500 Consumers Road
North York, Ontario M2J 1P8
PO Box 650
Scarborough ON M1K 5E3

Lorraine Chiasson
Regulatory Coordinator
Regulatory Affairs
phone: (416) 495-5499
fax: (416) 495-6072
Email: egdregulatoryproceedings@enbridge.com

February 28, 2014

VIA RESS, EMAIL and COURIER

Ms. Kirsten Walli
Ontario Energy Board
2300 Yonge Street
Suite 2700
Toronto, Ontario
M4P 1E4

Re: EB-2012-0459 - Enbridge Gas Distribution Inc. ("Enbridge")
2014 – 2018 Rate Application
Undertaking Responses

Further to Enbridge Gas Distribution's earlier filing of February 28, 2014, enclosed please find the following undertaking responses:

Exhibit J5.4, J5.5, and J5.10
.

This submission was filed through the Board's RESS and is available on the Company's website at www.enbridgegas.com/ratecase.

Yours truly,

(original signed)

Lorraine Chiasson
Regulatory Coordinator

cc: Mr. F. Cass, Aird & Berlis
EB-2012-0459 Intervenors

UNDERTAKING J5.4

UNDERTAKING

TR 35

To provide summary information on 2012 survey of Canadian Gas Association, or advise if there is already information on record.

RESPONSE

The reference in the pre-filed evidence at Exhibit B2, Tab 5, Schedule 2, Attachment 3, page 2, to the Company surveying the Canadian Gas Association ("CGA") to evaluate the current load shed planning methodology and practices refers to the oral discussions Company staff had with appropriate individuals at various CGA companies. These oral discussions were used to inform the development of the Company's load shed plan and the completion of its load shed study. Further details of the load shed plan were included in the materials filed in the GTA Reinforcement proceeding (EB-2012-0451) at Exhibit I.A1.EGD.CCC.2, a copy of which is attached.

Witness: J. Sanders

Filed: 2013-06-07
EB-2012-0451/EB-2012-0433/EB-2013-0074
Exhibit I.A1.EGD.CCC.2
Page 1 of 2
Plus Attachment

ENBRIDGE GAS DISTRIBUTION INC. RESPONSE TO CONSUMERS COUNCIL OF CANADA INTERROGATORY #2

INTERROGATORY

1. Are the proposed facilities needed? Considerations may include but are not limited to demand, reliability, security of supply, flexibility, constraints, operational risk, cost savings and diversity as well as the Board's statutory objectives.

Issue: A.1-CCC-2

Reference: A/T3/S1/ pg.4; s3/pg.24

a) Please provide the current contingency plan for disruption at the Parkway Station. Specifically: (i) provide the referenced "Enbridge Load Shed Report"; (ii) provide a table comparable to Figure 5 which shows the projected composition of gas volumes at alternate stations in the event of Parkway closure; (ii) describe any arrangements with large volume consumers including PEC for emergency (force majeure) interruptions.

b) When was the last time Enbridge experienced reduced service due to disruptions at Parkway?

RESPONSE

a) Enbridge is filing pertinent sections of the load shed report at Attachment 1. Load shedding is the act of removing gas service from large areas of customers when there is a supply disruption. The goal of load shedding is to minimize widespread system outage in the event of limited supply or network disruption. This will prevent a cascading distribution system failure where the loss of supply could result in a random and unpredictable outage. Enbridge has filed the sections of the Load Shed report that discuss the background and intent of the load shed plan. As well as the number of load shed zones in each administration area of the Enbridge Franchise area. In the event of a supply disruption EGD will

Witness: E. Naczynski

select areas of the network to isolate so that demand is removed from the system to match the available supply. The other sections of the Load Shed report detail specific information regarding the Enbridge network and valve locations as well as impacted customers. Also, not included is specific information regarding other gas companies that were compiled through the course of developing the load shed project. Enbridge is not submitting these sections of the report due to security concerns.

