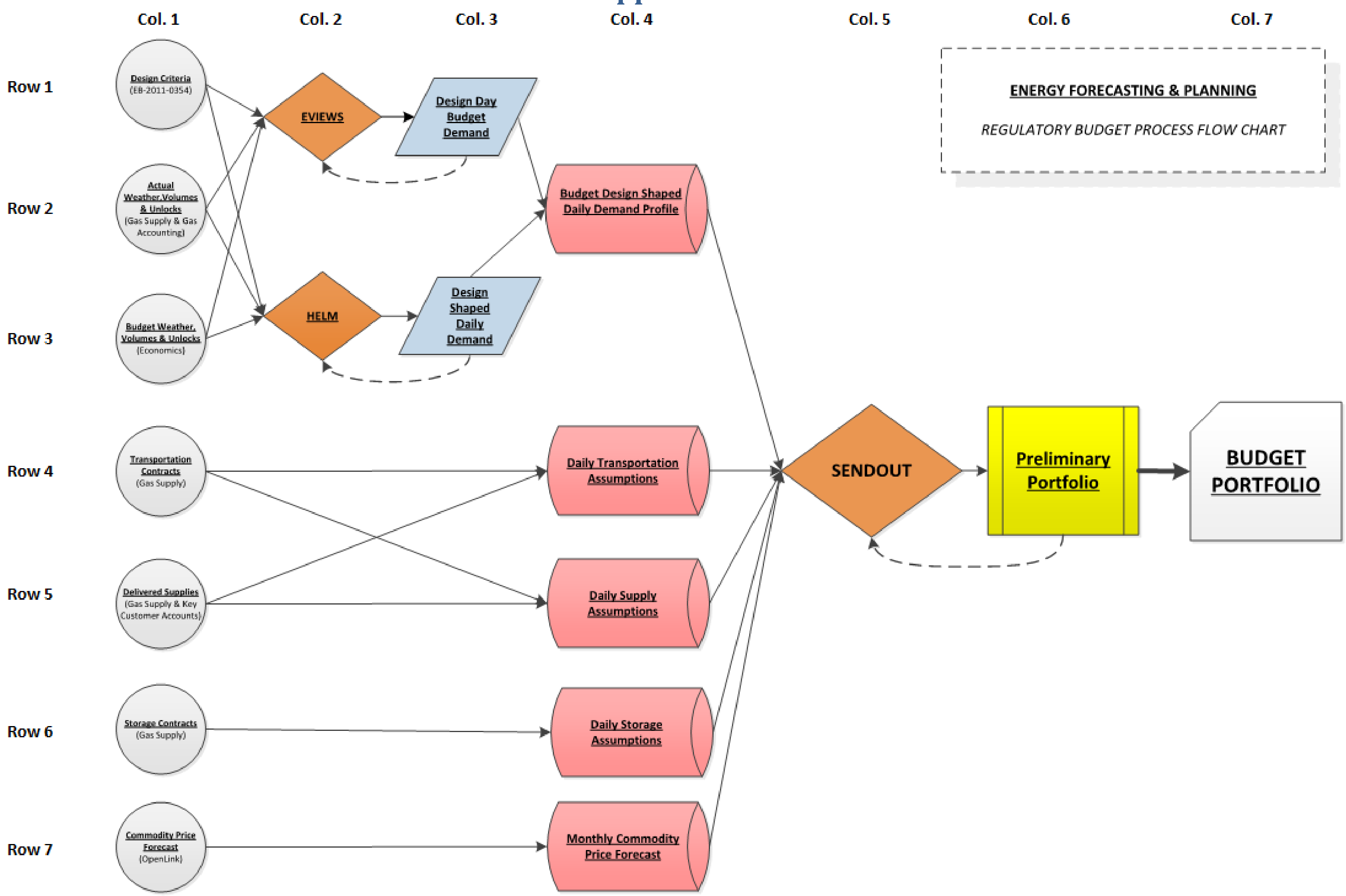
Appendix B

Source: U.S. Energy Information Administration based on data from various published studies. Canada and Mexico plays from ARI.
Updated: May 9, 2011

Appendix C: Nexus



Appendix D



Col. 1
Col. 2
Col. 3
Col. 4
Col. 5
Col. 6
Col. 7
ENERGY FORECASTING & PLANNING
REGULATORY BUDGET PROCESS FLOW CHART
Row 1
Row 2
Row 3
Row 4
Row 5
Row 6
Row 7
Design Criteria (EB-2011-0354)
Actual Weather,Volumes & Unlocks (Gas Supply & Gas Accounting)
Budget Weather, Volumes & Unlocks (Economics)
Transportation Contracts (Gas Supply)
Delivered Supplies (Gas Supply & Key Customer Accounts)
Storage Contracts (Gas Supply)
Commodity Price Forecast (OpenLink)
EVIEWS
HELM
Design Day Budget Demand
Design Shaped Daily Demand
Budget Design Shaped Daily Demand Profile
Daily Transportation Assumptions
Daily Supply Assumptions
Daily Storage Assumptions
Monthly Commodity Price Forecast
SENDOUT
Preliminary Portfolio
BUDGET PORTFOLIO

2018/19 Gas Supply Plan Memorandum

December 2018

Table of Contents

1. INTRODUCTION

This document provides an overview of the 2018/19 Gas Supply Plan ("GSP") of Union Gas ("Union" or "the Company") and includes the underpinning assumptions and the market context from which it was formed. This includes future trends that may impact the GSP going forward.

1.1 Objective of the Gas Supply Planning Process

The objective of Union's GSP is to identify the efficient combination of upstream transportation, supply purchases, and storage assets required to serve sales service and bundled direct purchase ("DP") customers' annual, seasonal and design day natural gas delivery requirements under a set of gas supply planning principles. Balanced consideration of these principles ensures Union's customers have access to secure, reliable and diverse natural gas purchased at a prudently incurred cost. The planning principles are outlined in detail in Section 3.

Union's GSP also guides the Company's gas supply acquisition process. The GSP does not commit Union to the acquisition of a specific supply type or facility, nor does it preclude Union from pursuing a particular supply. Rather, the GSP identifies the transportation and supply volume requirements.

1.2 Summary of Union North and Union South

In Ontario, natural gas is a significant and critical energy source relied on for providing heat and hot water to homes and institutions, fueling manufacturing plants and generating electricity. These applications operate on demand, meeting the consumer expectation that energy will be readily available when needed. Customers in Ontario depend on a reliable supply of natural gas. The natural gas infrastructure needs to be robust and flexible to allow Ontarians long-term access to economic supply in light of the North American supply dynamics.

Union serves approximately 1.5 million customers in northern, eastern and southern Ontario through an integrated network of over 70,000 kilometres of natural gas transmission and distribution pipelines.

Union operates storage and transmission assets that include 180 PJ of underground natural gas storage at the Dawn Hub, and an 8.2 PJ/d Dawn Parkway System. Union's Dawn Parkway System is an integral part of the natural gas delivery system for residents, businesses, industries and power plants located in Ontario, Québec and U.S. Northeast. The Dawn Parkway System connects these markets to North America's major supply basins and the largest underground natural gas storage in Canada, the Dawn Hub.

Union's Dawn Hub has been recognized as a key market hub for the Province of Ontario and the entire Great Lakes region, and is Ontario's energy advantage. The growth of Dawn as an effective and efficient trading hub provides competitive and transparently priced natural gas supplies and services which benefit all Ontarians. Dawn is currently the second most physically traded liquid hub in North America. The liquidity of Dawn stems from the combination of access to underground storage, interconnections with upstream pipelines, take away capacity to growth markets, a large number of buyers and sellers of natural gas and price transparency.

Union is divided into two separate operating areas: Union South and Union North, as shown in Figure 1. Union North is further divided into Union North West and Union North East; each zone is comprised of three delivery areas as outlined below:

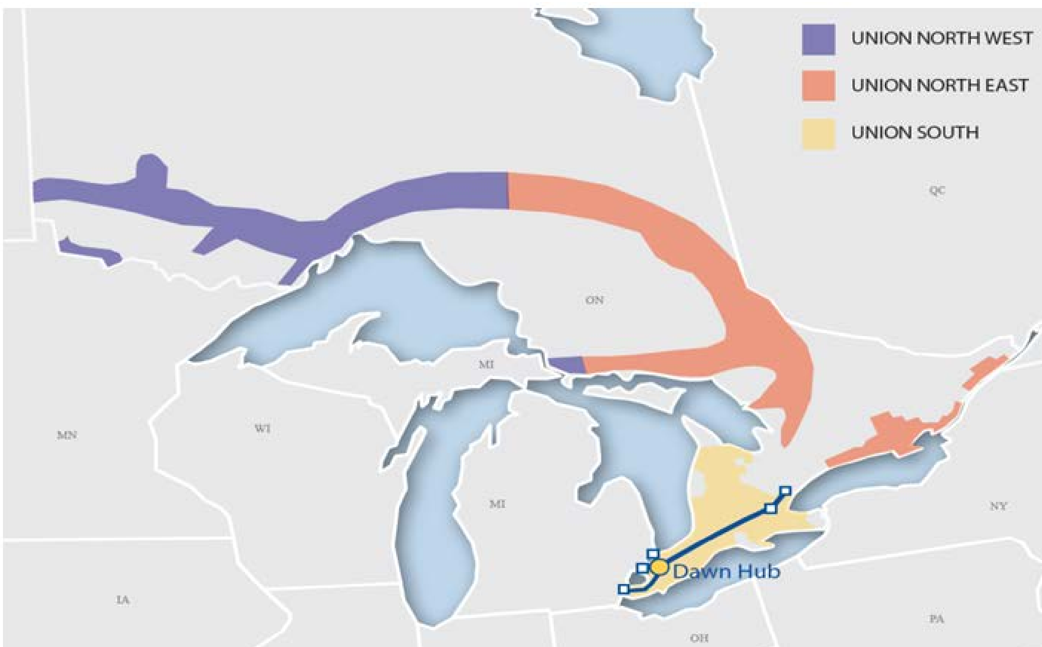
North West Zone:

- Manitoba Delivery Area ("MDA")
- Western Delivery Area ("WDA")
- Sault Ste. Marie Delivery Area ("SSMDA")

North East Zone:

- North Delivery Area ("NDA")
- North Central Delivery Area ("NCDA")
- Eastern Delivery Area ("EDA")

Figure 1



Union North is served exclusively through deliveries off of the TransCanada Pipeline Limited ("TransCanada") Mainline. Five of the six Union North delivery areas align with delivery areas on the TransCanada Mainline. The delivery area that does not align is Union's Manitoba Delivery Area, which is connected to the TransCanada Mainline at the Spruce interconnect in the Centrat MDA by two additional pipelines (Centra Transmission Holdings and Centra Pipeline Minnesota).

Union provides distribution services to all in-franchise customers, however, customers continue to have the option to purchase their supply from Union or arrange supply through a direct purchase arrangement. Union in-franchise customers fall into three distinct categories:

- Sales Service: Union acquires supply and transportation capacity for these customers in Union South and Union North. These customers are included in the GSP;
- Bundled DP: These customers acquire their own supply. In Union North, Union holds transportation capacity on behalf of bundled DP customers. In Union South, subsequent to the suspension of the vertical slice, bundled DP customers acquire their own transportation. These customers are included in the GSP;
- Transportation Service ("T-Service") DP: These customers acquire their own supply and transportation and are not considered within the GSP. This service is available to large contract commercial and industrial customers in Union South and Union North.

Of the 1.5 million customers that Union serves, approximately 1.4 million are sales service customers that rely on Union to provide their gas supply. Sales service customers are primarily residential and small commercial customers. The remaining customers rely on direct purchase arrangements with marketers and alternate suppliers to meet their gas supply needs.

Union performs the role of system operator and supplier of last resort. As system operator, Union manages many operational factors. These include:

- Seasonal balancing requirements for sales service customers;
- Weather variances outside of checkpoint balancing for bundled DP customers;
- Changes in supply and balancing requirements as customers move between sales service and DP;
- Differences between daily receipts and the demands of all end users including transportation service customers; and,
- Unaccounted for gas and compressor fuel variances.

As supplier of last resort, Union is the default supplier to its in-franchise customers. A supplier of last resort must ensure it has the assets or can acquire the assets to serve:

i) customers that otherwise choose not to serve or fail to serve (e.g. for reason of financial failure); and
ii) any customer who chooses to be a sales service customer and have Union provide gas supply services. DP customers can revert back to sales service on short notice.

2. MARKET CONTEXT

2.1 Emerging Supply Sources

North American natural gas markets continue to experience significant change. Production from shale gas formations in Appalachia, the Gulf region and Western Canada continue to exceed expectations. As a result, the flow of natural gas on the Canadian and U.S. pipeline grid continues to change with the addition of new pipeline infrastructure and different utilization of existing assets. Gas traditionally flowed west to east and south to north. With new shale plays being developed, pipelines have and are continuing to reverse flows and new pipelines are being built to allow gas to flow east to west and north to south. In addition, market area shippers have been shifting from long haul transportation to short haul transportation as supply basins are located closer to consuming markets.

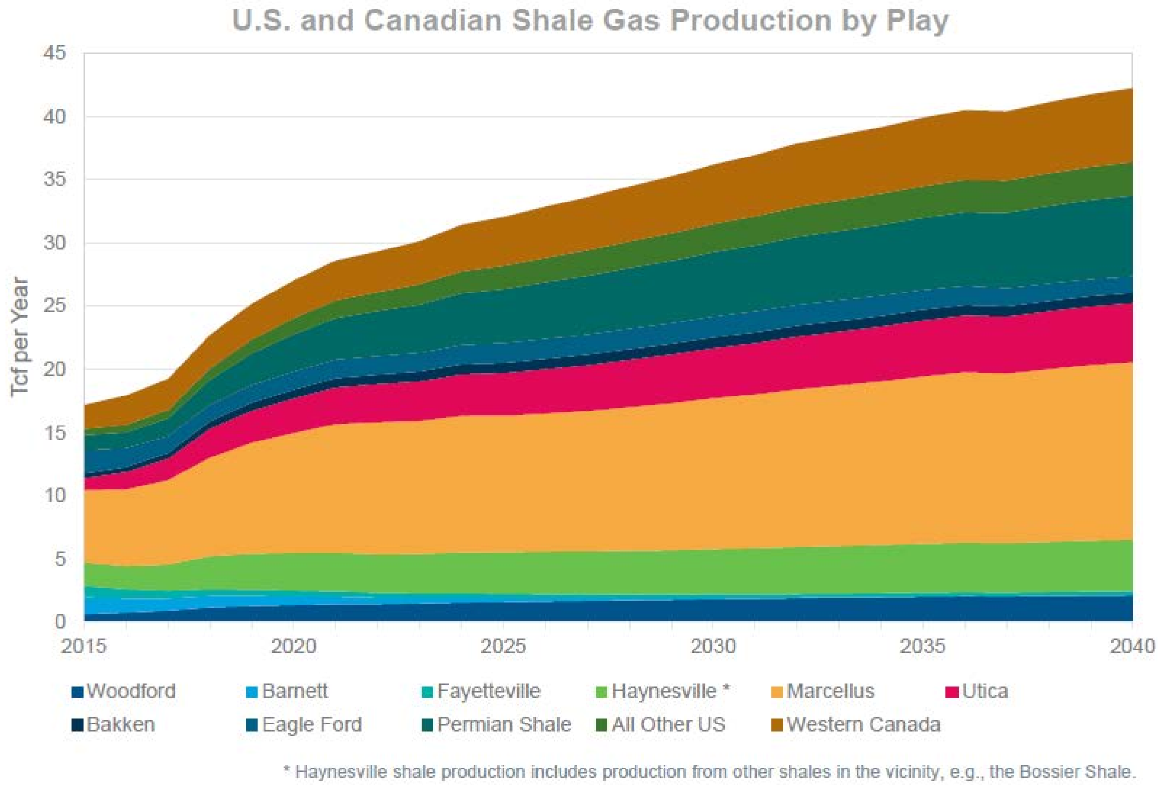
The EIA Annual Energy Outlook 2018 states that in the U.S., natural gas production continues to increase as a result of development of shale gas and tight oil plays. Shale gas production will account for more than three-quarters of natural gas production by 2050. Growth in the Marcellus and Utica plays in the east is the main driver of growth in total U.S. production in shale gas. In addition, continued technological advancements and improvements in industry practices are expected to lower costs and increase the volume of oil and natural gas recovery per well.[1]

According to the National Energy Board, in Canada, Western Canadian conventional production made up 55% of total production in 2006 and 21% in 2016. Conventional production is expected to continue to decline to 10% of total Canadian production by 2040. Production from the Montney Formation, a large gas resource extending from northeast British Columbia into northwestern Alberta, has grown significantly over the past five years increasing from no production prior to 2006 to almost 4.5 Bcf/d in 2016, or 30% of total Canadian natural gas production. The majority of Canadian production growth comes from the Montney, with its production reaching 7.9 Bcf/d by 2040. The Duvernay and Horn River shale gas plays currently produce small amounts of natural gas with modest production growth projected by 2040[2].

As shown below in Figure 2, ICF International ("ICF") is also projecting total U.S. and Canada shale gas production to almost double from 22.7 Tcf in 2018 to 42.2 Tcf in 2040. The Marcellus and Utica shales account for about 38% of the incremental production growth from shale formations. Production from tight oil plays in the Permian is projected to more than triple by 2040 to reach about 6.4 Tcf.

[1] EIA Annual Energy Outlook 2018 with projections to 2050 February 6, 2018 - https://www.eia.gov/outlooks/aeo/pdf/AEO2018.pdf
[2] National Energy Board, AN ENERGY MARKET ASSESSMENT, Canada's Energy Future 2017 Supplement - https://www.neb-one.gc.ca/nrg/ntgrtd/ftr/2017ntrlgs/nrgftrs2017spplmntsntrlgs-eng.pdf

Figure 2



"Source: ICF Forecast: Natural Gas – Strategic, Q2 2018 Outlook. Used with permission"

The development of abundant and competitively priced natural gas presents Ontario consumers, including residential, commercial, industrial and power, with an opportunity to diversify their natural gas supply portfolios. Accessing this new supply will be essential to providing diversity of supply and long term affordable energy prices to fuel Ontario's economic competitiveness. By using both new and existing infrastructure, access to abundant sources of supply can increase reliability and security for Ontario natural gas supply and provide increased liquidity at the Dawn Hub.

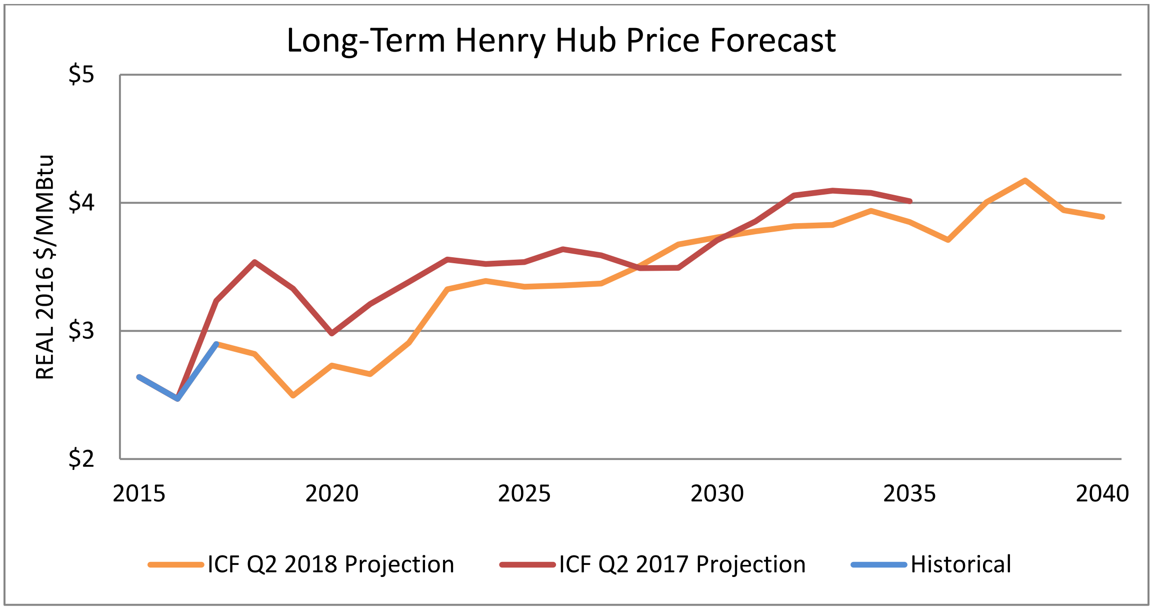
2.2 Natural Gas Price Signals

The emergence of shale production has increased dramatically since 2007 and the increase in available supply has put downward pressure on natural gas prices across North America. As indicated above, continued development of the Marcellus and Utica plays in the U.S. Northeast is the main driver of supply growth in total U.S. shale gas production. A rebound in drilling activity will lead to continued production growth and increases in per-well production. These two factors have reduced costs and made gas supplies more responsive to price changes, which should limit upward pressure on prices.