The process that deals with the force majeure, specifically PEC is detailed in the response to Federation of Rental Housing Providers of Ontario Interrogatory #14 at Exhibit I.A1.EGD.FRPO.14.

With reference to Figure 5 in Exhibit A, Tab 3, Schedule 1, in the event of a Parkway Station outage the flows through Markham, Richmond Hill, and Bathurst will not change appreciably. Flow through Lisgar and Victoria Square will increase until they reach the maximum contract flow rate. The flow through Lisgar and Victoria Square will be very similar and will account for approximately 45% each of the total system flow. However, with the loss of Parkway there will be insufficient supply and distribution capacity to maintain supply to firm customers.

b) Enbridge has not experienced a reduced service due to disruptions at Parkway Gate station.

2012

Load Shed Project

END OF YEAR REPORT

Completed by:

Danielle Turney

TABLE OF CONTENTS

1.0 PROJECT INITIATION

The Load Shed (LS) Project started in November 2011, and its need was identified by two initiatives at EGD:

(i) Operate Gas Network (OGN) Process Team: To improve preparedness for large scale emergencies
(ii) Operational Risk Mitigation (ORM): To assist EGD on its path to industry leadership

The goal of the project was to designate isolation areas across the franchise area to optimize LS planning. While Load Shed Zones (LSZ) had previously been documented at the company, any documentation discovered was either dated, no longer enforced, or not significant enough to provide a solution to a major supply issue. A summary of this information can be seen in Section 4.1 Load Shed History at EGD. A sustainable approach to LS planning has yet to be achieved at the Company.

A two phase approach was assumed for the roll-out of a LS Plan at EGD. The approach was designed to ensure that existing company infrastructure, practices, and policies could be understood and considered with the implementation of any form of LS planning.

Phase 1 (2012): Existing Infrastructure - Examine the existing infrastructure and propose LSZs

- Development of the criteria for creating LSZs
  - ➔ To ensure region-wide consistency for any LSZ designation
  - ➔ To establish a baseline standard
- Capture 500 TJ of firm load at design conditions in LSZs
  - ➔ To create LSZs for emergency response
  - ➔ To apply LS criteria
- Create a preliminary LS Plan
- Develop a process to ensure sustainability of the LSZs
  - ➔ To ensure that any work on the system either maintains or improves existing area isolation options

Phase 2 (2013+): LS Plan Validation & Optimization – Validate the LS Plan (2013) and propose valve locations to improve area isolation (2013+)

- Validate the existing plan:
  - Isolation valves (location, type, valve classification, alternate options if applicable)
  - Sustainability (ensure that LS processes are being followed and that work on the system is maintaining and/or improving area isolation)
- Optimize Isolation Areas
  - Identification of high priority areas/valve installation
  - Process improvement – installing high priority valves with existing company projects

The overall approach can be seen in Figure 1.