Natural gas prices set at Henry Hub are generally seen to be the primary price set for the North American natural gas market with locational basis differentials based off NYMEX

Henry Hub. ICF indicates that Henry Hub prices will remain in the $3-4 USD/MMBtu range in the longer term as shown in Figure 3. The 2018 projection from ICF is slightly lower than the ICF projection from 2017.

Figure 3



"Source: ICF Forecast: Natural Gas – Strategic, Q2 2018 Outlook. Used with permission"

Natural gas supply costs are an important consideration in the GSP. However, Union must balance the benefits of all the attributes of the planning principles to ensure customers receive secure, reliable, diverse supplies of natural gas at a prudently incurred cost.

To ensure that gas supplies are acquired at a prudently incurred cost, Union follows specific gas procurement policies and procedures, as accepted by the Ontario Energy Board (the "OEB")[3], to govern commodity purchases including a Request for Proposal process. Union's gas commodity purchases are influenced by the characteristics and traits of the specific supply points or basins where Union purchases supplies. Each of these purchase points have different liquidity and supply characteristics. Certain purchase points have a large number of active parties and volume available for purchase and others do not. Having many suppliers at a specific point, along with other buyers, creates an environment of higher liquidity, reliability and more efficient gas purchases.

2.3 Transportation/Pipeline Changes

As supply and transportation market options change, so does Union's gas supply mix and how gas is transported to Ontario. When Union considers a new supply basin, new upstream transportation capacity or renewals for existing transportation, multiple alternatives are considered. A landed-cost analysis is completed when a new transportation path is purchased.

[3] EB-2011-0210 Application and Evidence, November 10, 2011, Exhibit D1, Tab 1, Appendix A.

As outlined in Section 2.1, North American natural gas markets continue to change resulting in local distribution companies ("LDC") shifting their supply portfolios to source gas closer to their end–use markets. Union continues to encourage new sources of supply and new infrastructure to the Dawn Hub and Ontario.

3. GAS SUPPLY PLANNING PRINCIPLES

The GSP defines the gas supply requirements and the necessary upstream transportation capacity and assets needed to meet customers' annual, seasonal and design day gas delivery needs. Union's gas supply portfolio is guided by a set of principles that are designed to ensure customers receive secure, reliable and diverse gas supply at a prudently incurred cost.

The principles are as follows:

- Ensure secure and reliable gas supply to Union's service territory at a reasonable cost;
- Minimize risk by diversifying contract terms, supply basins and upstream pipelines;
- Encourage new sources of supply as well as new infrastructure to Union's service territory;
- Meet planned peak day and seasonal gas delivery requirements; and,
- Deliver gas to various receipt points on Union's system to maintain system integrity.

These principles have been presented to and accepted by the OEB[4] on a number of occasions. Most recently these principles were presented to the OEB as part of the Distributor Gas Supply Planning Consultation[5].

A description of each guiding principle is provided below.

3.1 Ensure secure and reliable gas supply to Union's service territory at a reasonable cost

Union has an obligation to provide gas supply and transportation capacity for sales service customers and transportation capacity for Union North bundled DP customers. Union also provides a load balancing function for all sales service and bundled DP customers to manage the seasonal differences between supply and demand. To meet this obligation, Union uses a combination of: firm upstream transportation contracts, Dawn sourced supply, and storage capacity. Union ensures adequate firm capacity is available on a sustained basis to meet firm design day and annual demands through transportation capacity contractual rights. This includes a combination of long-term transportation contracts with third parties, transportation contracts with guaranteed renewal rights, as well as dedicated Union storage, transmission and distribution assets.

[4] EB-2013-0109 Decision and Order, March 27, 2014, p. 8.
[5] EB-2015-0238 Staff Report to the OEB, August 12, 2016, Appendix A, Section 2.

3.2 Minimize risk by diversifying contract terms, supply basins and upstream pipelines

Union's current upstream transportation portfolio and related supply are diversified with respect to supply basin, gas supply producers and marketers, contract term and transportation service provider. Union's approach to diversifying the portfolio of firm assets is analogous to a prudent investment portfolio where diversity of funds, risk and term are important considerations.

In Union South and Union North East, Union uses capacity on multiple upstream pipelines to access several supply basins and market hubs. These pipelines provide access to supplies in Western Canada, Chicago, the U.S. Mid-Continent and Appalachia. The GSP also includes Dawn purchases as part of the supply portfolio. Union purchases gas from suppliers under a North American Energy Standards Board ("NAESB") contract. Union has executed 10 new NAESB contracts in the past year and has NAESB contracts with approximately 110 suppliers in total. The portfolio of suppliers and upstream transportation contracts provides diversity and reduces the exposure to price volatility for customers. It also provides Union the flexibility to manage its seasonal inventory targets.

Union also manages risk to customers by diversifying the length of the contract terms to provide flexibility in managing the upstream transportation portfolio with existing contract terms ranging from 1 to 15 years.

For gas supply purchases, the sales service supply portfolio can consist of multi-year, annual, seasonal, monthly, and in rare cases, daily purchases.

3.3 Encourage new sources of supply as well as new infrastructure to Union's service territory

Union continues to seek new sources of cost-effective supplies to serve its customer base either through accessing new supply sources with existing infrastructure or participating in longer-term projects to encourage the development of new infrastructure to and through Ontario. The development of new supply sources and the related infrastructure often require long-term commitments. In the OEB decision in the Union and Enbridge Gas Distribution ("EGD") Long-Term Contracts proceeding (EB-2010-0300 / EB-2010-0333), the OEB recognized the role that regulated utilities play in supporting new infrastructure development:

> *"The Board recognized that the enrolment of regulated utilities for such long term arrangements would be a necessary and desirable element in new infrastructure development…"(p.7)*

In addition, Union supports the infrastructure required to allow new supply sources to flow to Union North West and Union North East. In order for all Ontario natural gas customers to access new emerging supply, capital expansions on the Union, EGD, and TransCanada Mainline systems were completed in 2017. Union remains committed to providing support for new infrastructure to bring new supplies and suppliers to Dawn to enhance the liquidity of the Dawn Hub, such as the NEXUS Transmission Project.

3.4 Meet planned peak day and seasonal gas delivery requirements

Inherent in the obligation to meet sales service and bundled DP customers' gas supply needs is the requirement to construct a gas supply portfolio that will meet:

- Design day requirements – to provide service to sales service and bundled DP customers on the day of highest anticipated design day demand in each delivery area; and,
- Seasonal/annual requirements – to be able to meet the annual requirements of the markets while balancing the summer/winter load changes.

A further description of how Union meets these requirements is provided in Section 5.

3.5 Deliver gas to various receipt points on Union's system to maintain system integrity

The Union South transportation portfolio has delivery points at Dawn, Parkway, Union CDA, Union ECDA, Kirkwall, St. Clair and Ojibway. In addition to the physical connections Union has with adjoining pipelines, abundant storage, and the robust Dawn Parkway System, it is also Union's practice to contractually receive gas at multiple delivery points. This practice provides two benefits.

First, it maintains system integrity as Union is not reliant on one receipt point for all of its gas supplies. A system interruption or upset at one receipt point would not cause a complete supply failure to Union's system.

Second, delivery to multiple receipt points allows Union to minimize its pipeline facilities in the area. For example, the delivery of gas at Ojibway enables the Panhandle Transmission System to be smaller than it would otherwise be to meet design day requirements. In this case, when Union receives gas at Ojibway, Union does not have to transport the equivalent volume from Dawn to Ojibway. The effectiveness of delivered supply to any point on Union's system to minimize pipeline facilities will depend on system hydraulics and be subject to economic analysis.

Union needs to balance the value of contracting and relying on third party providers and the continued cost and reasonableness of doing so when compared to physical alternatives. For example, Union increased reliability to the Sarnia area through the Sarnia Expansion Project in early 2015[6] which reduces reliance on upstream supply deliveries.

In response to customers' requests, Union has been moving the Parkway Obligation for DP customers to Dawn[7], and has also reduced the reliance on deliveries at the east end of its system on behalf of sales service customers. This trend is supported by the increased security and reliability resulting from the expansion of the Dawn Parkway System, including loss of critical unit protection across the entire Dawn Parkway System.

[6] Sarnia Expansion Pipeline Project (EB-2014-0333).
[7] EB-2013-0365 Settlement Agreement, June 3, 2014, Appendix B.

4. GAS SUPPLY PLANNING PROCESS

The GSP identifies the efficient combination of upstream transportation, supply purchases, and storage assets required to serve sales service and bundled DP customers' annual, seasonal and design day gas delivery requirements, while adhering to the planning principles described in Section 3. The costs for the supply and transportation services identified in the GSP are recovered through commodity, transportation and storage charges. The GSP is finalized and receives executive approval in the third quarter each year. The annual gas supply planning process is summarized in Appendix A.

Union's gas supply planning is a complex process that incorporates demand related items such as customer growth, normalized weather, design day requirements, customer consumption patterns and economic outlooks. The firm needs of customers are analyzed to ensure the appropriate level of firm transportation and storage assets are held to meet annual, seasonal and design day demand. The upstream transportation contracts in the GSP, along with storage assets, are managed by Union to provide an integrated service to all sales service and bundled DP customers. The GSP is appropriately sized and there are no assets in the GSP in excess of those necessary to meet firm customer requirements.

To complete the GSP, Union uses gas supply planning software known as SENDOUT. SENDOUT is a widely recognized gas supply planning tool and is used by a number of LDCs in North America. Union has used this software for over 30 years and the results have been presented in a number of rate applications since 1987.

Union uses SENDOUT to ensure that the assets incorporated in the GSP meet annual, seasonal, and design day demands. SENDOUT determines the amount of capacity, supply and associated costs required to meet customer demands. Union's GSP includes the following key inputs and assumptions:

- The design day demand forecast for each Union North delivery area;
- Union's in-franchise monthly demand forecast based upon customer location, supply arrangement, storage requirement and service type (excludes transportation service);
- A monthly commodity price forecast using the same pricing methodology as the Quarterly Rate Adjustment Mechanism ("QRAM") process;
- Upstream transportation tolls in effect at the time the forecast was prepared for the term of the plan;
- All upstream transportation contracts held by Union plus existing obligated Ontario deliveries for the bundled DP market;
- Sales service and bundled DP storage requirements that are cycled completely each year in the GSP with storage full on November 1 and empty by March 31 assuming normal weather;
- Applicable heating value;
- Sufficient inventory at February 28 to meet the design day requirements for sales service and bundled DP customers;
- No migration between sales service and bundled DP customers for the term of the GSP With any migration representing a risk that needs to be managed by Union; and,

- 9.5 PJ of system integrity space to maintain the operational integrity of Union's integrated storage, transmission and distribution systems with 6.0 PJ of this space filled with system integrity supply, and 3.5 PJ left empty as contingency space.

The outcome of the annual planning process is a plan that provides a monthly volumetric forecast of demands and supplies (by transportation path) and a forecast of Union's costs to serve its sales service and bundled DP customers.

5. UNION'S 2018/19 GAS SUPPLY PLAN

The GSP defines the gas supply requirements and the necessary upstream transportation capacity and assets needed to meet customers' annual, seasonal and design day demands. The GSP received executive approval in July 2018, and reflects the best available information at that time. The key inputs and outputs, as well as plan changes, are described in more detail below.

5.1 Design Day Demand

Union ensures assets are available to provide firm service to customers on an extreme cold weather day called a design day. A design day is measured in heating degree days ("HDD"). A HDD is a measure of temperature that identifies the need for heating and occurs when the average daily temperature falls below 18 degrees Celsius. For example, an average daily temperature of zero degrees Celsius equals 18 HDD. The main information required to develop the GSP to serve design day demand includes weather, firm customer demand, forecast demand growth and acquired assets.

Weather

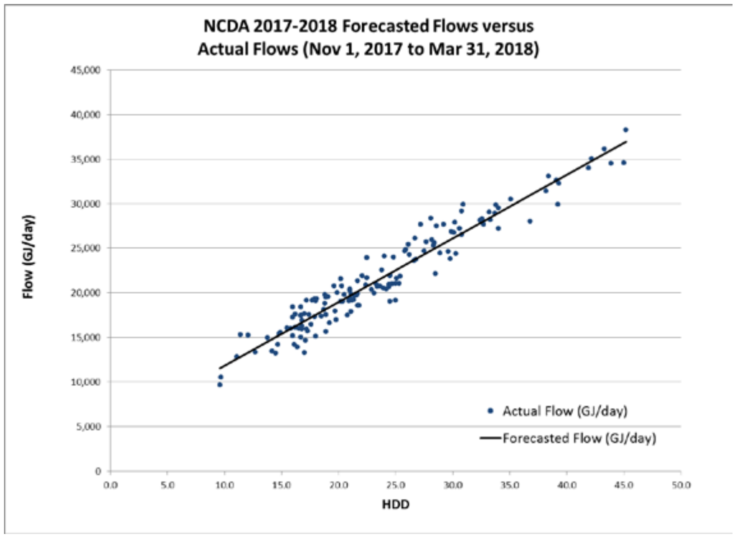
Union uses the coldest observed degree day for Union South and each of the six delivery areas in Union North.

Firm Customer Demand

The firm customer design day demand is forecasted by multiplying the firm use per degree day factor with the coldest observed degree day.

Union develops a trend line using the daily firm customer consumption from the prior winter and the associated daily degree day data. Union extrapolates the calculated trend line to the coldest observed degree day resulting in the estimated design day demand for each delivery area. An illustrative example of the degree day data and the trend line calculation for the NCDA is provided in Figure 4.

Figure 4



Forecast Demand Growth

The design day demand described above is adjusted by the winter season growth factor. This forecast growth factor is added to the firm customer demand, to provide a total forecasted design day demand for each delivery area.

Required Assets

The design day requirements are met by holding storage and transportation capacity. Design day weather does not occur every year, however, the assets must be available should that design day occur given Union's role as the system operator and supplier of last resort for sales service and bundled DP customers.

In order to meet these design day requirements for Union South and Union North, Union uses a combination of contracted upstream transportation capacity and Union's storage, transmission and distribution assets. The use of storage assets is more cost effective than contracting for firm upstream transportation capacity all year. The plan target is to fill storage at November 1 and maintain sufficient inventory at February 28 to meet the design day storage withdrawal requirement.

Since Union's storage and transmission assets reside within the Union South franchise area, the role of the gas supply portfolio is different on a design day in Union South than in Union North. The differing methodologies are described below. These methodologies are consistent with Union's Gas Supply Planning Review prepared by Sussex Economic Advisors (the "Sussex report")[8].

5.1.1 Union South Design Day

Union South design day demand is the total firm requirement of the in-franchise sales service, bundled DP, and transportation service customers.

[8] EB-2013-0109 Application and Evidence, May 8, 2013, Exhibit C, Tab 2 and Tab 3.

The design day weather condition for Union South is based on the coldest observed degree day which is 43.1 measured at the London, Ontario airport.

The role of meeting the entire design day needs for Union South resides within the storage and transmission system plans. The GSP is only a component of this broader exercise and only manages the average day supply needs for Union South sales service customers. To meet the design day requirements, Union must have a sufficient volume of gas in storage and sufficient transportation assets to move the upstream supply and gas out of storage into the transmission pipeline systems. If the transmission or storage assets are not sufficient to meet design day requirements, Union will build additional assets or purchase services to meet this shortfall. Union's distribution systems are also designed to meet design day requirements.

Although the design degree day of 43.1 has not changed in Union South, the customers' demands on a design day have grown. The design day requirements in Union South have increased slightly from 3,027 TJ/d in 2017/18 to 3,053 TJ/d in 2018/19. The resources available to meet Union's design day in Union South are shown in Figure 5.

Figure 5

Winter 2018/2019 Design Day
Union South Design Day Demand and Resources (TJ/day)

Demand	
Union South*	3,053
Supply	
Storage at Dawn	1,750
Non-obligated (e.g. Power Plants)	270
TCPL Empress to Union CDA	3
Panhandle	37
Ojibway	21
TCPL Niagara	21
Ontario Parkway	219
Vector	84
Nexus	106
Ontario Dawn	542
Total Supply	3,053

* includes Sales Service, Bundled Direct Purchase, T-Service

5.1.2 Union North Design Day

Union North design day demand is the total firm requirement of the in-franchise sales service and bundled DP customers in each of Union's six Union North delivery areas. Union does not include demand for customers with transportation service contracts as these customers are required to provide their own transportation services to meet their design day requirements.

The design day weather condition is based on the coldest observed degree day experienced in each of the six Union North delivery areas. The design degree day for each Union North area is as follows:

WDA	51.6	Thunder Bay
MDA	54.7	Fort Frances
SSMDA	48.2	Sault Ste Marie
NCDA	49.3	Muskoka / Gravenhurst
NDA	51.9	Sudbury
EDA	47.1	Kingston

For Union North, the firm design day demand is a direct input into the GSP. Since there is no physical storage in Union North, Union is required to purchase transportation services to move the firm design day demand from Parkway, Dawn or Empress to the delivery areas where the gas is consumed.

Union North delivery areas are connected to TransCanada's Mainline and are physically separated from Union's Dawn storage and transmission pipeline assets. Therefore, Union requires firm transportation services to connect each of the six Union North delivery areas to a supply source.

The full suite of assets is only used in each delivery area when a design day occurs. Union uses a portfolio of firm services and assets including TransCanada Firm Transportation ("FT"), TransCanada firm Storage Transportation Service ("STS") and other firm TransCanada services to meet the design day demand requirement. Since Union is required to contract for transportation services to meet design day demand, there are days when the pipe is not fully utilized.

Figure 6 illustrates what services and assets are relied on in the GSP to meet design day demand.

Figure 6

Union North Design Day Demand (TJ/Day)

	MDA	WDA	SSMDA	NDA	NCDA	EDA	Total
Demand							
Sales Service and Bundled DP	6	84	39	152	39	165	**485**
T-Service Storage Redelivery	-	-	-	13	-	-	**13**
North Dawn T-Service	-	-	-	17	2	14	**33**
Peak Day Demand for the Region	**6**	**84**	**39**	**181**	**41**	**179**	**531**
Supply							
Long-haul Firm from Empress							
Sales Service	6	45	19	2	1	1	**74**
Bundled DP	-	6	2	-	-	-	**8**
Short-haul Firm from Parkway							
Sales Service	-	-	-	34	7	52	**93**
Bundled DP	-	-	-	9	3	15	**26**
North T-Service	-	-	-	17	2	14	**33**
Redelivery from Storage							
From Parkway							
STS Withdrawals	-	31	-	48	14	20	**113**
STS Pooled Withdrawals	-	-	-	4	15	-	**19**
Short-haul Firm	-	-	-	67	-	52	**119**
Enhanced Market Balancing	-	-	-	-	-	25	**25**
From Dawn							
STS Withdrawals	-	-	19	-	-	-	**19**
Peak Day Supply to the Region	**6**	**83**	**40**	**181**	**41**	**179**	**530**
Excess(Shortfall) by delivery area	-	(2)	-	-	-	-	**(2)**

The GSP has identified an additional 2 TJ/d requirement in the WDA to meet design day requirements. Union is currently evaluating options to meet this additional requirement.

5.2 Demand Forecast

The GSP for 2018/19 is based upon the 2019-2022 weather normalized demand forecast for general service customers and contract rate classes as prepared by Union's demand forecasting team.

A comparison of the annual demand forecast included in the 2018/19 GSP relative to the 2017/18 GSP is provided in Figure **7**.

Figure 7

Union Demand Forecast

Line No.	Particulars (TJ)	2017/18 Gas Supply Plan	2018/19 Gas Supply Plan	Variance	% change
		(a)	(b)	(c) = (b-a)	(d) = (c/a)
	UNION SOUTH				
1	General Service - Sales Service	129,423	132,991	3,568	
2	General Service - Bundled DP	31,956	32,004	48	
3	Sub-Total	161,379	164,995	3,616	2.2%
4	Contract - Sales Service	3,829	4,191	362	
5	Contract - Bundled DP	46,709	45,824	(885)	
6	Sub-Total	50,537	50,015	(523)	-1.0%
7	Total Union South (line 3 + line 6)	211,916	215,010	3,093	1.5%
	UNION NORTH				
8	General Service - Sales Service	40,443	41,203	759	
9	General Service - Bundled DP	9,811	9,134	(677)	
10	Sub-Total	50,254	50,337	83	0.2%
11	Contract - Sales Service	2,337	1,425	(912)	
12	Contract - Bundled DP	3,564	3,584	21	
13	Sub-Total	5,901	5,010	(891)	-15.1%
14	Total Union North (line 10 + line 13)	56,155	55,346	(808)	-1.4%
15	Total Union Forecast Demand (line 7 + line 14)	268,071	270,356	2,285	0.9%

The annual general service forecast has increased by 3,616 TJ in Union South and 83 TJ in Union North due to an increase in higher forecasted average use per customer and additional customers added to sales service.

The total annual contract market has decreased by 523 TJ in Union South and decreased by 891 TJ in Union North. The decrease in Union South is a result of consumption migration to T-Service and delays to growth projects. The decrease in Union North is due to lower forecasted consumption.

Union continues to see a migration of customers from DP to sales service in Union South. A comparison of the number of sales service and DP customers in the 2018/19 GSP relative to the 2017/18 GSP is provided in Figure 8.

Figure 8

Number of Customers by Service Classification - Union South

	2017/18 Forecast	2018/19 Forecast	Variance
Sales Service	1,058,787	1,080,555	21,768
Bundled DP	68,395	58,870	(9,525)
Total	**1,127,182**	**1,139,425**	**12,243**

Union is required to purchase additional supply for demand increases in Union South due to customers returning to sales service.

Union holds upstream pipeline transportation capacity for both sales service and bundled DP customers in Union North so no additional transportation capacity is required resulting from a customer's migration between DP and sales service supply.

The gas demand/supply balance for sales service customers for the 2018/19 GSP is provided in Appendix B.

5.3 Transportation Portfolio

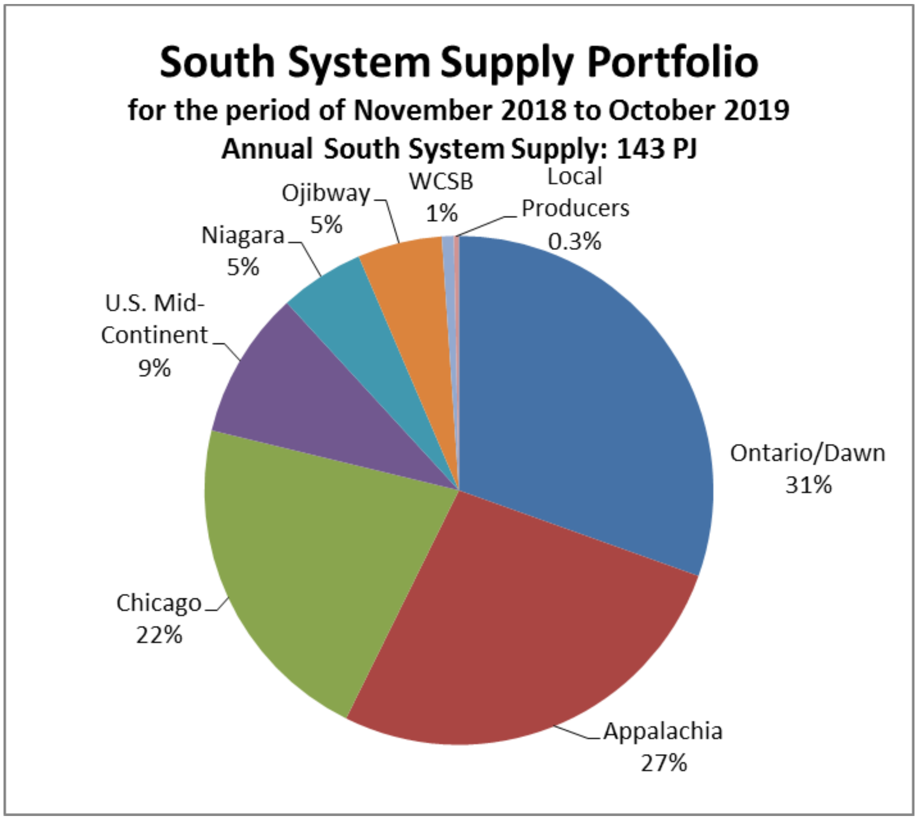
Union holds a combination of firm transportation contracts, Dawn sourced supply and storage capacity to meet the forecasted annual demand. Firm transportation services provide direct and secure access to a diverse group of supply basins and market hubs in North America.

Union South

For Union South, Union holds firm transportation contracts on upstream pipelines and sources supply at Dawn to meet average annual demand requirements. Union uses capacity on multiple upstream pipelines to access several supply basins or market hubs. These pipelines provide access to supplies in Western Canada, Chicago, the U.S. Mid-Continent and Appalachia. The GSP also includes Dawn purchases as part of the Union South supply portfolio. The annual volume requirement is divided by 365 days such that the upstream pipe flows at 100% utilization each day of the year. During times when usage is less than the upstream supply, the excess supply is injected into storage at Dawn. When demands are greater than the upstream supply, gas is withdrawn from storage and transported to Union South in-franchise customers.

Figure 9 demonstrates the sources of supply underpinned by Union's transportation portfolio for Union South sales service customers. Refer to Section 5.5 for changes that have occurred since the creation of the plan.

Figure 9



Union North

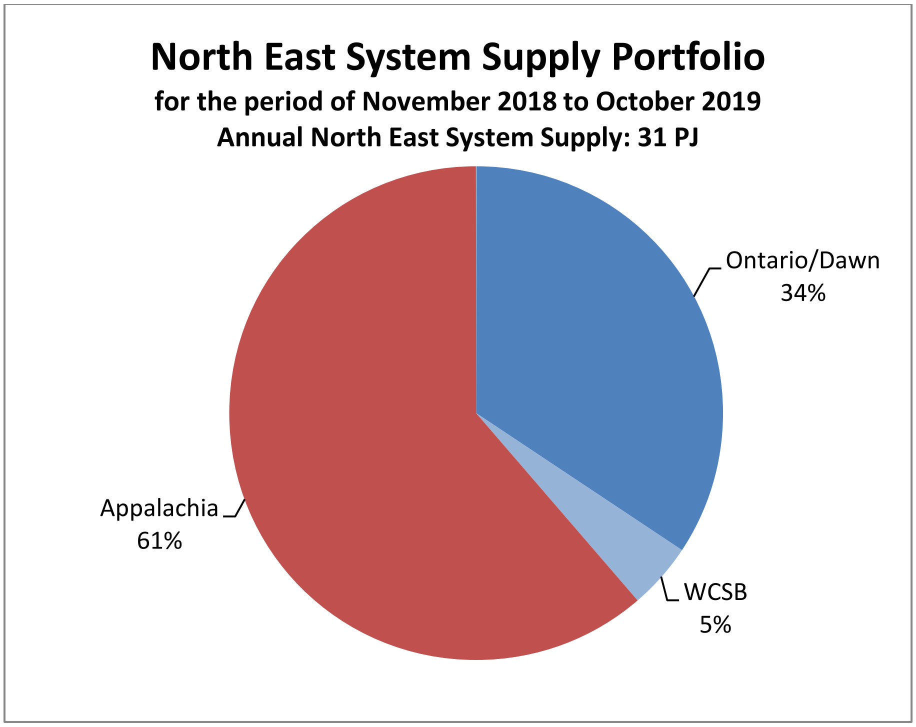
In Union North, the GSP uses various transportation services to meet sales service and bundled DP customer seasonal and annual demands.

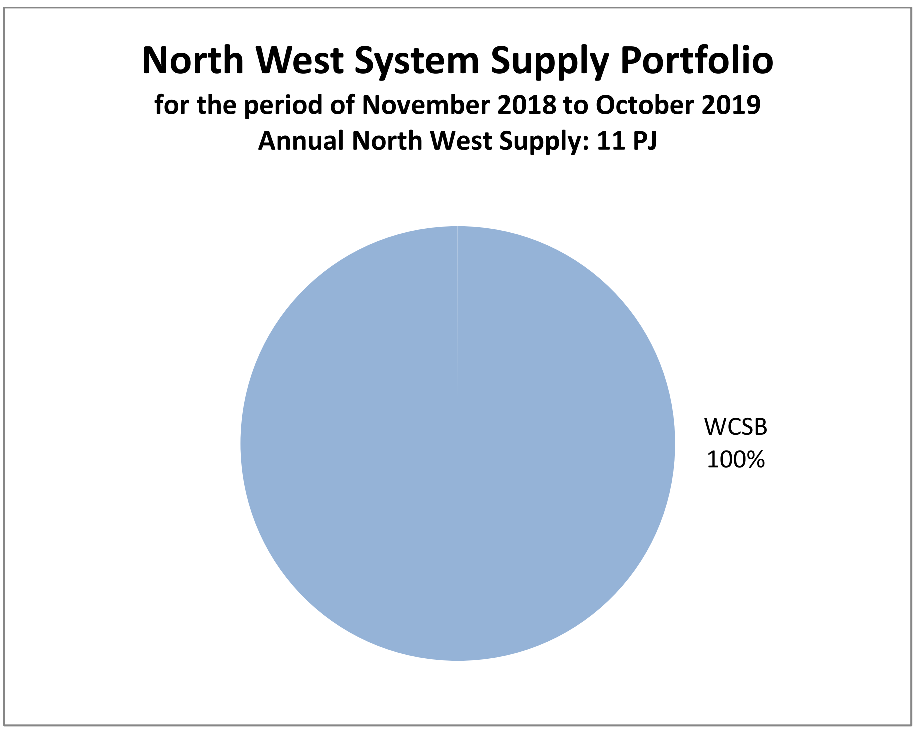
In order to meet the annual demand requirements for Union North East sales service customers, Union uses capacity on multiple upstream pipelines providing access to supplies in Western Canada and Appalachia. The GSP also includes Dawn purchases as part of the Union North East supply portfolio.

In order to meet the annual demand requirements for Union North West sales service customers, Union uses capacity on the TransCanada Mainline, the only pipeline accessible to these areas of Union's franchise, providing access to supplies in Western Canada.

Figure 10 demonstrates the sources of supply underpinned by Union's transportation portfolio for Union North East and Union North West sales service customers.

Figure 10





The GSP reflects the effective management of TransCanada capacity by:

- Using TransCanada STS injections, which allow Union to transport excess supply away from Union North to Parkway to be injected into Dawn storage in the summer;

- Using TransCanada STS withdrawals and Enhanced Market Balancing service in the winter months to serve weather-driven demands. Gas is withdrawn from Dawn storage throughout the winter and is transported to Union North without the need for contracting additional TransCanada FT capacity to that delivery area; and,
- Using contractual STS pooling rights to aggregate all of Union's STS rights to serve the Union North delivery areas. This provides Union with the flexibility to serve certain delivery areas in Union North with gas service in excess of that delivery area's specific STS rights.

5.4 Unabsorbed Demand Charges ("UDC")

In Union North, the upstream transportation portfolio is first sized to meet the design day demand requirement. The amount of supply needed to be transported on upstream long-haul and short-haul capacity to meet average annual demand requirements is less than the capacity needed to meet design day requirements. As a result, a portion of Union's contracted capacity is planned to be unutilized during the year. The difference between the total average contracted capacity and total demand for both Union North sales service and bundled DP customers equals the planned unutilized capacity. Subject to finalizing and contracting the transportation capacity required to meet the design day shortfall of 2 TJ/d in the WDA, the total planned UDC is 18.1 PJ in the 2018/19 GSP. If weather is colder than normal and/or annual consumption is greater than forecast Union will use this capacity to meet incremental supply requirements. Figure 11 shows the total planned UDC by delivery area.

Figure 11

2018/19 UDC (PJ)

Delivery Area	Long-haul	Short-haul	Total
North West			
MDA	1.4	-	**1.4**
WDA	9.9	-	**9.9**
SSMDA	2.4	-	**2.4**
North East			
NDA	0.1	1.7	**1.7**
NCDA	0.0	0.0	**0.0**
EDA	0.0	2.5	**2.5**
	14.0	**4.1**	**18.1**

The GSP forecasts a 100% load factor on all upstream transportation landing at Dawn resulting in no UDC on upstream paths.

5.5 Changes in Upstream Transportation Portfolio

NEXUS Gas Transmission, LLC

Union holds 150,000 Dth/d of firm renewable capacity from Kensington to the interconnection with Union's system at St. Clair. Union allocates 50,000 Dth/d of capacity to serve Union North East sales service customers and the remaining 100,000 Dth/d of capacity to serve Union South sales service customers. This capacity has a 15 year term, and service commenced on November 1, 2018.

In January 2018, Union added the Clarington receipt point to its NEXUS contract for a 4 year term from the NEXUS service commencement date. This allows Union the opportunity to source up to 75,000 Dth/d of its contracted supply from the Texas Eastern Pipeline (TETCO) M2 market located in the heart of the Marcellus and Utica drilling region. The additional receipt point is the NEXUS interconnect with TETCO, referred to as Clarington. The Clarington point provides access to additional counterparties on TETCO. Please refer to Section 6.6 for more information on NEXUS in-service.

Gas Supply Plan Pipeline Renewal Assumptions

The GSP assumes that all pipeline capacity contracted with renewal rights will continue to be available in the future, unless Union has elected turn-back or automatic conversion rights (e.g. TransCanada long-haul to short-haul pipeline conversions).

In 2016, Union submitted bids into TransCanada's New Capacity Open Season for incremental deliveries of 9,128 GJ/d from Parkway to the Union EDA and converted two Empress to Union NCDA contracts to Parkway to Union NCDA in the amount of 7,796 GJ/d. Both of these contracts began flow on November 1, 2018.

Dawn Supply Requirements

The GSP identifies the total amount of supply required to meet the sales service forecasted demands. This supply requirement is typically greater than the total upstream transportation capacity under contract at any point in time. A supply requirement not met by an existing upstream transportation arrangement is referred to as an uncommitted supply requirement and is assumed to be supplied at Dawn.

The GSP has identified Dawn supply requirements for 2018/19 of approximately 93 TJ/d for Union South and 31 TJ/d for Union North East.

Union will, as part of an ongoing process, evaluate the portfolio to ensure it meets the needs identified in the GSP. This includes monitoring the impacts of in-service delays for new transportation projects and evaluating all available transportation alternatives. Maintaining an uncommitted position allows Union flexibility to secure additional upstream transportation capacity as warranted.

A complete listing of the transportation capacity currently contracted for Union South and Union North is provided at Appendix C and Appendix D, respectively.

5.6 Cost of Gas

The transportation tolls and gas supply commodity prices used in the development of the GSP are consistent with what was used to set the April 2018 QRAM reference prices. The gas supply commodity prices for each supply location are based on the the 21-day average of the twelve month forecast to be used for the NYMEX strip, the basis differentials at the various supply locations, and exchange rates.

As part of Union's Incentive Rate Mechanism Settlement Agreement[9], Union stated in Section 4.7.1, that the cost of gas supply, upstream transportation and gas supply balancing would continue to be passed through to customers through the QRAM. Union reflects updated transportation tolls and forecasted gas commodity costs in rates through the QRAM process. Variances in actual gas supply costs and transportation tolls relative to forecasted gas supply costs and transportation tolls reflected in rates are captured in Union's gas supply deferral accounts. Union includes the prospective disposition of gas supply related deferral accounts in the QRAM process.

5.7 Bundled DP Customer Assumptions

The GSP includes all bundled DP customer demand and the corresponding supply based on their Daily Contract Quantities ("DCQ"). Union is unable to predict customer migration between sales service and bundled DP. Therefore, for the term of the GSP, customers are assumed to remain with the service they elected effective January 2018.

On an ongoing basis throughout the year, Union continues to monitor the migration between bundled DP and sales service supply. As customers return to sales service supply, Union proactively manages the expected supply requirements by filling any pipe that is returned to Union when the customer returns to sales service supply. In addition, each month, Union purchases incremental supply for demand that is returned without underlying pipe based on forecast activity for the balance of the gas year.

5.8 Storage

Union operates 180 PJ of underground natural gas storage. Consistent with the Natural Gas Electricity Interface Review ("NGEIR") Decision[10], the allotment of storage space to in-franchise customers is 100 PJ. For the 2018/19 GSP, the in-franchise space requirement is 92.4 PJ, a decrease of 0.8 PJ when compared to the 2017/18 GSP. This leaves 7.6 PJ of excess in-franchise space which is available for short term sales to the market at Dawn. The decrease in in-franchise space requirement is due to lower contract customer requirements, which is partially offset by an increase in general service average use per customer.

The in-franchise space of 92.4 PJ is provided to in-franchise customers to meet the storage requirements of sales service, bundled DP and T-Service customers. The amount available to in-franchise customers is based on the storage allocation methodologies approved by the OEB as part of the Natural Gas Storage Allocation Policies Decision[11].

The storage space available to sales service and bundled DP customers in Union South and Union North is determined using the OEB-approved aggregate excess methodology.

This methodology calculates the difference between the forecasted winter demand (November 1 through March 31) and the annual average daily demand for a 151 day period. The result is the required storage space allocation.

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[9] EB-2013-0202 Settlement Agreement, July 31, 2013.
[10] EB-2005-0551 Decision with Reasons, November 7, 2006, pp. 82-83.
[11] EB-2007-0724/0725 Decision with Reasons, April 29, 2008.

Aggregate Excess = Forecasted Winter Consumption – [(151/365) * Total Annual Consumption]

Union South T-Service customers determine which methodology is used to calculate their contracted storage space parameter. The four methodologies available to a Union South T-Service customer are: aggregate excess, 15 x obligated DCQ, peak hourly consumption x 24 x 4 days, or contract demand x 10.

5.9 Conclusion

Adhering to the gas supply guiding principles, Union continues to establish a GSP that is right sized to meet firm sales service and bundled customer demands with a diverse, flexible, secure, reliable and cost effective portfolio of firm services and assets. Union's gas supply planning process incorporates demand related items such as customer growth, normalized weather, design day requirements, customer consumption patterns and economic outlooks. Union plans and contracts for services and assets to provide an efficient combination of upstream transportation, supply purchases and storage assets to serve sales service and bundled DP customers' annual, seasonal and design day gas delivery requirements.

As supply and transportation market options change, Union continues to proactively evaluate supply and transportation options for Union North and Union South customers. Unchanged, however, is Union's application of the gas supply planning principles and the requirement to ensure secure, reliable supplies to serve its customers at prudently incurred costs.

6. FUTURE TRENDS THAT MAY IMPACT THE GAS SUPPLY PLAN

Union monitors the North American natural gas industry and identifies how initiatives and trends may impact Union's future gas supply portfolio.

6.1 Merger, Acquisitions, Amalgamations and Divestitures ("MAADs")

On November 2, 2017, Union filed a joint application with EGD to seek approval to amalgamate the two companies under Section 43(1) of the *Ontario Energy Board Act, 1998*[12]. The oral hearing concluded on May 28, 2018 with final argument submitted on June 29, 2018. The OEB issued a decision on August 30, 2018 approving the amalgamation and associated rate setting mechanism. On October 15, 2018, EGD and Union filed a letter with the OEB indicating their intention to proceed with amalgamation effective January 1, 2019. The Gas Supply Integration evidence at Exhibit E1, Tab 1 addresses alignment over time of the gas supply planning processes.

6.2 Framework for the Assessment of Distributor Gas Supply Plans ("Framework")

[12] MAADs Application (EB-2017-0306).

In October 2015, the OEB initiated the Distributor Gas Supply Planning Consultation. Specifically, the consultation focused on gas supply and transportation planning strategies and the appropriate balance between risk and cost in the GSP. Union and EGD each presented an overview of their Gas Supply Planning Process and subsequently, provided a side-by-side comparison document of their gas supply and transportation planning processes.

On March 16, 2017, the OEB launched an initiative to update the regulatory approach to the gas supply planning process and inject greater transparency, accountability and measurement to ensure that consumers are getting value for money.

To assist in developing a Framework for consideration, a Technical Working Group, having a balanced and broad representation of relevant interests, was established to provide advice on a number of topics, including issues related to renewable natural gas as a component of gas supply plans.

On April 12, 2018, the OEB issued for comment a Draft Report of the OEB: A Framework for the Assessment of Distributor Gas Supply Plans[13] ("Draft Report"). The Draft Report sets out the OEB's expectations for distributors' gas supply plans by articulating guiding principles and criteria that the OEB will use in assessing a distributor's plan to determine whether the plan delivers value to consumers. The Draft Report also sets out the OEB's process for the review of gas supply plans, consisting of a detailed review every five years and an annual update review process.

Union provided comments on the Draft Report on June 1, 2018 and received the final Framework on October 25, 2018.