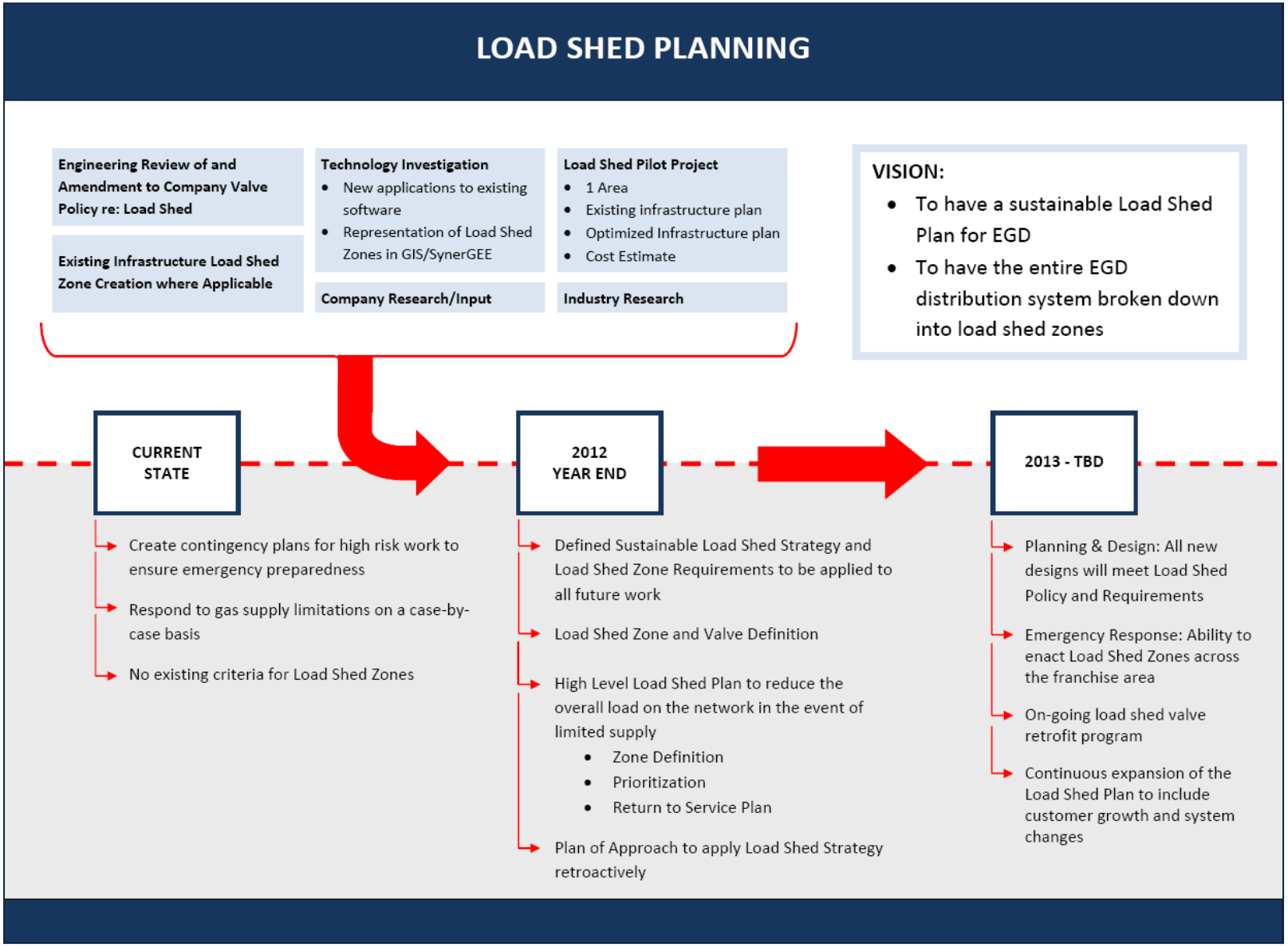

FIGURE 1: LOAD SHED OVERVIEW

2.0 DESCRIPTION OF CONCEPT

The concept of LS planning, as described in this document, was developed with the goal to have a sustainable LS Plan that encompasses the entire EGD distribution network; its development considered the following:

- Industry research
- Stakeholder and subject matter advisor input
- Design practice and policy
- EGD infrastructure

Section 4.0 Overview of 2012 Components provides all details on the above components.

To ensure consistency in the application of LS at EGD, the following items were defined to build the plan:

- LS Definitions
- LSZ Criteria
- LSZ Prioritization Factors
- LS Policy and Rules
- LS Plan Responsibilities and Accountabilities

2.1 LOAD SHED DEFINITIONS

Load Shedding: The act of curtailing predefined areas of customers when gas demand on the system exceeds availability. The goal of load shedding is to minimize widespread system outage in the event of limited supply or network disruption.

Load Shed Plan: Load Shedding documentation that is managed by DAM. The plan outlines all LSZs and their respective loads, customer counts, valves for isolation, key accounts, and curtailable customers. Based on this information, when load shedding is necessary, zones can be prioritized for use.