6.3 Renewable Natural Gas ("RNG")

RNG is an alternative to conventional gas supply and can be stored, transmitted and distributed when located near and connected to existing natural gas infrastructure. RNG is produced by capturing methane that results from the decay of organic matter. Some examples of RNG include landfill and waste water treatment plant gas.

In developing the Framework mentioned above, OEB Staff identified RNG as an issue that the Working Group would focus on. The issues discussed by the Working Group as it relates to RNG include:

- Understanding the current RNG marketplace and sources in Ontario;
- Drivers for inclusion of RNG in the system gas supply plan;
- Availability and reliability of supply of RNG that should be taken into consideration in developing the Framework;
- Barriers and enablers to including RNG in the supply mix; and,
- Key metrics the OEB should utilize to help inform the appropriate contribution to the supply mix.

[13] EB-2017-0129.

As part of Union's 2018 Cap-and-Trade Compliance Plan, Union filed its intention to include the purchase of RNG as an abatement activity subject to the receipt of government funding. In March 2018, Union issued a Request for Proposal ("RFP") for RNG that was predicated on the government funding.

In late June, the new Ontario government took office. On July 25, 2018, the newly formed Ontario Government introduced Bill 4, the *Cap and Trade Cancellation Act, 2018* which repeals the *Climate Change Mitigation and Low-carbon Economy Act, 2016*. As a result of the change in direction of Ontario's environmental regulations, Union closed its RNG RFP without accepting any bids.

On November 29, 2018, the Ontario government released the new Made-in-Ontario Environment Plan, which outlines a requirement for natural gas utilities to implement a voluntary renewable natural gas option of customers. The government will also consult on the appropriateness of clean content requirements[14]. Union remains committed to working with the provincial and federal governments and other organizations to offer services that will support government policies and objectives.

6.4 New Sources of Supply

There are new pipelines and services that provide new sources of supply and greater access to Dawn.

The Rover Pipeline was approved to go into service by the Federal Energy Regulatory Commission ("FERC") on May 1, 2018 and began delivering gas to Dawn in June 2018. NEXUS pipeline was approved to go into service by the FERC on October 10, 2018 and began delivering gas to Dawn in October 2018 on a portion of the greenfield pipe. These pipelines are connected to Dawn through the Vector Pipeline and other existing infrastructure connecting Michigan and Ontario.

In November 2017, TransCanada began flowing a new service, Dawn LTFP (Long Term Fixed Price), that delivers Empress supply to Dawn. Over 1.4 PJ/d of this new service has been contracted for a term of 10 years.

During the 2017/2018 winter, Union experienced average daily third-party pipeline supply to the Dawn Parkway System, including the Dawn Hub, that was more than 0.5 PJ/d higher than previous winters. From a gas supply portfolio perspective this is beneficial as it provides the opportunity to transact with additional counterparties when sourcing Dawn supplies offering greater diversity.

National Fuel's Northern Access project will add 490 MMcf/d (535 TJ/d) of delivery to TCPL's Chippawa receipt point. The project has had to revise its in-service date multiple times and is not expected to be in service until at least fall of 2019[15]. Once in-service, the Northern Access project should increase market depth at Niagara and could result in increased deliveries of gas to Dawn via TransCanada and Dawn Parkway System facilities.

[14] Preserving and Protecting our Environment for Future Generations, A Made-in-Ontario Environment Plan, page 33.
[15] https://www.natfuel.com/supply/NorthernAccess2016/timeline.aspx

Liquefied Natural Gas ("LNG") export projects proposed for the east and west coasts of Canada to export LNG to Asian, European and South American markets using gas supply could result in additional competition for WCSB and Appalachia supply.

6.5 Transmission Systems

Kingsville Transmission Reinforcement Project

Union continues to forecast robust firm transportation growth along the entire Panhandle Transmission System. To accommodate this growth, in 2017, Union proposed the Kingsville Transmission Reinforcement Project ("KTRP"). The proposed NPS 20 pipeline is approximately 17 km in length, and will begin at Union's existing NPS 20 Panhandle Pipeline and end at a new valve site located in the Town of Kingsville. KTRP will provide high pressure gas to the distribution network, reducing the capacity constraint on the Panhandle Transmission System and avoiding major distribution expansion in the area.

Union's leave to construct application was filed with the OEB in early 2018 and approved in September 2018, with a target in-service date of November 1, 2019.

6.6 NEXUS

In 2015, Union entered into an agreement to contract, subject to certain conditions precedent, for long-term transportation capacity for 15 years with the NEXUS Pipeline commencing November 1, 2017. The total volume of the contract is 150,000 Dth/d, which qualified Union as an anchor shipper. Union received OEB approval of the cost consequences of the NEXUS contract[16].

The NEXUS Pipeline is designed to transport supplies of Appalachian shale gas production, from the single largest and fastest growing supply basin in North America to customers in Ohio, Michigan, and ultimately the Dawn Hub; creating a direct connection from the largest source of natural gas on the continent to Ontario. NEXUS received FERC approval to commence service on October 10, 2018.

6.7 2018–2020 Mainline Tolls

TransCanada filed an Application with the NEB on December 17, 2017 for approval of Mainline tolls for the 2018-2020 period. Mainline tolls have a direct impact on Union's cost of gas.

The result of the application is a proposed 2-4% toll reduction for long-haul transportation services and a proposed 13% toll reduction for short-haul transportation services.

The regulatory process is expected to conclude with an NEB decision in late 2018.

6.8 Post-2020 Mainline Tolls

Per the NEB's RH-001-2014 Decision, TransCanada must file a tolls application for tolls effective January 1, 2021. TransCanada's application may include significant changes to the

[16] EB-2015-0166 Decision and Order, December 17, 2015.

Mainline tolling framework it offers which may impact Union's Gas Supply Plan. Union will be an active participant in the TransCanada Tolls Task Force discussions prior to the post-2020 application and an active participant in the NEB proceeding.

6.9 Long Term Contracting Trends

There are several areas of constraint in the North American pipeline system requiring new builds and/or longer term (and/or maximum rate) contracts to secure capacity. Such examples include, NEXUS Pipeline (new), Panhandle Eastern Pipe Line (existing but becoming constrained), TransCanada Eastern Ontario Triangle (short haul paths), Niagara/Chippawa, and Vector into Dawn.

While LDCs need to make long term commitments to secure access to new transportation capacity builds, they also can be required to extend commitments as the holder of an existing contract. As pipelines undergo expansions to respond to market need, the pipelines will often require existing shippers to term up their existing contracts to retain access to the capacity beyond their current contract term. Union has had to extend the end dates of contracts on the TransCanada system in the past as a result of system expansions, and may be required to do so should further facilities expansions occur.

Areas of constraint are expected to continue into the future as political, environmental, and regulatory challenges make construction of new greenfield pipeline projects increasingly difficult, particularly in urban areas and certain U.S. jurisdictions. Union continues to evaluate all supply sources and pipeline capacity to ensure that Union maintains diversity and security of supply.

6.10 Climate Change

Union filed its 2018 Cap-and-Trade Compliance Plan in November 2017. A Technical Conference and oral hearing took place during the month of April 2018, and Union submitted its final argument in June 2018.

In late June, the new Ontario government took office and immediately announced the cancellation of the Cap-and-Trade program. Union is committed to working with the government and OEB to achieve an orderly wind-down of the Cap-and-Trade program.

On July 6, 2018, the OEB issued a Procedural Order to suspend its review of Union's 2018 Compliance Plan and requested that Union file a letter confirming it ceased all Cap-and-Trade activities. Union complied with this direction and filed a letter with the OEB on July 12, 2018. On August 30, 2018, the OEB instructed Union to request the elimination of Cap-and-Trade charges in the October 2018 QRAM applications, allowing for the removal of the Cap-and-Trade charges from customer bills effective October 1, 2018. In addition, Union was instructed to request the disposition of any projected net credit amount in the aggregate balance of their Cap-and-Trade-related deferral and variance accounts as at September 30, 2018. The OEB expected to dispose of deferral and variance account balances on an interim basis with a prudence review to take place at a later date.

Union is monitoring developments related to the federal government's Pan-Canadian Framework, including carbon pricing, clean fuel standards and methane reduction regulations. Impacts from these programs on Union's operations or GSP remain uncertain.

Initiatives being considered to reduce emissions in support of any impending GHG reduction targets could have varying impacts on the GSP including:

- Displacement of natural gas with RNG;
- Compressed Natural Gas/Liquefied Natural Gas ("CNG"/"LNG") for Transportation;
- Energy efficiency initiatives (such as DSM programs) to reduce the carbon footprint of natural gas consumers throughout Ontario;
- The wider use of natural gas Combined Heat & Power ("CHP") systems; and,
- Natural Gas-related innovation.

7. APPENDICES

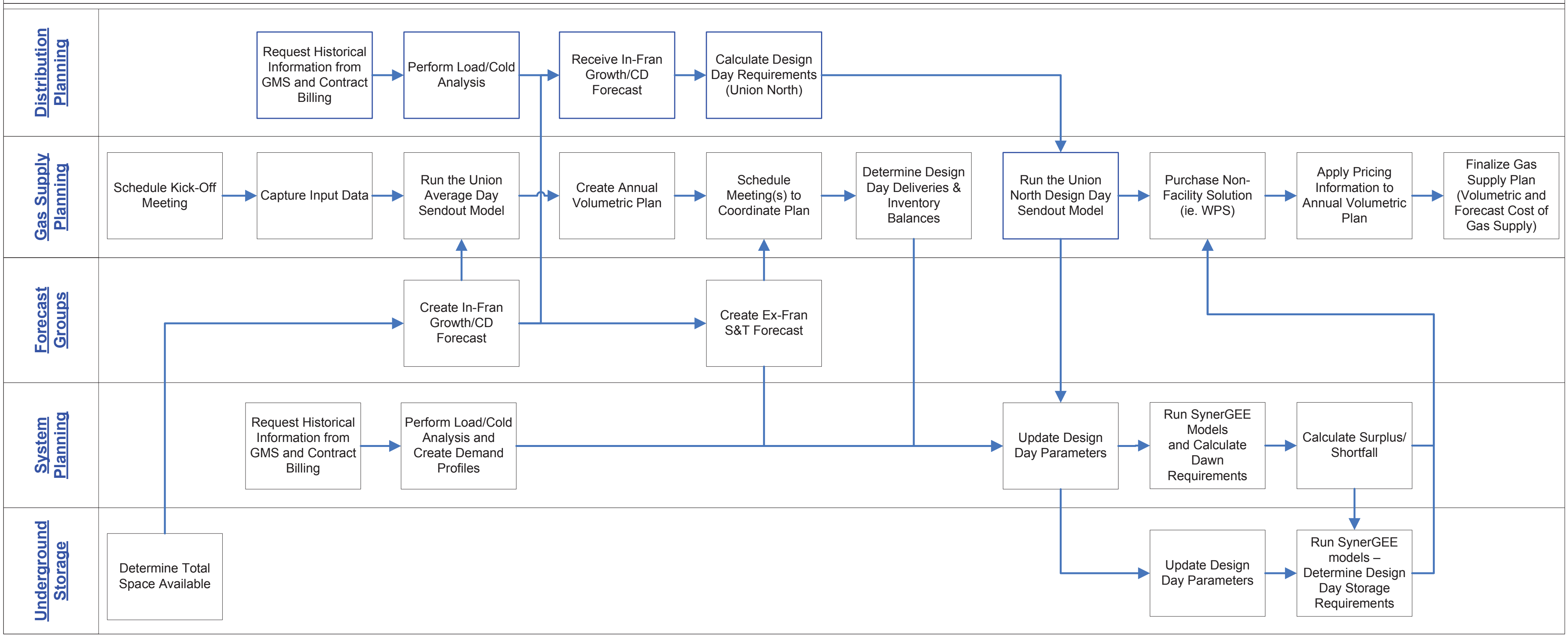
Appendix A - Gas Supply Planning Process

Appendix B - Sales Service Gas Supply Demand Balance

Appendix C - Union South Detailed List of Transportation Contracts

Appendix D - Union North Detailed List of Transportation Contracts

Annual Gas Supply Planning Process



Appendix B
Union Gas Limited - System Sales Supply Demand Balance - November 2018 to October 2019

Particulars (TJ)	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Total
South													
Demands													
System Sales	13,470	20,769	23,533	21,001	18,233	11,257	6,162	3,507	3,597	3,498	4,348	7,807	**137,181**
South Co. Use, UFG, Comp. Fuel	482	902	1,634	1,853	1,364	632	499	475	630	703	752	758	**10,683**
Less: Customer Supplied Fuel	(428)	(646)	(1,153)	(939)	(573)	(230)	(127)	(152)	(158)	(172)	(125)	(112)	**(4,816)**
Total Demands	13,524	21,024	24,014	21,915	19,023	11,659	6,534	3,830	4,069	4,029	4,974	8,453	**143,049**
Supplies													
TCPL Empress-Union ECDA	90	93	93	84	93	90	93	90	93	93	90	93	**1,095**
Vector	2,532	2,617	2,617	2,363	2,617	2,532	2,617	2,532	2,617	2,617	2,532	2,617	**30,807**
TCPL Niagara-Kirkwall	633	654	654	591	654	633	654	633	654	654	633	654	**7,702**
Panhandle	1,108	1,145	1,145	1,034	1,145	1,108	1,145	1,108	1,145	1,145	1,108	1,145	**13,478**
Local Production	37	38	38	35	38	37	38	37	38	38	37	38	**452**
Ojibway	633	654	654	591	654	633	654	633	654	654	633	654	**7,702**
Dawn	3,634	3,635	3,519	3,283	3,635	3,842	3,429	3,673	3,795	3,795	3,673	3,795	**43,706**
Nexus	3,165	3,271	3,271	2,954	3,271	3,165	3,271	3,165	3,271	3,271	3,165	3,271	**38,510**
Total Supplies	11,832	12,106	11,991	10,935	12,106	12,040	11,900	11,871	12,267	12,267	11,871	12,267	**143,452**
Change in Inventory - wd/(inj)	1,692	8,918	12,024	10,980	6,917	(381)	(5,367)	(8,041)	(8,198)	(8,238)	(6,897)	(3,814)	**(403)**
Total Supplies + Inventory Change	13,524	21,024	24,014	21,915	19,023	11,659	6,534	3,830	4,069	4,029	4,974	8,453	**143,049**
North													
Demands													
System Sales													
Union NCDA	373	540	656	545	468	284	144	94	87	82	93	209	**3,573**
Union EDA	1,289	1,864	2,262	1,898	1,649	1,032	526	344	316	318	324	728	**12,551**
Union MDA	53	77	95	78	67	40	20	13	11	10	11	28	**504**
Union NDA	1,497	2,168	2,610	2,163	1,847	1,120	583	368	339	333	378	823	**14,230**
Union SSMDA	375	554	666	552	473	289	151	97	87	82	94	213	**3,634**
Union WDA	830	1,202	1,476	1,228	1,061	655	344	243	215	197	208	478	**8,137**
North Comp Fuel	6	19	10	5	3	15	32	31	32	32	31	32	**246**
Total Demands	4,423	6,424	7,776	6,470	5,567	3,434	1,799	1,189	1,086	1,055	1,139	2,511	**42,874**
Supplies													
TCPL Empress-Union NCDA	30	31	31	28	-	30	31	30	31	31	30	31	**334**
TCPL Empress-Union EDA	30	31	31	28	-	30	31	30	31	31	30	31	**334**
TCPL Empress-Union MDA	54	82	101	83	71	41	18	8	6	6	8	26	**504**
TCPL Empress-Union NDA	63	65	65	58	-	63	65	63	65	65	63	65	**696**
TCPL Empress-Union SSMDA	389	-	-	-	-	560	579	560	579	579	560	579	**4,386**
TCPL Empress-Union WDA	958	1,298	625	589	155	1,193	400	248	211	200	230	543	**6,651**
TCPL Parkway-Union EDA	436	309	329	452	-	-	-	190	229	323	426	385	**3,078**
TCPL Parkway-Union NDA	705	911	880	610	-	-	-	755	952	884	748	851	**7,294**
TCPL Parkway-Union NCDA	58	21	34	63	-	-	-	22	81	56	49	27	**411**
Nexus	1,583	1,635	1,635	1,477	1,635	1,583	1,635	1,583	1,635	1,635	1,583	1,635	**19,255**
Total Supplies	4,306	4,381	3,732	3,389	1,861	3,499	2,759	3,487	3,820	3,809	3,726	4,174	**42,944**
Change in Inventory - wd/(inj)	117	2,043	4,044	3,080	3,706	(65)	(960)	(2,298)	(2,734)	(2,754)	(2,586)	(1,663)	**(69)**
Total Supplies + Inventory Change	4,423	6,424	7,776	6,470	5,567	3,434	1,799	1,189	1,086	1,055	1,139	2,511	**42,874**
Total Demands													
South	13,524	21,024	24,014	21,915	19,023	11,659	6,534	3,830	4,069	4,029	4,974	8,453	**143,049**
North	4,423	6,424	7,776	6,470	5,567	3,434	1,799	1,189	1,086	1,055	1,139	2,511	**42,874**
	17,948	**27,448**	**31,790**	**28,385**	**24,590**	**15,093**	**8,333**	**5,019**	**5,155**	**5,084**	**6,113**	**10,964**	**185,923**
Total Supplies													
South	11,832	12,106	11,991	10,935	12,106	12,040	11,900	11,871	12,267	12,267	11,871	12,267	**143,452**
North	4,306	4,381	3,732	3,389	1,861	3,499	2,759	3,487	3,820	3,809	3,726	4,174	**42,944**
	16,138	16,487	15,723	14,324	13,968	15,539	14,660	15,358	16,087	16,075	15,596	16,441	**186,395**
Change in Inventory - wd/(inj)													
South	1,692	8,918	12,024	10,980	6,917	(381)	(5,367)	(8,041)	(8,198)	(8,238)	(6,897)	(3,814)	**(403)**
North	117	2,043	4,044	3,080	3,706	(65)	(960)	(2,298)	(2,734)	(2,754)	(2,586)	(1,663)	**(69)**
	1,810	10,961	16,067	14,061	10,623	(446)	(6,326)	(10,338)	(10,932)	(10,991)	(9,483)	(5,477)	**(472)**
Total Supplies + Inventory Change	**17,948**	**27,448**	**31,790**	**28,385**	**24,590**	**15,093**	**8,333**	**5,019**	**5,155**	**5,084**	**6,113**	**10,964**	**185,923**

Gas Supply Plan Memorandum
Appendix C

UNION GAS LIMITED

Summary of November 1, 2018 Upstream Transportation Contracts
as of December 2018

Southern Operations Areas

Line No.	Upstream Pipeline	Primary Receipt Point	Primary Delivery Point	Contract Quantity	Contract Units	Contract Termination Date	Unitized Demand Charge ($Cdn/GJ)	Commodity Charge ($Cdn/GJ)	100% LF Toll ($Cdn/GJ)	Rate Type
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h=f+g)	
	TransCanada Pipeline									
1	Empress to Union ECDA FT	Empress	Union ECDA	3,000	GJ	31-Oct-2020	1.901		1.901	Tariff
2	Dawn to Union CDA FT	Dawn	Union ECDA	8,000	GJ	31-Oct-2020	0.296		0.296	Tariff
3	Niagara to Kirkwall FT	Niagara	Kirkwall	21,101	GJ	31-Oct-2022	0.201		0.201	Tariff
4	Kirkwall to Union CDA FT	Kirkwall	Union CDA (Amended)	135,000	GJ	31-Oct-2032	0.141		0.141	Tariff
5	TCPL FT - Total			167,101	GJ					
	Panhandle Eastern Pipe Line Field Zone									
6	PEPL FT(1)	Panhandle Field Zone	Ojibway (Union)	25,000	DTH	31-Oct-2025	0.425	0.044	0.469	Tariff
7	PEPL FT (2)	Panhandle Field Zone	Ojibway (Union)	10,000	DTH	31-Oct-2027	0.425	0.044	0.469	Tariff
8	PEPL - Total			36,927	GJ					
	Vector Pipelines									
9	Vector US FT1	Chicago	Cdn/US Interconnect	80,000	DTH	31-Oct-2022	0.296	0.002	0.298	Fixed
10	Vector Canada FT1	Cdn/US Interconnect	Dawn (Union)	84,404	GJ	31-Oct-2022	0.019	0.0004	0.019	Fixed
11	Vector - Total			84,404	GJ		0.315	0.002	0.317	
	NEXUS									
12	NEXUS - FT(3)(4)(5)	Kensington	St. Clair (Union)	150,000	DTH	01-Nov-33	1.090		1.090	Fixed
				158,258	GJ					
	Other:									
13	St.Clair Pipelines L.P. (St.Clair Pipeline)	St. Clair/Intl Border	St. Clair/Intl Border	214,000	GJ	31-Oct-2023	0.004		0.004	Tariff
14	St.Clair Pipelines L.P. (Bluewater Pipeline)	Bluewater/Intl Border	Bluewater/Intl Border	127,000	GJ	31-Oct-2023	0.022		0.022	Tariff

Exchange Rate 1 US =	1.3291	CAD	As of November 30, 2018
Conversion Factor	1.055056		
Heat Content (as of April 1/18)	38.89		

Note:

(1) Effective November 1, 2019 Contract Quantity increases to 35,000 DTH/day.
(2) Effective November 1, 2019 Contract Quantity increases to 22,000 DTH/day.
(3) Union has contracted for 150,000 DTH/day and allocates 50,000 DTH/day to the North Portfolio
(4) Start date assumed in Gas Supply Plan to be October 1, 2018 with a 15 year contract term. (Actual commencement date, November 1, 2018)
(5) Effective November 1, 2018, Union has obtained a 4 year contract for primary receipt at Clarington for up to 75,000 dth/day with a cost of $0.15US/dth

Gas Supply Plan Memorandum
Appendix D

UNION GAS LIMITED

Summary of November 1, 2018 Upstream Transportation Contracts(1)(2)
as at December 2018

Northern and Eastern Operations Areas

Line No.	Upstream Pipeline	Primary Receipt Point	Primary Delivery Point	Contract Quantity	Contract Units	Contract Termination Date	Unitized Demand Charge ($Cdn/GJ)	Commodity Charge ($Cdn/GJ)	100% LF Toll ($Cdn/GJ)	Rate Type
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h=f+g)	
	TransCanada Pipeline									
1	Empress to Union NCDA FT	Empress	Union NCDA	1,412	GJ	31-Oct-2020	1.841		1.841	Tariff
2	Empress to Union EDA FT	Empress	Union EDA	1,089	GJ	31-Oct-2022	2.033		2.033	Tariff
3	Empress to Union NDA FT	Empress	Union NDA	4,442	GJ	31-Oct-2020	1.548		1.548	Tariff
4	Empress to Union WDA FT	Empress	Union WDA	51,407	GJ	31-Oct-2020	1.003		1.003	Tariff
5	Empress to Union WDA FT	Empress	Union WDA	1,520	GJ	31-Oct-2019	1.003		1.003	Tariff
6	Empress to Union SSMDA FT	Empress	Union SSMDA	8,843	GJ	31-Oct-2020	1.404		1.404	Tariff
7	Empress to Union SSMDA FT	Empress	Union SSMDA	12,800	GJ	31-Oct-2020	1.404		1.404	Tariff
8	Empress to Union MDA FT	Empress	Union MDA	5,565	GJ	31-Oct-2020	0.698		0.698	Tariff
9	Parkway to Union EDA FT	Parkway	Union EDA	35,000	GJ	31-Oct-2022	0.360		0.360	Tariff
10	Parkway to Union EDA FT	Parkway	Union EDA	9,128	GJ	31-Oct-2033	0.360		0.360	Tariff
11	Parkway to Union EDA FT	Parkway	Union EDA	75,000	GJ	31-Oct-2031	0.360		0.360	Tariff
12	Parkway to Union EDA FT (EMB)	Parkway	Union EDA	25,000	GJ	31-Oct-2031	0.394		0.394	Tariff
13	Parkway to Union EDA FT	Parkway	Union EDA	9,286	GJ	31-Oct-2031	0.360		0.360	Tariff
14	Parkway to Union EDA FT	Parkway	Union EDA	5,000	GJ	31-Oct-2032	0.360		0.360	Tariff
15	Parkway to Union NCDA FT	Parkway	Union NCDA	1,100	GJ	31-Oct-2031	0.255		0.255	Tariff
16	Parkway to Union NCDA FT	Parkway	Union NCDA	2,887	GJ	31-Oct-2032	0.255		0.255	Tariff
17	Parkway to Union NCDA FT	Parkway	Union NCDA	7,796	GJ	31-Oct-2033	0.255		0.255	Tariff
18	Parkway to Union NDA FT	Parkway	Union NDA	126,629	GJ	31-Oct-2031	0.519		0.519	Tariff
19	TCPL FT - Total			383,904	GJ					
	TransCanada Storage Transportation Service Firm Withdrawal									
20	NCDA	Parkway	Union NCDA	13,704	GJ	31-Oct-2024				
21	WDA	Parkway	Union WDA	31,420	GJ	31-Oct-2024				
22	SSMDA	Dawn	Union SSMDA	35,022	GJ	31-Oct-2024				
23	NDA	Parkway	Union NDA	48,375	GJ	31-Oct-2024				
24	EDA	Parkway	Union EDA	26,351	GJ	31-Oct-2024	0.360		0.360	Tariff
25	TCPL Firm STS Withdrawal - Total			154,872	GJ					
	TransCanada Storage Transportation Service Firm Injection									
26	WDA	Union WDA	Parkway	3,150	GJ	31-Oct-2024	1.230		1.230	Tariff
27	EDA	Union EDA	Parkway	1,000	GJ	31-Oct-2024				
28	NDA	Union NDA	Parkway	49,100	GJ	31-Oct-2024	0.519		0.519	Tariff
29	TCPL Firm STS Injection - Total			53,250	GJ					
	Centra Transmission Holdings Inc.(3)									
30	Centra Transmission Holdings Inc.	Spruce	Union MDA	149.6	10^3m^3	31-Oct-2019	0.506		0.506	Tariff
31	Centra Pipelines Minnesota Inc.	Sprague	Baudette	5,281	MCF	31-Oct-2019	0.133		0.133	Tariff
32	CTHI FT - Total			5,727	GJ					

Exchange Rate 1 US =	1.3291	CAD	As of November 30, 2018
Conversion Factor	1.055056		
Heat Content (as of April 1/18)	38.28		

Note:
(1) Assumes all 2018 TCPL NCOS as awarded, and existing contracts reduced as bid
(2) Excludes NEXUS capacity allocated from the South portfolio
(3) Renewal letters sent in April 2018 to renew for 1 year to October 31, 2019

ENBRIDGE GAS INC. - EGD RATE ZONES 2019 GAS, TRANSPORTATION, AND STORAGE COSTS

1. INTRODUCTION

The purpose of this evidence is to provide an overview of the gas cost consequences of the gas supply activities for Enbridge Gas Inc's ("Enbridge") EGD Rate Zones during the 2019 fiscal year. The process for developing the Company's 2019 gas supply plan and calculating budgeted gas costs is consistent with the approach and the gas supply principles described in the Gas Supply Memorandum at Exhibit E1, Tab 2, Schedule 1.

2. REVIEW OF CURRENT MARKET CONDITIONS AND GAS SUPPLY PLANNING PRINCIPLES

The gas supply planning cycle begins with a review of North American natural gas market conditions. In recent years, changes to the TransCanada PipeLines Limited ("TCPL") Mainline toll structure and increasing supply opportunities in the United States northeast have influenced a shift from Alberta purchases (paired with long haul transportation) to Ontario purchases at the Dawn and Niagara receipt points (paired with short haul transportation).

As Enbridge and other shippers shift supply obligations east, it also needs to ensure its gas supply plan is not overly reliant on one source of supply.

Throughout the gas supply planning process, the gas supply planning principles of reliability, diversity, flexibility, and landed cost, are revisited to ensure a well-designed and robust plan.

3. PEAK DAY COVERAGE

Enbridge's EGD rate zone gas supply portfolio is structured first and foremost to meet peak demand. The EGD rate zone's 2019 gas cost budget assumes peak day HDD values of 41.4 degree days in the Central Weather Zone, 48.2 degree days in the Eastern Weather Zone, and 38.8 degree days in the Niagara Weather Zone, as produced by current Design Criteria[1].

Based upon this design day forecast and the information available at the time, the EGD rate zone forecast for design peak day volume is 106,840 10^3m^3 (4.1 PJs) during the winter season of the 2019 fiscal year.

A comparison of the 2019 Forecast Peak Day Supply Mix and the 2018 Forecast Peak Day Supply Mix can be found at Exhibit E1, Tab 4, Schedule 5. This schedule is structured in two parts: The first part, Budget Net Peak Day Demand (on Line 3), is the result of total system peak day demand less curtailment volumes[2]; the second part, displayed between Lines 4 and 11, is all of the services for EGD rate zones procured to meet peak day demand (the total of which is

[1] Current Design Criteria is discussed in Section 2.3 of Exhibit E1, Tab 2, Schedule 1.
[2] Curtailment volumes are defined and discussed in Section 3.4.2 of Exhibit E1, Tab 2, Schedule 1.

contained in Line 12). These include transportation services, deliveries from Ontario T-Service customers, third-party supplies delivered to the franchise area, and peaking service. Any variation between the actual and forecasted cost for peaking service will be captured in the 2019 EGD Purchased Gas Variance Account ("2019 EGD PGVA").

4. TRANSPORTATION PLANNING AND COSTS

A summary of EGD rate zone 2019 transportation contracts can be found at Exhibit E1, Tab 4, Schedule 7, page 1 (the Status of Transportation Contracts). Note that the total contracted daily volume on this schedule is greater than listed on the Forecast Peak Day Supply Mix schedule. This is due to the fact that the Peak Day Supply Mix schedule displays volumes delivered to the EGD rate zone / franchise area, while the Status of Transportation Contracts schedule lists all Transportation contracts, including those that deliver volume to other receipt points such as Dawn, for transportation onwards to the CDA and EDA.

Enbridge has a number of Firm Transportation ("FT") and other service entitlements in place for system gas sourced in Canada and the United States during the 2019 fiscal year. These include service entitlements on traditional paths such as TCPL and the Vector Pipeline ("Vector"). TCPL long haul FT can be referenced at Line 4 of Schedule 5 and Lines 1 to 3 of Schedule 7. Vector capacity can be referenced in Lines 20 to 23 of Schedule 7, but is not identifiable in the Peak Day Supply Mix schedule since the capacity is delivered to Dawn rather than the EGD rate zone / franchise area. Gas delivered to Dawn can be transported to the franchise area via TCPL short haul (Schedule 5, Lines 6 and 7) as well as Union Deliveries (Schedule 5, Line 9). In the Status of Transportation Contracts schedule, TCPL short haul and STS transportation contracts are identified in Lines 4 to 17, while Union transportation contracts are in Lines 26 to 38.

The 2019 EGD rate zone gas cost forecast also includes forecasted costs pertaining to the Nexus Pipeline. The Nexus Pipeline is intended to bring supplies from Kensington Ohio and interconnect with the Vector Pipeline at the Milford Junction receipt point. Please refer to Exhibit E1, Tab 4, Schedule 7, page 1 of 2 ("Status of Transportation and Storage Contracts") for the applicable tolls. Any changes between forecasted and actual costs will be captured in the 2019 EGD PGVA.

The Company is not forecasting any TCPL Unabsorbed Demand Charges ("UDC") and is not proposing a UDC Deferral Account for 2019. UDC has been forecast in prior years when the Company does not expect it will be able to fully utilize its contracted long haul TCPL capacity.

For the purposes of the 2019 forecast, it is assumed that the customers who elected to transition from Western or Ontario T-Service to the Dawn T-Service option was completed by customers effective November 1, 2018.

The impact of Direct Purchase customers shifting from Western or Ontario T-Service to Dawn T-Service is twofold: firstly, peak day deliveries to the franchise area via Ontario T-Service customers decline (Line 8 of the Peak Day Supply Mix schedule); secondly, there is a need to increase volumes delivered to the franchise area to replace the decline in volume delivered by Ontario T-Service customers (currently that deficiency is mostly visible as an increase in Peaking Service in Line 11 of Schedule 5).

M12 and M12X service entitlements on the Union system currently total 2,985,102 GJ per day (3,718 MMcf per day), and are scheduled to increase by 75,000 GJ per day effective November 1, 2019 (Line 38 of Schedule 7) for a total available capacity of 3,060,102 GJ per day. The EGD rate zone gas supply plan also currently holds 236,586 GJ per day of westerly C1 capacity on the Union system (Line 34 of Schedule 7) which is scheduled to expire March 31, 2019. M12 is a versatile service, providing delivery of gas by Union at Dawn for storage injection or onward transportation, as well as for gas withdrawn from storage at Tecumseh or Union, or both. As a transportation service, M12 provides onward transportation of gas sourced in Western Canada or the United States, or both, and delivered at Dawn. Of the 3,060,102 GJ per day of capacity listed above, 200,000 GJ per day is M12X capacity. M12X service differs from M12 service in that it is bi-directional, allowing for transportation of gas between any two of the main points on the Union system, Dawn, Parkway, or Kirkwall.

The Company also has M16 transportation capacity with Union to facilitate the use of the Chatham “D” Storage pool.

The gas cost forecast assumed January 1, 2018 Union tolls. Any variation between actual Union tolls and the forecasted tolls will be captured in the 2019 EGD Storage and Transportation Deferral Account ("2019 EGD S&TDA").

5. SUPPLY PLANNING AND COMMODITY COSTS

A new supply source was added in 2018 and continues in 2019 - see Exhibit E1, Tab 4, Schedule 3, page 1 (the Summary of Gas Cost to Operations): Dominion Supplies, on Line 8. Dominion Supplies refer to gas acquired at the Clarington and Kensington receipt points and transported on the Nexus Pipeline to the Milford Junction delivery point on the Vector Pipeline. The decision to acquire supplies from Dominion supports diversity and reliability.

As a consequence of changes in the management of storage balances that were first introduced in the 2015 gas supply plan coupled with the de-contracting of long haul TCPL capacity the EGD gas supply plan manages a large Dawn requirement with the winter purchase requirements accounting for the bulk of annual purchases. In 2019 there is a forecast annual Dawn requirement of 2,649.8. 10^6 m^3 (93.5 Bcf) with 1,734.0 10^6 m^3 (61.2 Bcf) required during the winter months. To manage the additional winter seasonal requirements the intention is to acquire the necessary supplies through a series of RFP's (seasonal, term and monthly) as well as buying gas on the day at Dawn throughout the winter. The purpose for not contracting for the entire requirement today is the need to maintain a level of flexibility in the portfolio to be able to manage potential reductions in demand in the event of warmer than budgeted weather this winter. Similar to the winter of 2018 the plan will also look at opportunities to acquire the necessary supplies at other supply basins. For example, in 2017 incremental Vector capacity was acquired which allowed for increased purchases in Chicago thereby reducing to some extent the reliance on the winter Dawn requirement and enhancing the gas supply plan's reliability and mitigating landed cost risk. The plan will also review shorter term high deliverability seasonal exchanges to meet a winter Dawn requirement. These hybrid arrangements provide economic benefit to customers and offer enhanced operational flexibility.

As mentioned and rationalized in EGD's 2018 Rate Application there is no foreseen material change in the level of the winter Dawn requirement until 2021. The 2018 approved gas supply plan included a proposal to acquire an incremental 2-3 PJ's of third party storage effective April 1, 2018 to allow the purchase of additional supplies in the summer for injection purposes, then available to be withdrawn from storage in the winter thereby providing a benefit of operational flexibility and reliability as well as passing on the benefit of lower summer prices to customers. The 2019 gas supply plan and forecasted gas cost has assumed a similar level of storage capacity as assumed in the 2018 Rate Application.

The EGD rate zone forecast of gas supply acquisition during the 2019 Fiscal Year can be referenced in Exhibit E1, Tab 4, Schedule 3, the "Summary of Gas Costs to Operations", and is reproduced in Table 1, below.[3]

Table 1: 2019 Volumes and Costs, by Source

Contract Type / Supply Source[4]	Volume (10^3m^3)	Cost $ (000's)
Western Canadian Supply	2,161,097.7	165,664.5
Ontario Production	0	0
Peaking	6,902.0	3,615.0
Chicago Supplies	649,654.9	81,176.0
Dominion Supplies	1,099,416.1	132,450.5
Delivered Supplies	2,649,847.9	366,405.0
Niagara Supplies	1,894,627.6	235,982.4
Total	8,461,546.2	985,293.4

The prices assumed for the supplies listed in Table 1 reflect the market's assessment for the different expected delivery points in the EGD rate zone forecast of gas supply at the time of preparation of this evidence. However, in an effort to isolate the cost impact resulting from the change in supply mix, we have removed the impact of the updated price forecast and assumed that the 2019 gas cost will be based upon the October 1, 2018 QRAM Reference Price.

[3] The difference between the Total Volume in the table vs. Line 9 of Schedule 3 is equal to the TCPL Fuel Requirement, Line 1.6 of Schedule 4.
[4] Details on the supply sources can be found in Exhibit E1, Tab 2, Schedule 1, Section 3.1.

Any variance between the actual commodity cost and the forecasted prices will be captured in the 2019 EGD PGVA. Also, any variation between the forecasted transportation tolls and the actual tolls will be captured in the 2019 EGD PGVA.

The 2019 EGD rate zone volumetric forecast as set out at Exhibit E1,Tab 4, Schedule 4, is proposed to be used, on an interim basis, for the purpose of deriving reference prices in 2019 QRAM applications for the EGD rate zones, until a final decision in this proceeding is implemented. Following Board approval of 2019 volumes and the cost consequences of the 2019 EGD rate zone gas supply plan, any adjustments, if necessary, will be made within the next QRAM application.

6. STORAGE[5]

Management of storage balances assumed in the 2019 EGD rate zone gas supply plan is consistent with the methodology described in Section 3.3 of Exhibit E1, Tab 2, Schedule 1, where it relies on an ability to maintain maximum deliverability from storage until the end of February, and an ability to maintain deliverability sufficient to meet March peak day as late as March 31.

Storage contracts for capacity with third party providers are valued at market based pricing. The magnitude of the contracted capacity and the term of the contracts vary such that every year the

[5] Enbridge Gas has underground storage of its own at Tecumseh near Corunna in southwestern Ontario and at Crowland near Welland in the Niagara Region, but this section is concerned with storage provided by third-parties.

EGD gas supply plan will access the marketplace via an RFP process seeking to replace the contracted capacity scheduled to expire March 31 or April 30 of that year. The 2019 gas cost forecast assumes the amount and value of storage set to expire will be extended. For gas cost purposes in 2019 the plan assumes a value for this storage to be equivalent to the current value of the storage contracts scheduled to expire March 31, 2019 or April 30, 2019. Any variation between this assumed cost and the cost assumed for the current contract level expected to be renewed and the actual cost of storage acquired through an RFP process will be captured in the 2019 EGD S&TDA.

Storage contracts are identified in Exhibit E1, Tab 4, Schedule 7, page 2.

7. Evaluation

The EGD rate zone gas supply plan is evaluated using four gas supply planning principles: Reliability, Diversity, Flexibility, and Landed Cost. Comments on the 2019 gas supply plan, as they relate to each planning principle are expanded below.

8. Reliability

In the 2019 gas supply plan, there is a continued focus on sourcing gas from established liquid hubs such as Empress and Dawn. Contracted capacity out of Dawn is at an all-time high for the EGD rate zone gas supply plan. To avoid an over-reliance on daily purchases at Dawn, the plan will procure at sources upstream of Dawn by utilizing Vector capacity from Chicago and from

Dominion South (via NEXUS). Since Niagara is a less liquid hub, the plan contracts for seasonal and annual supply rather than making daily purchases there.

9. DIVERSITY

In recent years, the EGD rate zone gas supply plan has converted a significant portion of TCPL long haul capacity to TCPL short haul capacity. However, Enbridge has chosen to retain some TCPL long haul capacity to maintain diversity of path and source. This is discussed in the Gas Supply Memorandum document Exhibit E1, Tab 2, in the section on "Transportation". There has also been an increase in diversity through the addition of Dominion South supply via NEXUS capacity, and through contracting for Link capacity. To provide a visual representation of gas supply diversity, and the magnitude of the changes conducted in recent years, Appendix 1 charts the sources included in the 2015 gas supply portfolio, before Enbridge the converted TCPL long haul capacity to TCPL short haul capacity, as compared to the 2019 gas supply portfolio, after the conversion was completed.

10. FLEXIBILITY

Appendix 2 provides a visual representation of the gas supply portfolio's flexibility, in terms of contract renewal terms, broken down by delivery area. With 89% and 63% of contracted capacity delivered to the CDA and EDA, respectively, up for renewal in the next five years, optionality is ensured within the gas supply portfolio. In some cases, it is necessary to make longer-term commitments to satisfy other planning criteria. For example, the 15-year agreement with NEXUS is a significant benefit to diversity, reliability, and landed cost. In other cases, there is the option to make shorter term supply and capacity arrangements when appropriate.

11. LANDED COST

The shift from long haul capacity to short haul capacity is contributing to a lower cost gas supply portfolio, on a per unit basis. Landed cost was considered in all contracting decisions made for 2019, weighed against the other three gas supply principles.