Load Shed Zone (LSZ): A predefined isolatable area of the distribution network managed by DAM that is used to respond to supply outages or network disruptions. LSZs typically have less than 10,000 customers and require 10 or less valves for isolation.

2.2 LOAD SHED ZONE CRITERIA

The following 2 criteria* were agreed upon for the identification of LSZs:

(i) Customer Count $\leq$ 10,000 and
(ii) Number of Valves for Isolation $\leq$ 10

*While most LSZs should meet this criteria, it was created with the caveat that there may be areas that are desirable for load shedding where the customer count and/or number of valves will exceed the requirements. System Analysis & Design is responsible for identifying and approving zones that do not meet LSZ criteria.

2.3 LOAD SHED ZONE PRIORITIZATION FACTORS

Prioritization factors, as seen in Table 1 were identified to assist with LS decision making; these factors are measurable attributes of LSZs. An algorithm was developed (as seen in Equation 1) that uses a selection of these factors to rank the zones relative to each other; this enables quick comparison and understanding of isolation options in the event of an emergency. The following zone attributes are used in the algorithm: customer loss, load, number of valves, size (amount of pipe), and the number of key accounts. Factors that are not included in the algorithm still support decision-making as they must be considered before a final decision is made to enact a LSZ.

TABLE 1: LOAD SHED ZONE FACTORS

Primary	Secondary
- Load - Zone Dependencies - Customer Loss - Critical Customers	- Number of Valves - Size of Zone - Key Accounts

EQUATION 1: LOAD SHED ZONE ALGORITHM

$$\textbf{Overall Score for Ranking} = vZR_{\text{Customer Loss}} + wZR_{\text{Load}} + xZR_{\text{Valves}} + yZR_{\text{Size of Zone}} + zZR_{\text{Key Accounts}}$$

Where:

ZR = Zone Rank

$v + w + x + y + z = 1$

The weighted sum in the LSZ Algorithm allows those managing the emergency to select the factors that are most important in their decision and weight them accordingly. The default values for weighting are:

Customer Loss = 0.4
Load = 0.4
Number of Valves = 0.1
Size of Zone = 0.05
Key Accounts = 0.05

2.4 LOAD SHED POLICY AND RULES

An Engineering review of all Company policy related to valves was completed to understand the existing valve requirements. This review can be seen in Appendix 7.1. Based on the current policy, clarifications and new LS context were added to the PDR. The Technical Announcement for this policy addition can be seen in Appendix 7.2.

The following requirements were introduced to ensure that System Analysis & Design is aware of any work with major impact to a LSZ.

Any work completed on the gas distribution system must consider existing Load Shed Zones and the overall isolation options of the gas network. System Analysis & Design must approve any work that affects a Load Shed Zone where:

(i) Customer Count > 10,000

(ii) Number of valves for isolation > 10

(iii) Two Load Shed Zones are connected

All other impacts to LSZs will be captured by System Analysis & Design in their annual review of the system; this process has been outlined in Section 4.8.2 Management of Load Shed Zones.

In addition to the above LS rules, EGD policy already outlines that valves must be located "to create isolation areas, where otherwise a main break can require the "make safe" and relighting of more homes or businesses than the Operations group considers practical. Where practical, valves must be located to segment the system into areas of approximately 2,500 customers or less". This rule supports the development of isolation areas that can be grouped into larger LSZs and relates to new construction and 3R work. A new process, presented in Section 4.8.1 Completing Planned Work, supplements the Planning, Design and Permitting DMS Process. Its purpose is to reinforce existing Company requirements and enable growth and maintenance of LSZs and the LS Plan.

2.5 Load Shed Responsibilities & Accountabilities

Load Shed Custodian: System Analysis & Design

System Analysis and Design will be accountable for the day-to-day management of the LS Plan and an annual review (as described in Section 4.8.2 Management of Load Shed Zones**).** It is the responsibility of everyone at the Company to ensure that their work meets policy requirements (LSZ requirements as well as main valve location requirements). LSZs have been made available in GIS to ensure that everyone has access to the most up-to-date information. The goal is that with training and awareness of isolation requirements, planned work will have more consideration of these requirements and also propose improvements where applicable.