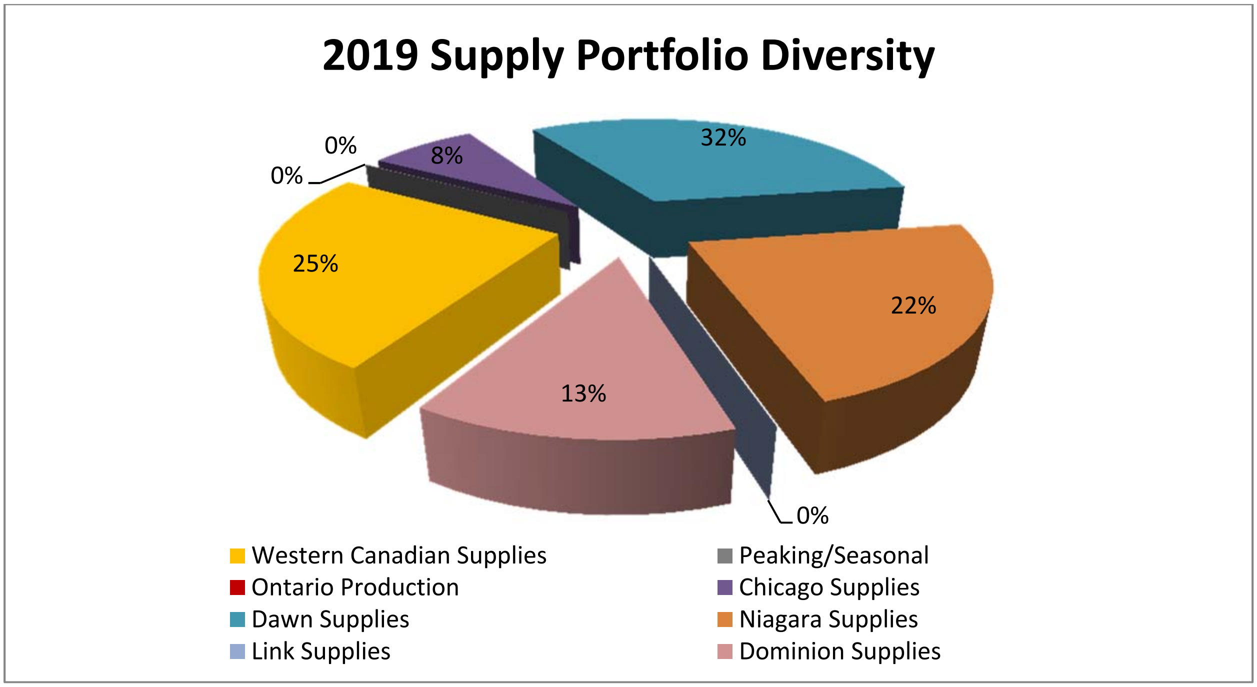
12. ENERGY CONTENT

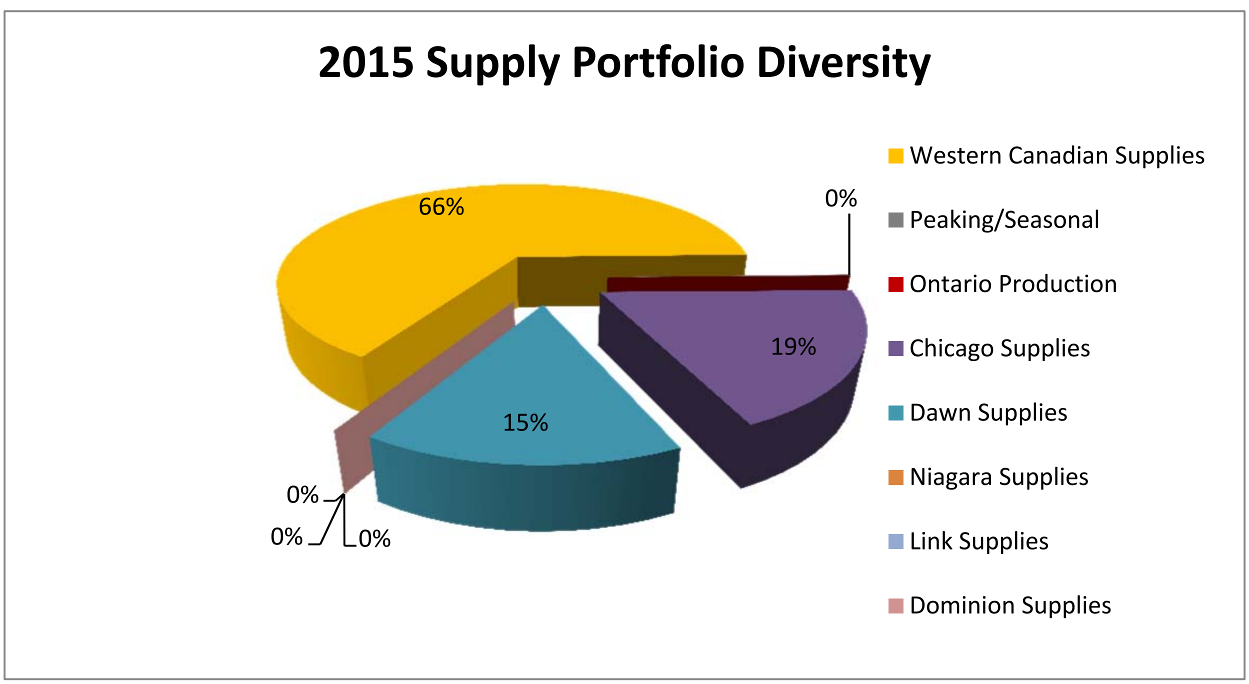
As a part of the 2017 Settlement Agreement (EB-2016-0215) Enbridge made a commitment that starting with its 2018 gas supply plan, Enbridge would use an updated heat value when developing its annual gas supply plan. The 2019 EGD rate zone gas supply plan has used a gross heating value of 38.53 MJ/m^3 to convert quantities (i.e., GJ, Dth) into volumes (i.e., 10^3m^3, MMcf). Quantities are the units specified in many of the gas purchase and transportation service agreements, whereas rates are volumetric.

13. RELIEF REQUESTED

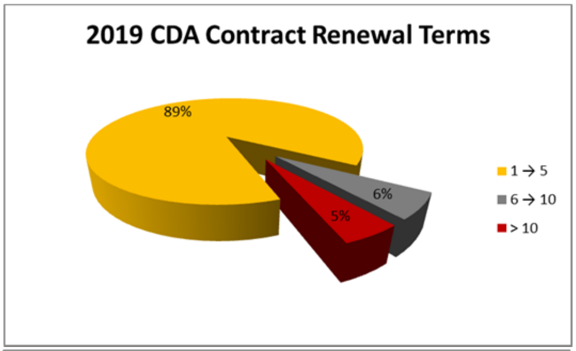
Based on the evidence above Enbridge requests recovery of the cost outcomes of the 2019 EGD rate zone Gas Supply Plan and the associated Gas Cost forecast for 2019.

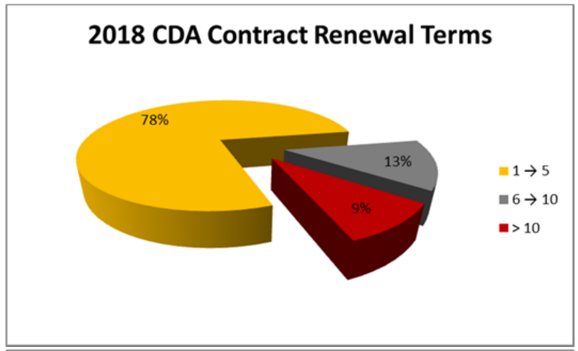
Appendix 1

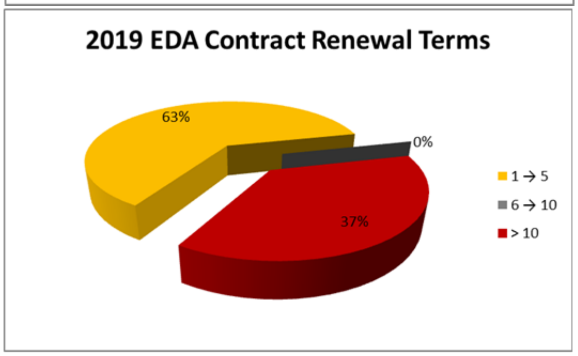

2019 Supply Portfolio Diversity
0%
0%
8%
32%
25%
22%
13%
0%
Western Canadian Supplies
Peaking/Seasonal
Ontario Production
Chicago Supplies
Dawn Supplies
Niagara Supplies
Link Supplies
Dominion Supplies

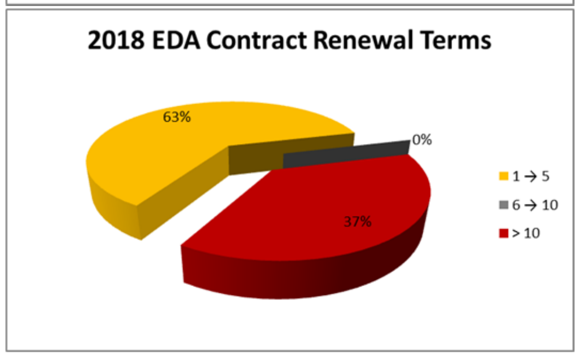

2015 Supply Portfolio Diversity
66%
0%
19%
15%
0%
0%
0%
Western Canadian Supplies
Peaking/Seasonal
Ontario Production
Chicago Supplies
Dawn Supplies
Niagara Supplies
Link Supplies
Dominion Supplies

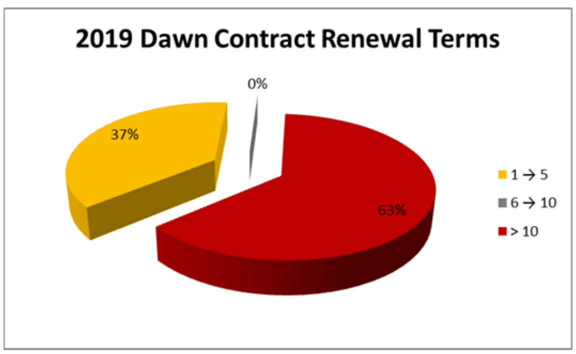
Appendix 2

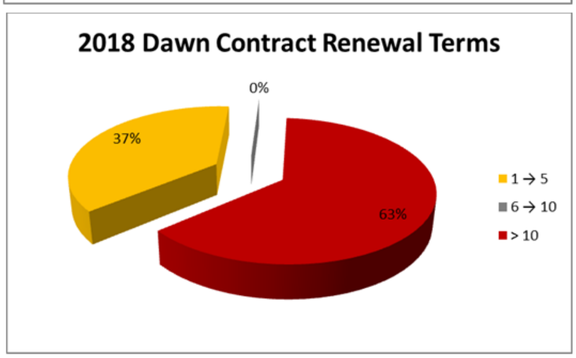

2019 CDA Contract Renewal Terms
89%
6%
5%
1 → 5
6 → 10
> 10

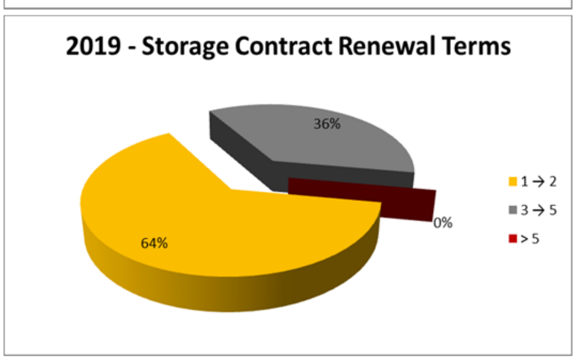

2018 CDA Contract Renewal Terms
78%
13%
9%
1 → 5
6 → 10
> 10

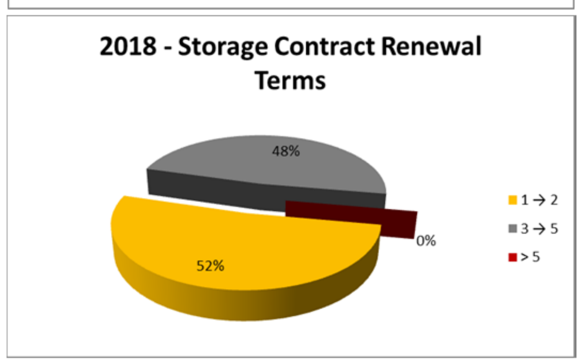

2019 EDA Contract Renewal Terms
63%
0%
37%
1 → 5
6 → 10
> 10


2018 EDA Contract Renewal Terms
63%
0%
37%
1 → 5
6 → 10
> 10


2019 Dawn Contract Renewal Terms
0%
37%
63%
1 → 5
6 → 10
> 10


2018 Dawn Contract Renewal Terms
0%
37%
63%
1 → 5
6 → 10
> 10


2019 - Storage Contract Renewal Terms
36%
0%
64%
1 → 2
3 → 5
> 5


2018 - Storage Contract Renewal Terms
48%
0%
52%
1 → 2
3 → 5
> 5

EGD RATE ZONE - UNBILLED AND UNACCOUNTED-FOR GAS VOLUMES

1. PRODUCING THE UUF FORECAST – 2019 TEST YEAR

This evidence describes the forecast methodology and updates the forecast of Unbilled and Unaccounted-For Gas ("UUF") for the 2019 test year. The 2019 UUF forecast of 119,035 10^3m^3 is a component of the 2019 volumes budget.

The UUF forecast is produced using a two-step process involving the forecast of both Unaccounted-For Gas ("UAF") and unbilled volumes. The 2019 UUF forecast is equal to the 2019 UAF forecast plus the expected difference between the December 2019 and December 2018 unbilled volumes (i.e., change in unbilled volumes). Both the UAF and unbilled volumes forecasts are generated using regression models consistent with the Settlement Proposal in the EB-2015-0114 proceeding (Exhibit N1, Tab 1, Schedule 1, page 8).

UAF data for years prior to 2005 have been transformed to calendar year format in order to produce a calendar year UAF forecast. For an explanation of the transformation of volumes from fiscal to calendar year format, please see EB-2006-0034, Exhibit C1, Tab 3, Schedule 1.

2. UNBILLED VOLUMES

The Company uses a regression model to forecast the level of monthly unbilled volumes. The model relies on the high degree of correlation between volumes and degree days.

The change in unbilled volumes from December 2018 to December 2019 recognizes that at the end of any given year, a portion of volumes are captured in the current year that should reside in the previous year because billing does not reflect calendar months, and similarly, a portion of volumes are estimated in the following year that should reside in the current year. To net out the effects of both with the least administrative burden, the change in unbilled volumes is recorded annually in the same fashion.

3. UNACCOUNTED FOR GAS FORECAST

In the Settlement for EB-2015-0114, parties agreed that it is not appropriate to update UAF forecasting models during the Custom IR term. The Board approved the Settlement Proposal in its Decision and Order dated December 10, 2015. As a result, the model applied and approved as a part of the 2015 Rate Application (EB-2014-0276) will be used to produce the 2019 UAF forecast. Coefficients of existing model drivers are re-estimated to include the most recent year of actual data, and driver variables remain the same.

Figure 1 shows historical UAF data to 2017 along with the 2018 approved budget and the 2019 forecast. The addition of 2017 actual UAF serves to increase the estimated constant term (intercept) in the updated regression equation, contributing to a higher 2019 forecast value. This is consistent with a steeper series trend line with the inclusion of the 2017 actual value.

Figure 1

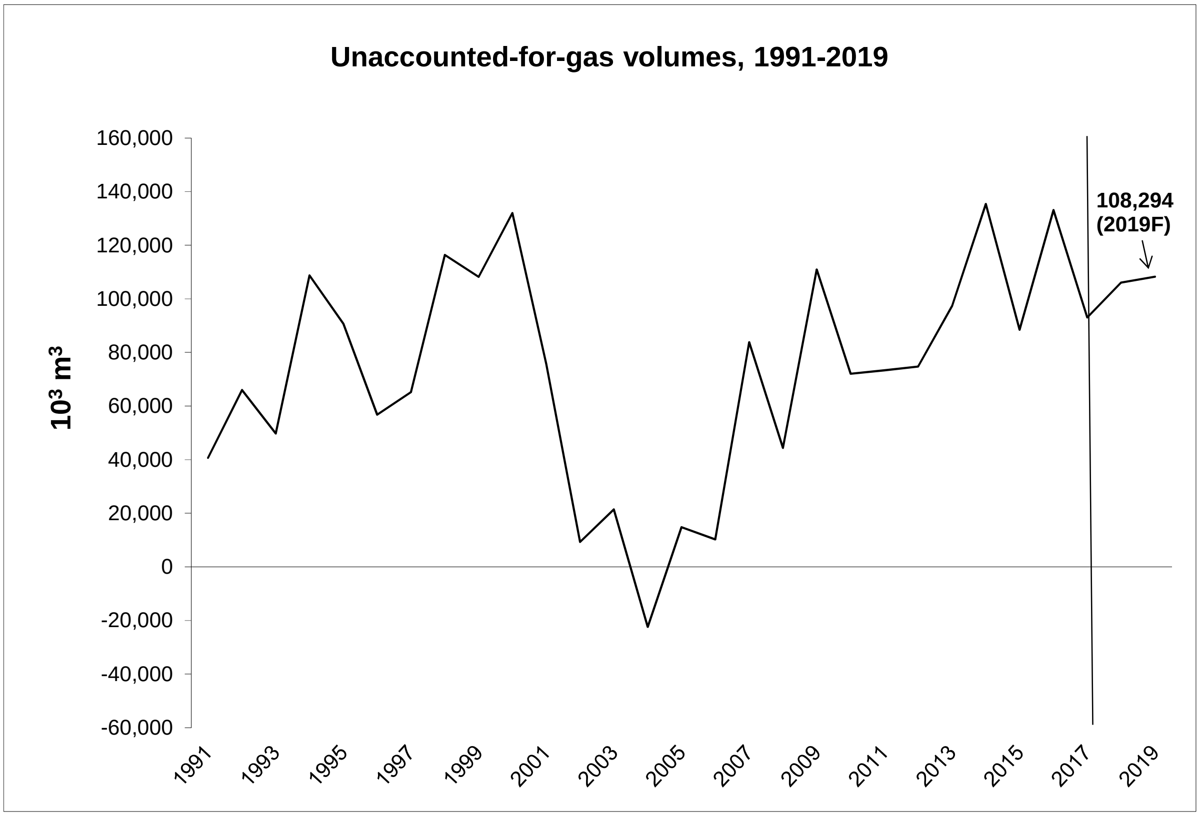

Unaccounted-for-gas volumes, 1991-2019
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
-20,000
-40,000
-60,000
10^3 m^3
108,294
(2019F)
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
2019

Table 1 presents UAF actuals along with most recently approved Budget values.

Table 1
UAF Actuals vs Board Approved

Col. 1	*Col. 2*	*Col. 3*
Calendar Year	**Actual**	**Board Approved**
2011	73,355	64,211
2012	74,762	68,925
2013	97,361	73,092
2014	135,380	77,660
2015	88,438	81,519
2016	133,112	84,766
2017	93,077	98,279
2018	-	106,077

4. CALCULATION OF 2019 UUF

The total UUF forecast is generated by adding the forecasted change in December 2019 and December 2018 unbilled volumes to the 2019 UAF forecast. As such, the 2019 Test Year UUF forecast is as follows:

2019 UUF = (Forecast of UAF Gas) + (Change in Unbilled Gas)

= (Forecast of UAF Gas) + (Forecast of December 2019 Unbilled Gas - Forecast for December 2018 Unbilled Gas)

$= 108{,}294\ 10^3 m^3 + (750{,}893\ 10^3 m^3 – 740{,}152\ 10^3 m^3)$

$= 108{,}294\ 10^3 m^3 + 10{,}741\ 10^3 m^3$

$= 119{,}035\ 10^3 m^3$

5. EB-2017-0102: 2016 ESM SETTLEMENT PROPOSAL

In the EB-2017-0102 Settlement Proposal, Enbridge committed to:

- File evidence explaining the steps that have been taken to address UAF that may be associated with metering differences at gate stations (as described in response to BOMA Interrogatory #21). Enbridge's evidence will address any reductions in UAF achieved to date from review of metering at gate stations, as well as plans for any future actions to address this item.

In 2017, EGD introduced a process to track and assess potential measurement errors at TCPL's gate stations, compiling a list of measurement assets at each gate station and identified the flow range of each device.

In 2018, EGD continues to refine this process, described below:

- EGD Gas Control monitors variances between TCPL gate stations and EGD's check meters and notifies the Telemetry group of variances +/-2%
- Telemetry issues a trouble call to record and assess the variance and where appropriate will initiate work order in Maximo. Based on Telemetry's assessment, where EGD's check meter is found not to be functioning appropriately, Telemetry will troubleshoot and correct the variance.
- Telemetry and Gas Control will review variances monthly and follow up with TCPL on any variances out of tolerance with EGD's check meters.

As a result of the meter variance analysis, Station Assets have initiated a project at Victoria Square Gate Station to better match system flows with flow requirements. The objectives are to improve metering accuracy, particularly during low flow conditions, while providing the versatility to ramp up/down the flow to meet operational needs. The project will evaluate replacing the existing NPS 30 Ultrasonic meters with either smaller ultrasonic meters or a bank of Coriolis meters. Design is still on going and the new metering has been included in EGD's asset plan and is currently prioritized to be installed in 2020.

The following is a comparison of the measurement variance between TCPL's custody meter and EGD's check meter in 2017 and 2018:

Table 2: Comparison of TCPL Metered Sendout Versus EGD Check Metered Sendout[1]

	CDA	NIAGARA	EDA
2017	-0.78	-0.98	-0.013
2018	-0.11	-0.40	-0.56

[1] Negative variances means that TCPL metered flow is higher than EGD's check metered flow

EGD Rate Zone Summary of Gas Cost to Operations
Year ended December 31, 2019

Item #		Col. 1 10^3m^3	Col. 2 $(000)	Col. 3 $/$10^3m^3$ (Col.2 / Col.1)	Col. 4 $/GJ (Col.3 / 38.53)
	Western Canadian Supplies				
1.1	Alberta Production	-	-	-	-
1.2	Western - @ Empress - TCPL	976,624.0	91,565.5	93.757	2.433
1.3	Western - @ Nova - TCPL	1,184,142.2	74,066.8	62.549	1.623
1.4	Western Buy/Sell - with Fuel	331.6	32.2	97.186	2.522
1.5	Western - @ Alliance	-	-	-	-
1.6	Less TCPL Fuel Requirement	(77,168.5)	-		
1.	Total Western Canadian Supplies	2,083,929.3	165,664.5	79.496	2.063
2.	Peaking Supplies	6,902.0	3,615.0	523.757	13.593
3.	Ontario Production	-	-	-	-
4.	Chicago Supplies	649,654.9	81,176.0	124.953	3.243
5.	Delivered Supplies	2,649,847.9	366,405.0	138.274	3.589
6.	Niagara Supplies	1,894,627.6	235,982.4	124.553	3.233
7.	Link Supplies	-	-	-	-
8.	Dominion Supplies	1,099,416.1	132,450.5	120.473	3.127
9.	Total Supply Costs	8,384,377.7	985,293.4	117.515	3.050
	Transportation Costs				
10.1	TCPL - Long Haul - Demand		159,237.6		
10.2	- Long Haul - Commodity	2,083,929.3	0.0	-	-
10.3	TCPL - Niagara Falls to Enbridge Parkway CDA		15,893.6		
10.4	- Firm Transportation Short Notice		5,598.8		
10.5	TCPL - Short Haul - Dawn to CDA		18,997.4		
10.6	- Dawn to EDA		26,614.4		
10.7	- Dawn to Iroquois		9,512.3		
10.8	- Parkway to CDA		6,123.8		
10.9	- Parkway to EDA		56,473.4		
10.10	Other Charges		0.0		
10.11	Nova Transmission		8,247.0		
10.12	Alliance Pipeline		0.0		
10.13	Vector Pipeline		13,880.5		
10.14	Nexus Pipeline		36,477.5		
10.15	Niagara Link Pipeline		0.0		
10.	Total Transportation Costs		357,056.3		
11.	Total Before PGVA Adjustment	8,384,377.7	1,342,349.7	160.101	4.155
12.	PGVA Adjustment		28,697.3		
13.	Total Purchases & Receipt	8,384,377.7	1,371,047.0	163.524	4.244

EGD Rate Zone Summary of Gas Cost to Operations
Year ended December 31, 2019

Item #		Col. 1 10^3m^3	Col. 2 $(000)	Col. 3 $/$10^3m^3$ (Col.2 / Col.1)	Col. 4 $/GJ (Col.3 / 38.53)
13.	Total Purchases & Receipt	8,384,377.7	1,371,047.0	163.524	4.244
14.	Storage Fluctuation	49,486.7	8,092.3		
15.	Commodity Cost to Operations	8,433,864.4	1,379,139.2	163.524	
16.	Storage and Transportation Costs		155,867.7		
17.	Gas Cost to Operations	8,433,864.4	1,535,007.0	182.005	4.724
18.	Western T-Service Transportation Costs		30,975.7	74.421	
19.	Dawn T-Service Transportation Costs		32,062.4	11.619	
20.	Forecasted Gas Costs	8,433,864.4	1,598,045.1	189.480	4.918

Reconciliation Of Natural Gas Sendout Volumes
To Sales Volumes
Year ended December 31, 2019

Item #				
1.	Sendout To Operations	8,433,864.4		
2.	T-Service Volumes	3,488,517.3		
3.	Total Sendout	11,922,381.7		
4.1	Residential Sales	4,800,950.9		
4.2	Commercial Sales	2,823,929.8	Western T	416,222.9
4.3	Industrial Sales	493,179.6	Ontario T	312,810.9
4.4	T-Service	3,484,720.8	Dawn T	2,759,483.9
4.5	Rate 200 T-Service (Gazifere)	43,725.3		
4.6	Rate 200 Sales (Gazifere)	131,083.1		3,488,517.6
4.7	Company Use	5,391.9		
4.8	Unaccounted For (UAF)	108,294.0		
4.9	Unbilled Forecast - Sales	50,670.1		
4.10	Unbilled Forecast - T-Service	(39,928.8)		
4.11	Lost and Unaccounted For (LUF)	20,365.2		
4.	Total System Requirements	11,922,381.8		

EGD Rate Zone Summary of Storage & Transportion Costs
Fiscal 2019

Item #	Units - $(000)	Col. 1 Storage & Transportation Charges Incurred in Fiscal 2019	Col. 2 Fiscal 2019 Storage Charges Recovered in Fiscal 2019	Col. 3 Fiscal 2018 Storage Charges Recovered in Fiscal 2019	Col. 4 Total Storage & Transportation Charges Recovered in Fiscal 2019
	Storage				
1.1	Chatham D	382.6	217.1	165.1	382.2
1.2	Injection	117.6	35.3	85.7	121.0
1.3	Withdrawal	137.6	137.6	0.0	137.6
1.4	Market Based Storage	18,098.6	9,961.3	8,079.6	18,041.0
1.6	Other	4,273.2	3,348.9	(4,855.0)	(1,506.1)
1.	Total Storage	23,009.6	13,700.2	3,475.5	17,175.7
2.	Total Transportation	123,766.4	68,224.5	54,300.9	122,525.4
	Dehydration				
3.1	Demand	1,056.4	581.4	473.7	1,055.1
3.2	Commodity	326.9	326.9	0.0	326.9
3.	Total Dehydration	1,383.3	908.3	473.7	1,382.0
4.	Total Storage & Other Costs	148,159.3	82,833.0	58,250.0	141,083.0
	Fuel Costs				
5.1	Tecumseh	2,544.2	1,597.0	1,160.9	2,758.0
5.2	Union Storage	880.9	572.6	272.5	845.1
5.3	Union Transportation	11,469.9	10,324.2	857.5	11,181.6
5.	Total Fuel Costs	14,895.1	12,493.8	2,290.9	14,784.7
6.	Unutilized Transportation Costs	0.0	0.0	0.0	0.0
7	Total Storage & Transportation	163,054.4	95,326.8	60,540.9	155,867.7
8.	Storage and Transportation Costs Charged to Gas Cost to Operations				155,867.7

EGD Rate Zone 2019 Forecast Peak Day Supply Mix

		2018 Budget Peak Day Demand - as filed in EB-2017-0086				2019 Budget Peak Day Demand			
		Column 1	Column 2	Column 3		Column 4	Column 5	Column 6	
Line #	GJ's	CDA	EDA	Total		CDA	EDA	Total	
1.	Demand	3,369,677	701,708	4,071,385		3,401,478	715,068	4,116,546	
2.	Less Curtailment	(80,791)	(30,129)	(110,920)		(79,088)	(30,129)	(109,217)	
3.	Net Peak Day Demand	3,288,886	671,579	3,960,465		3,322,390	684,939	4,007,329	
4.	TCPL FT Capacity	75,000	190,000	265,000		75,000	190,000	265,000	
5.	TCPL STFT	-	-	-		-	-	-	
6.	TCPL Short Haul from Dawn	309,999	154,000	463,999		349,818	154,000	503,818	
7.	TCPL Short Haul from Parkway	457,416	333,725	791,141		457,416	333,725	791,141	
8.	Ontario T-Service	84,264	2,285	86,549		54,803	152	54,955	
9.	Union Deliveries	2,193,961	-	2,193,961		2,193,961	-	2,193,961	
10.	Delivered Service	133,256	-	133,256		32,779	-	32,779	
11.	Peaking Service	26,560	-	26,560	(1)	158,612	7,062	165,674	(1)
12.	Total Supply	3,280,455	680,010	3,960,465		3,322,390	684,939	4,007,329	
13.	Sufficency/(Deficiency)	(8,431)	8,431	-		-	-	-	

note (1) - At the time of the filing gas cost budget the Peaking Services requirement had not been contracted for

EGD Rate Zone Gas Supply/Demand Balance

Item #		Col. 1 2019 Budget 10^3m^3	Col. 2 2018 Budget 10^3m^3	Col. 3 2017 Actual 10^3m^3
1.	Total Demand	11,922,381.7	11,625,874.3	11,764,998.5
	Deliveries			
2.1	Western Canadian Supplies	2,083,929.3	1,764,957.5	1,631,381.4
2.2	Peaking/Seasonal	6,902.0	3,520.5	1,299.3
2.3	Ontario Production	-	358.0	-
2.4	Chicago Supplies	649,654.9	651,514.9	1,782,957.6
2.5	Delivered Supplies	2,649,847.9	2,613,645.4	2,401,036.5
2.6	Niagara Supplies	1,894,627.6	1,900,052.1	1,883,011.9
2.7	Link Supplies	-	0.0	332,614.9
2.8	Dominion Supplies	1,099,416.1	1,102,563.7	-
2.9	Direct Purchase Delivery	3,492,101.7	3,830,542.9	3,832,308.8
2.10	Storage (Injection)/Withdrawal	45,902.6	(241,281.0)	(99,611.9)
2.	Total Delivery	11,922,382.1	11,625,874.0	11,764,998.6

Total Demand includes both System Sales and T-Service Consumption

2019 Budget

EGD Rate Zone Gas Supply/Demand Balance

Item #		Col. 1 January 10^3m^3	Col. 2 February 10^3m^3	Col. 3 March 10^3m^3	Col. 4 April 10^3m^3	Col. 5 May 10^3m^3	Col. 6 June 10^3m^3	Col. 7 July 10^3m^3	Col. 8 August 10^3m^3	Col. 9 September 10^3m^3	Col. 10 October 10^3m^3	Col. 11 November 10^3m^3	Col. 12 December 10^3m^3	Col. 13 Total 10^3m^3
		1,982,098.4	1,770,279.2	1,547,907.6	972,867.4	569,145.8	379,198.3	351,637.4	357,335.5	359,224.0	744,392.4	1,209,412.7	1,678,883.5	
1.	Total Demand	1,982,098.4	1,770,279.2	1,547,907.6	972,867.4	569,145.8	379,198.3	351,637.4	357,335.5	359,224.0	744,392.4	1,209,412.7	1,678,883.5	11,922,382.2
	Deliveries													
2.1	Western Canadian Supplies	176,991.3	159,863.1	176,991.3	171,281.9	176,991.3	171,281.9	176,991.3	176,991.3	171,281.9	176,991.3	171,281.9	176,991.3	2,083,929.3
2.2	Peaking/Seasonal	6,902.0	-	-	-	-	-	-	-	-	-	-	-	6,902.0
2.3	Ontario Production	-	-	-	-	-	-	-	-	-	-	-	-	0.0
2.4	Chicago Supplies	55,176.2	49,836.5	55,176.2	53,396.3	55,176.2	53,396.3	55,176.2	55,176.1	53,396.3	55,176.2	53,396.3	55,176.2	649,654.9
2.5	Delivered Supplies	539,950.6	433,635.1	63,664.8	-	157,230.2	152,157.6	157,230.2	157,230.2	182,979.2	109,008.1	173,787.0	522,974.9	2,649,847.9
2.6	Niagara Supplies	160,913.6	145,341.3	160,913.6	155,722.8	160,913.6	155,722.8	160,913.6	160,913.6	155,722.8	160,913.6	155,722.8	160,913.6	1,894,627.6
2.7	Link Supplies	-	-	-	-	-	-	-	-	-	-	-	-	0.0
2.8	Dominion Supplies	93,375.1	84,338.7	93,375.1	90,363.0	93,375.1	90,363.0	93,375.1	93,375.1	90,363.0	93,375.1	90,363.0	93,375.1	1,099,416.1
2.9	Direct Purchase Delivery	296,589.5	267,887.3	296,589.5	287,022.1	296,589.5	287,022.1	296,589.5	296,589.5	287,022.1	296,589.5	287,022.1	296,589.5	3,492,101.7
2.10	Storage (Injection)/Withdrawal	652,200.2	629,377.2	701,197.2	215,081.4	(371,129.9)	(530,745.3)	(588,638.3)	(582,940.2)	(581,541.2)	(147,661.2)	277,839.7	372,863.0	45,902.8
2.	Total Delivery	1,982,098.4	1,770,279.2	1,547,907.6	972,867.4	569,145.8	379,198.3	351,637.4	357,335.5	359,224.0	744,392.4	1,209,412.7	1,678,883.5	11,922,382.2

Total Demand includes both System Sales and T-Service Consumption

EGD Rate Zone Status of Transportation and Storage Contracts

Item #	Transportation	Route	Total Contracted Daily Volume		Fuel Rate	Monthly Demand Charge		Renewal Date	Expiry Date	
	Current Contracts									
1	TCPL FT - CDA	Empress to CDA	75,000	GJ	varies	58.75040	$/GJ	31-Oct-18	31-Oct-20	1
2	TCPL FT - EDA	Empress to EDA	163,044	GJ	varies	60.51853	$/GJ	31-Oct-20	31-Oct-22	
3	TCPL FT - Iroquois	Empress to Iroquois	26,956	GJ	varies	60.91394	$/GJ	31-Oct-20	31-Oct-22	
4	TCPL FT Dawn to CDA		149,818	GJ	varies	10.56692	$/GJ	31-Oct-20	31-Oct-22	
5	TCPL FT Dawn to EDA		114,000	GJ	varies	19.45497	$/GJ	31-Oct-20	31-Oct-22	
6	TCPL FT Dawn to Iroquois		40,000	GJ	varies	18.69517	$/GJ	31-Oct-20	31-Oct-22	
7	TCPL FT Parkway to EDA		83,114	GJ	varies	14.10177	$/GJ	31-Oct-30	31-Oct-32	
8	TCPL FT Parkway to CDA		572	GJ	varies	5.45675	$/GJ	31-Oct-20	31-Oct-22	
9	TCPL FT Parkway to CDA		87,952	GJ	varies	5.45675	$/GJ	31-Oct-30	31-Oct-32	
10	TCPL STS Parkway to CDA		283,892	GJ	varies	5.45675	$/GJ	31-Oct-20	31-Oct-22	
11	TCPL FT Parkway to CDA		75,000	GJ	varies	5.45675	$/GJ	31-Oct-32	31-Oct-34	2
12	TCPL FT-SN Parkway to CDA		85,000	GJ	varies	5.48899	$/GJ	31-Oct-20	31-Oct-22	
13	TCPL STS Parkway/Kirkwall to EDA		70,895	GJ	varies	14.10177	$/GJ	31-Oct-20	31-Oct-22	
14	TCPL STS Parkway to EDA		9,716	GJ	varies	14.10177	$/GJ	31-Oct-20	31-Oct-22	
15	TCPL FT Parkway to EDA		170,000	GJ	varies	14.10177	$/GJ	31-Oct-29	31-Oct-31	
16	Niagara Falls to CDA		76,559	GJ	varies	6.58856	$/GJ	31-Oct-28	31-Oct-30	
17	Chippawa to CDA		123,441	GJ	varies	6.64331	$/GJ	31-Oct-28	31-Oct-30	
18	Nova Transmission	AECO to Empress	50,000	GJ	N/A	5.66000	$/GJ	31-Oct-19	31-Oct-20	3
19	Nova Transmission	AECO to Empress	75,000	GJ	N/A	5.66000	$/GJ	31-Dec-19	31-Dec-20	
20	Vector Pipeline -	Milford Junction to Cdn border	110,000	dth	varies	4.42173	$US/dth	31-Oct-31	31-Oct-33	
21		Cdn border to Dawn	116,056	GJ	varies	0.57050	$/GJ	31-Oct-31	31-Oct-33	
22	Vector Pipeline	Chicago to Cdn border	65,000	dth	varies	5.03003	$US/dth	31-Oct-19	31-Oct-21	
23		Cdn border to Dawn	68,579	GJ	varies	0.57050	$/GJ	31-Oct-19	31-Oct-21	
24	Nexus Pipeline	Kensington to Milford Junction	55,000	dth		24.25730	$US/dth	31-Oct-31	31-Oct-33	
25		Clarington to Milford Junction	55,000	dth		28.81980	$US/dth	31-Oct-31	31-Oct-33	
26	Union Gas Dawn to Parkway		1,764,678	GJ	varies	3.7160	$/GJ	31-Oct-20	31-Oct-22	
27	Union Gas Dawn to Parkway		106,000	GJ	varies	3.7160	$/GJ	31-Oct-18	31-Oct-20	
28	Union Gas Dawn to Parkway		57,100	GJ	varies	3.7160	$/GJ	31-Oct-18	31-Oct-20	
29	Union Gas Dawn to Parkway		18,703	GJ	varies	3.7160	$/GJ	31-Oct-18	31-Oct-20	
30	Union Gas Dawn to Parkway - M12X		200,000	GJ	varies	4.5900	$/GJ	31-Oct-20	31-Oct-22	
31	Union Gas Dawn to Lisgar		10,692	GJ	varies	3.7160	$/GJ	31-Oct-18	31-Oct-20	
32	Union Gas Dawn to Kirkwall		35,806	GJ	varies	3.1540	$/GJ	31-Oct-18	31-Oct-20	
33	Union Gas Dawn to Kirkwall		32,123	GJ	varies	3.1540	$/GJ	31-Oct-18	31-Oct-20	
34	Union Gas Parkway to Dawn - C1		236,586	GJ	varies	0.8740	$/GJ		31-Mar-19	
35	Union Gas Dawn to Parkway		400,000	GJ	varies	3.7160	$/GJ	31-Oct-20	31-Oct-22	
36	Union Gas Dawn to Parkway		170,000	GJ	varies	3.7160	$/GJ	31-Oct-29	31-Oct-31	
37	Union Gas Dawn to Parkway		190,000	GJ	varies	3.7160	$/GJ	31-Oct-30	31-Oct-32	
38	Union Gas Dawn to Parkway		75,000	GJ	varies	3.7160	$/GJ	31-Oct-32	31-Oct-34	2

notes:

(1) - Please see paragraphs 18 and 19 in the Gas Supply Future Considerations document (Exhibit E1, Tab 4, Schedule 9) regarding the TCPL North Bay Junction Long Term Fixed Price Service

(2) - Effective November 1, 2020

(3) - EGD also contracted for 40,000 GJ/d of Nova Capcity for the November 1, 2018 to March 31, 2019 period - non renewable