3.0 SUMMARY OF LOAD SHED ZONES

Table 2 provides an overview of the LSZs that have been identified based on existing infrastructure at EGD. A detailed breakdown of the LSZs can be seen in Appendix 7.3.

TABLE 2: SUMMARY OF LOAD SHED ZONES

Area	Firm Load at DD 41*	Existing Zones	Valves	Zones with <10 Valves	Customer Loss	Zones with <10,000 Customers	Pipe	Curtailable Customers			Do Not Curtail Customers	Key Accounts
	TJ	#	#	%	#	%	km	# - Phase 0	# - Phase 1	# - Phase 2	#	#
10	291	35	118	97%	146294	89%	1940	4	12	10	0	26
20	173	25	78	100%	118887	88%	1856	1	5	6	1	12
30	284	25	123	92%	220847	76%	3839	1	2	7	0	10
40	135	13	42	100%	114513	69%	2601	5	2	2	0	9
50	76	7	16	100%	59340	71%	1804	6	4	5	1	15
60	366	28	57	100%	167962	86%	3467	8	4	4	0	16
80	160	9	41	100%	102510	44%	3112	19	10	7	1	36
90	55	5	13	100%	35472	60%	861	0	0	0	0	0
CDA	1120	114	418	97%	762391	79%	15152	36	35	37	0	108
EDA	421	33	70	100%	203434	82%	4328	8	4	4	0	16
ALL	**1541**	**147**	**488**	**98%**	**965825**	**80%**	**19480**	**44**	**39**	**41**	**3**	**124**

*Firm load does not include Phase 0 contract customer loads

UNDERTAKING J5.5

UNDERTAKING

TR 41

To provide breakdown of Actual 2013 capital spend on core capital expenditures and total leave to construct.

RESPONSE

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Capital Expenditures	20.8	28.4	37.9	34.7	39.7	43.4	52.6	49.6	55.5	60.5	49.9	44.8	517.8
Leave to Construct	(0.2)	2.0	4.8	1.6	4.2	7.7	9.3	8.9	11.3	12.3	11.2	2.9	76.2
Core Capital	21.0	26.4	33.1	33.1	35.5	35.7	43.3	40.6	44.2	48.2	38.6	41.9	441.6

Witness: L. Au

UNDERTAKING J5.10

UNDERTAKING

TR 81

To provide 2013 actuals for Exhibit B2, Tab 5, Schedule 1, Table 1 and Table 2.

RESPONSE

Table 1 (Exhibit B2, Tab 5, Schedule 1)

(000's)

Item Number	Description	2013 Budget	2013 Actual	2014 Forecast	2015 Forecast	2016 Forecast
1	System Integrity and Reliability Totals	84,724	113,900	132,333	135,126	141,103
2	Variance Year over Year (000's)	N/A	N/A	18,433	2,793	5,977
3	Variance to Base Year (000's)	N/A	N/A	18,433	21,226	27,203
4	Percentage Variance to Base Year (%)	N/A	N/A	16%	19%	24%

Table 2 (Exhibit B2, Tab 5, Schedule 1)

(000's)

Item Number	Description	2013 Budget	2013 Actual	2014 Forecast	2015 Forecast	2016 Forecast
1	Mains Replacement	18,237	31,582	24,604	24,098	22,110
2	Service Replacement	17,814	23,551	21,118	25,011	41,216
3	Station Replacement	15,767	9,200	23,990	26,442	24,517
4	Other System Integrity and Reliability	32,906	35,058	41,808	42,650	35,810
5	System Integrity Direct Resource Costs	15,330	14,509	20,813	16,925	17,449
6	Total System Integrity and Reliability	84,724	113,900	132,333	135,126	141,103

Witness: L. Lawler