EGD Rate Zone Status of Transportation and Storage Contracts

Storage Contract Summary

	Contract	Annual Volume GJ's	Effective Date	Expiry Date	Maximum Withdrawal GJ's	Deliverability	Maximum Injection GJ's	Deliverability
	A	4,000,000	April 1, 2014	March 31, 2019	48,000	1.20%	30,000	0.75%
(1)	B	1,582,584	May 1, 2016	April 30, 2019	10,481	0.66%	7,395	0.47%
(1)	C	2,110,112	May 1, 2018	April 30, 2019	13,974	0.66%	9,861	0.47%
	D	3,000,000	April 1, 2015	March 31, 2020	36,000	1.20%	22,500	0.75%
	E	3,000,000	April 1, 2015	March 31, 2020	120,000	4.00%	60,000	2.00%
(1)	F	1,055,056	May 1, 2017	April 30, 2020	6,987	0.66%	4,930	0.47%
(1)	G	2,110,112	May 1, 2018	April 30, 2020	13,974	0.66%	9,861	0.47%
	H	1,500,000	April 1, 2016	March 31, 2021	18,000	1.20%	11,250	0.75%
	I	5,000,000	April 1, 2017	March 31, 2022	60,000	1.20%	37,500	0.75%
	J	3,000,000	April 1, 2018	March 31, 2023	36,000	1.20%	22,500	0.75%
		26,357,864			363,416	1.38%	215,797	0.82%

note (1) - Synthetic Stoarge

EGD RATE ZONE MONTHLY PRICING INFORMATION

	Col. 1	Col. 2	Col. 3	Col. 4			Col. 5
	21 Day Average Empress CGPR	21 Day Average NYMEX	21 Day Average Chicago	21 Day Average US Exchange	21 Day Average Niagara	21 Day Average Dawn	$\$CAD/10^3m^3$ Equivalent (Note 1)
	$CAD/GJ	$US/MMBtu	$US/MMBtu	$CAD/$US	$US/MMBtu	$US/MMBtu	
Jan-19	2.8685	3.1288	3.3053	1.3008	2.9771	3.2771	
Feb-19	2.8606	3.0924	3.2774	1.3001	2.9566	3.2566	
Mar-19	2.5783	2.9879	2.8628	1.2997	2.7300	3.0300	
Apr-19	2.2633	2.6784	2.4496	1.2991	2.2415	2.5415	
May-19	2.1709	2.6445	2.3426	1.2986	2.1179	2.4179	
Jun-19	2.1964	2.6722	2.3371	1.2981	2.1584	2.4584	
Jul-19	2.3159	2.7033	2.3914	1.2976	2.1352	2.4352	
Aug-19	2.3193	2.7073	2.3801	1.2971	2.1175	2.4175	
Sep-19	2.3063	2.6903	2.3412	1.2966	2.1095	2.4095	
Oct-19	2.3803	2.7065	2.3959	1.2962	2.1085	2.4085	
Nov-19	2.4095	2.7551	2.5869	1.2957	2.3998	2.6998	
Dec-19	2.5307	2.8769	2.8469	1.2952	2.5215	2.8215	
	2.4333	2.8036	2.6264	1.2979	2.3811	2.6811	93.7566
TCPL Fuel Ratio		3.70%					97.2290

(Note 1) $\$CAD/10^3m^3 = \$CAD/GJ * 38.53$ Mj/m3

21 Day Period **3-Aug-18** **to** **31-Aug-18**

Natural Gas Conversions

mcf times 0.028328 = 10^3m^3

1 Dth = 1 mcf

MMBtu times 1.055056 = GJ's

$/mcf divided by .028328 = $\$/10^3m^3$

$/MMBtu divided by 1.055056 = $/GJ

$/GJ times $MJ/m^3 = \$/10^3m^3$

Enbridge Gas Distribution Inc. assumes a heat content of 38.53 Mj/m^3

GAS SUPPLY FUTURE CONSIDERATIONS FOR EGD RATE ZONE

Enbridge Gas Distribution ("Enbridge" or the "Company") considers the long-term implications of its decisions throughout its gas supply planning process. There are often projects proposed or under development which have the potential to impact the Company's future gas supply planning options. There are also proposals and discussions from government and industry that can impact the landscape of the natural gas market in which Enbridge operates. For these reasons, Enbridge monitors projects and other developments closely.

This evidence provides information about known and expected new infrastructure projects which are relevant for the test year period; and about trends, policies, proceedings and plans that may impact Enbridge's future gas supply planning options.

1. CONTRACT TERMS – RENEWALS AND NEW FACILITIES

Contract terms for transportation capacity that requires the construction of new facilities are often different from those that utilize existing pipeline capacity. Acquiring transportation capacity generally requires a longer contract term commitment and financial backstopping if new capital investment is required in comparison to contracting on existing infrastructure.[1]

[1] For further discussion on transportation contracting decisions, see the "Transportation Portfolio" section in Exhibit E1, Tab 4, Schedule 2, Paragraph 9.

2. NATURAL GAS INFRASTRUCTURE PROJECTS

The following list of projects could impact Enbridge's gas supply planning options in the future. This list is not intended to be exhaustive and the Company is not requesting preapproval of the cost consequences related to the projects that are discussed, unless pre-approval has been explicitly sought and obtained. The intent of the following list is to provide some context in relation to the projects that have the potential to impact Enbridge's gas supply planning.

3. NCOS 2019: TCPL'S MAPLE COMPRESSOR STATION ("STATION 130") C4 UNIT ADDITION AND UNION GAS M12 CAPACITY

The TransCanada Pipelines Limited ("TCPL") Maple Compressor Station ("Station 130") C4 Unit Addition project includes constructing a new C4 unit within the existing Maple Compressor Station located in Vaughan, Ontario. The project involves the installation of a single 22 MW turbo-compressor package and tie-in within the existing Station 130 site. The project was approved by the National Energy Board ("NEB") on April 27, 2018 and has a targeted in-service date of November 1, 2019. This project, in-part, underpins elections made by Enbridge in TCPL's 2019 New Capacity Open Season ("NCOS") which includes 75,000 GJ per day of new short-haul capacity from Parkway to the Enbridge CDA.

In order to ensure the TCPL NCOS capacity is not stranded at Parkway, Enbridge also contracted for 75,000 GJ per day of M12 capacity through Union Gas' 2019 NCOS, which ran simultaneously with the TCPL NCOS. This capacity has a targeted in-service date of November 1, 2019. Union Gas does not require any new infrastructure to accommodate this capacity.

The combined transportation services with TCPL and Union Gas will be used to meet increasing system design day demand and reduce the amount of peaking services for which Enbridge would have otherwise contracted.

In the event of a delay to the in-service date of the Station 130 C4 Unit Addition, Enbridge will contract for an equivalent amount of peaking services until the transportation services are in place.

4. NCOS 2021: TCPL AND UNION GAS

Union Gas and TCPL each have NCOS offerings for transportation services with projected in-service dates for each NCOS as early as November 1, 2021. Union Gas is offering M12 services the Dawn-to-Parkway System, while TCPL is offering various firm transportation services on the Mainline System. The NCOS offering from Union Gas was held from August 29, 2018 to November 16, 2018, while the NCOS offering from TCPL was held from October 15, 2018 to November 14, 2018.

Union Gas's NCOS offering of M12 firm transportation services are from Dawn-to-Parkway, Dawn-to-Kirkwall, and Kirkwall-to-Parkway. TCPL's NCOS offering of multiple transportation services includes Firm Transportation, Short Notice Balancing, Enhanced Market Balancing, and

Firm Transportation-Short Notice from Empress, Dawn, Parkway and Niagara/Chippawa to any valid delivery point on the Mainline System (ex. Enbridge CDA, Enbridge EDA).

Enbridge submitted bids for each NCOS to meet incremental capacity needs. We are awaiting responses from TCPL and Union Gas in this regard.

5. Constitution Pipeline

The Constitution Pipeline proposes to transport natural gas produced in northern Pennsylvania (650,000 Dth or 685,786 GJ per day) through the state of New York where it would interconnect with multiple pipelines, including the Iroquois Pipeline which, in turn, interconnects with the TCPL Mainline in Waddington, near the Enbridge EDA.

FERC issued a certificate of public convenience and necessity for the Constitution Pipeline in December 2014. Since that time, however, planning and construction of the pipeline has been mired in controversy.[2] In July 2016, FERC approved a request from Constitution Pipeline for an additional two years to complete the pipeline, extending the deadline from December 2016 to December 2018. Furthermore, in March 2017 Constitution lost a court case whereby the pipeline argued that requests made by the State of New York to obtain certain permits to build a pipeline

[2] The Constitution Pipeline webpage tracks news developments here: http://constitutionpipeline.com/news/

were not required.[3] Constitution continues to engage in legal proceedings to have FERCs ruling to allow the state permitting process overturned, but this remains without resolution.[4]

The completion of Constitution Pipeline would increase the viability of importing United States shale gas directly into eastern Ontario and provide an opportunity to diversify the Company's supply portfolio, particularly for the Enbridge EDA. Specifically, natural gas transported on the Constitution and Iroquois Pipelines could increase the liquidity of the Iroquois trading hub which could make it a more reliable and cost effective source of supply in the future.

6. ENBRIDGE REQUIREMENT AT DAWN

While Enbridge has taken steps to diversify its gas transportation portfolio through increased short haul transportation capacity from Dawn to the franchise area, there is also a benefit to diversifying supply options upstream of Dawn through alternative means. In the near-term, that may include exploring opportunities such as contracting for capacity on pipelines that deliver to Dawn or to allow for the Company's winter requirement at Dawn to be shifted to the summer months by contracting for a level of incremental storage capacity, or shorter term hybrid seasonal exchanges at Dawn. In the longer-term, additional diversity from Dawn could be achieved through contracting for new transportation services, such as TCPL's long-term fixed-price services (described in the section below), or through the acquisition of supply at points other than

[3] https://stateimpact.npr.org/pennsylvania/2017/03/17/federal-judge-rejects-permits-challenge-in-new-setback-to-constitution-pipeline/
[4] https://www.reuters.com/article/us-williams-constitution-natgas/u-s-ferc-denies-rehearing-for-penn-n-y-constitution-natgas-pipe

Dawn such as Iroquois should it become a more liquid hub (as discussed in the Constitution Pipeline section above).

7. TCPL's Long-Term Fixed-Price Service

During the third quarter of 2018, TCPL held an open season for a new fixed price transportation service called North Bay Junction Long Term Fixed Price Service ("NBJ LTFP"). NBJ LTFP provides firm transportation from Empress to North Bay Junction that, combined with short haul firm transportation service with a receipt point of North Bay Junction, will provide long haul transportation access to Mainline markets. The NBJ LTFP is a non-renewable service beginning as early as November 1, 2019 with a minimum contract term of 10 years. The toll for the NBJ LTFP is fixed for the term of the contract at a rate of $0.93 per GJ per day inclusive of abandonment surcharges.

Enbridge submitted a bid into the NBJ LTFP open season to convert all of its existing long haul firm transportation, effective January 1, 2021 for a 10 year term ending December 31, 2030 and TCPL accepted this bid. The conversion includes 26,956 GJ/d of long haul capacity to Iroquois in addition to amending the delivery point from Iroquois to the Enbridge EDA. In conjunction with the NBJ LTFP bid, Enbridge has entered into an Amending Agreement with TCPL to swap 70,000 GJ/d of long haul Empress to Enbridge CDA capacity to the Enbridge EDA with a matching swap of 70,000 GJ/d of short haul Union Parkway Belt to Enbridge EDA capacity to the Enbridge CDA, effective November 1, 2019. TCPL must now seek NEB approval of the NBJ LTFP.

8. 2018-2020 TCPL Toll Review

In its RH-001-2014 Decision, the NEB approved TCPL's current tolls, and associated Tariff changes, to be in place until December 31, 2020, subject to a limited toll review the 2018 to 2020 period. The intention of the review is primarily to update tolls for changes to revenue requirements and billing determinants.

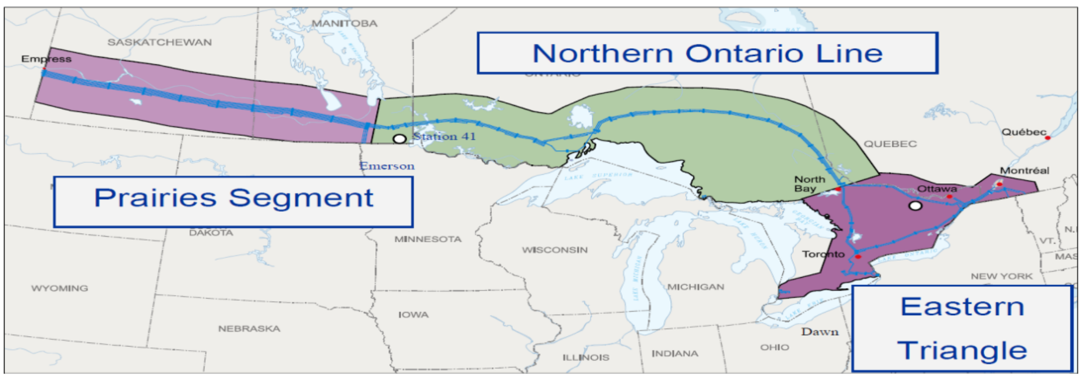
The NEB directed TCPL to file an application prior to December 31, 2017 for approval of tolls for the 2018 to 2020 period. As part of the consultation process leading up to the 2018 to 2020 toll application, the Company entered into a Supplemental Agreement to the Mainline Settlement Agreement with TCPL, Énergir, L.P., and Union Gas Limited to address related tolling matters.

The 2018 to 2020 toll application was filed in December 2017 under hearing order RH-001-2018 and is currently under review by the NEB. In the meantime, the NEB has approved the tolls resulting from the RH-001-2014 Decision on an interim basis while the 2018 to 2020 toll application is under review. The 2019 Gas Costs budget is underpinned by the interim tolls which, compared to TCPL's previous finalized tolls, yield $30-million in annual savings for EGD's transportation contracts that are in place for the 2019 calendar year.

9. Mainline Toll Segmentation

In the RH-001-2014 Decision, the NEB approved segmentation tolling parameters in principle as the basis for establishing Mainline tolls post-2020. The segmentation is expected to separate cost of service and throughput data, for toll design purposes, between the Prairies Segment, Northern Ontario Line, and the Eastern Triangle as illustrated in Figure 1.

Figure 1 – Segments of the TCPL Mainline



Negotiations related to the post 2020 toll design are anticipated to begin following the conclusion of the 2018 to 2020 toll review that is currently underway.

10. Cap & Trade, Environmental Regulation and Renewable Natural Gas (“RNG”)

As part of the Government of Ontario’s Climate Change Action Plan (“CCAP”), released in June 2016, carbon emitters were obligated to account for their carbon emissions by participating in the Government of Ontario’s Cap and Trade program. As directed by the Ontario Energy Board (“OEB”), the costs associated with Enbridge’s participation in the Cap and Trade program are recovered through customer rates. Enbridge began participating in the Cap and Trade program in January 2017.

The Government of Ontario's CCAP outlined the approach and initiatives the Province would use to address climate change and the investment of funds collected through the Cap and Trade program. One of the initiatives discussed in the CCAP provided funding to assist fuel distributors in providing sustainable biofuels and infrastructure upgrades.[5] Subsequently, Enbridge began working towards evaluating the inclusion of RNG as part of its future supply mix and in March 2018 initiated a Request for Proposal ("RFP") for RNG that was predicated on the CCAP funding.

With the Government of Ontario's announcement to end Ontario's Cap and Trade program[6] which included stopping all carbon sale and procurement activity, the OEB subsequently required Enbridge to cease collection of Cap and Trade costs. Furthermore, as a result of this change in direction of Ontario's environmental regulations, Enbridge closed its RNG RFP without accepting any bids. However, Enbridge is still working with customers to deliver RNG cleanup, injections and distribution services in accordance with the OEB's decision on Enbridge's RNG Enabling Program in EB-2017-0319.

On November 29, 2018 the Ontario government released the new Made-in-Ontario Environment Plan, which outlines a requirement for natural gas utilities to implement a voluntary renewable natural gas option for customers. The government will also consult on the appropriateness of

[5] https://www.ontario.ca/page/climate-change-action-plan#section-15
[6] https://news.ontario.ca/opo/en/2018/07/premier-doug-ford-announces-the-end-of-the-cap-and-trade-carbon-tax-era-in-ontario.html

clean content requirements in this space.[7] Enbridge remains committed to working with the provincial and federal governments and other organizations to offer services that will support government policies and objectives.

Enbridge will continue to monitor the development of provincial and federal government carbon initiatives and ensure that the Company is in a position to comply with legislated requirements. This includes filing a 2019 Federal Carbon Pricing Program ("FCPP") Application under file number EB-2018-0205 with the OEB on October 10, 2018, and which is currently being updated to reflect recent policy changes, where the Company is seeking approval to charge customers for the FCPP effective April 1, 2019.

11. CANADIAN LIQUEFIED NATURAL GAS EXPORTS

There are 20 Liquefied Natural Gas ("LNG") export projects[8] proposed for the East and West coasts of Canada which aim to export LNG primarily to Asian, South American, and European markets, using gas supply from the Western Canadian Sedimentary Basin ("WCSB") or from more proximate locations such as the Appalachian Basin or Eastern Canada. 18 of the 20 projects have been granted export licenses by the NEB, amounting to a total capacity of 264.3 million tonnes per year (for context, current global LNG trade is approximately 293 million tonnes per year[9]). The LNG export projects will face challenges which include competing with established market participants such as the United States and Australia. Should the LNG export

[7] Preserving and Protecting our Environment for Future Generations, A Made-in-Ontario Environment Plan, pg. 33
[8] https://www.nrcan.gc.ca/energy/natural-gas/5683
[9] https://www.igu.org/news/2018-world-lng-report

project(s) come into effect, there will be incremental competition for WCSB, Appalachian, and Eastern Canada supply.

Although the development of many Canadian LNG projects are stalled, some projects see favourable market conditions. Specifically, the 2.1 Mtpa Woodfibre LNG project in British Columbia received Federal approval for a 40-year export licence of LNG. With the support of the Federal government and First Nations communities, Woodfibre LNG is scheduled to begin exporting in 2020.[10] Also, LNG Canada's project off of British Columbia's coast, a 26 Mtpa facility backed by a group including Shell and PETRONAS, announced a positive final investment decision for the project in 2018, with the project's investors indicating an initial in-service date before the end of 2024.[11] One project on the East Coast, Pieridae Energy's 10 Mtpa Goldboro LNG Project is close to having a final investment decision made, which is currently targeting a start date in 2022. The proposed LNG export plant has begun sourcing supply from Western Canada through a merger with an Alberta producer[12], and the plant has contracts to begin long-term export arrangements with a German utility[13] and a Swiss utility[14], contingent on the facility becoming operational.

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[10] http://www.cbc.ca/news/canada/british-columbia/woodfibre-lng-secures-40-year-export-licence-from-feds/
[11] https://www.bloomberg.com/news/articles/2018-10-02/shell-partners-announce-31-billion-lng-canada-investment?srnd=premium-canada
[12] https://business.financialpost.com/commodities/energy/goldboro-lng-proponent-strikes-deal-to-merge-with-alberta-gas-producer
[13] http://goldborolng.com/2017/05/pieridae-energy-limited-announces-special-needs-collective-agreement-with-nova-scotia-construction-labour-relations-association-to-assist-with-the-construction-of-the-goldboro-lng-facility-in-goldboro/
[14] https://www.reuters.com/article/us-canada-lng-axpo/canadas-pieridae-energy-in-talks-to-sell-lng-to-swiss-utility-idUSKBN1L1129

12. NATIONAL FUEL'S NORTHERN ACCESS 2016 PROJECT

National Fuel's Northern Access 2016 project will add 490 MMcf per day (534,821 GJ per day) of delivery to TCPL's Chippawa receipt point. The project was originally slated for an in-service date of November 1, 2016, but has had to revise that in-service date multiple times due largely to environmental concerns such as water permits in New York State. Given these concerns, the Northern Access 2016 project is not expected to be in service until at least fall 2019.[15]

The supply from this project will be imported to Canada at the Chippawa receipt point and can be transported further downstream to Dawn via the TCPL Mainline and Union systems.

13. INCREMENTAL STORAGE

In March 2017 at EB-2016-0215, the Company filed a report developed by ICF International which evaluated incremental storage. Following the submission of this report, the Company committed to advising the Board of any plans to procure incremental storage.[16] As a result, the Company procured 2 PJ of incremental storage which was approved as part of EB-2017-0086, but the Company does not have plans to procure any incremental storage in this rate proceeding. From time to time, however, the company will consider shorter term high deliverability park/loan arrangements that provide operational flexibility to meet winter demand.

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[15] https://www.natfuel.com/supply/NorthernAccess2016/timeline.aspx
[16] EB-2016-0215, N1, Tab 1, Schedule 1, page 9

14. HEAT VALUE

For the purposes of developing its 2019 gas supply costs, the Company has used a conversion factor of 38.53 MJ/m^3, which is more closely aligned with recent heat value observations made by the Company.

15. NEW SERVICE TYPES FOR DIRECT PURCHASE MARKET

During 2017 Enbridge surveyed its Direct Purchase market to gain an understanding of the demand for new Direct Purchase service types to deliver supply to new receipt points (ex. Niagara Falls, Chippawa, Iroquois, etc.). Although at this time the Company is not implementing any additional new service types, Enbridge remains committed to monitoring market conditions and working with interested parties to develop new services where appropriate.