EB-2022-0222

Phase 1

Oral Hearing

EGI 2024 Rates Rebasing

Panel 11 – EGI

Capex and AMP (including IRP)

2023 Capital

FRPO Compendium 2

August 2, 2023

ENBRIDGE GAS INC.

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Reference:

Ex. 4, Tab 7, Schedule 1, pg. 14
AND EB-2017-0306/EB-2017-0307 Exhibit J2.5 Attachments 1 & 2

Preamble:

EGI evidence states: *At the time of Union's 2013 Cost of Service proceeding, 210 TJ/d of excess Dawn Parkway capacity existed relative to the forecast demands of the Dawn Parkway System. The full cost of the Dawn Parkway System was included in the Company's revenue requirement and allocated based on the forecast demands, consistent with a cost of service treatment.*

Question(s):

Using the presentation of J2.5 Attachments 1 & 2 from the merger proceeding, please show the period from W18/19 through W22/23.

a) For any year in which there was a shortfall of capacity, please provide the costs of resources to overcome the shortfall.

Response:

Please see Attachment 1 and Attachment 2.

a) Enbridge Gas has not acquired incremental resources or employed additional measures to manage a forecast Dawn Parkway System shortfall in any year.

Dawn Parkway System Capacity and Demand, PDO Shift Details, and PDO Demand Revenue Difference

Line No.	Particulars (TJ/d)	2013 Forecast W2013/2014 (a)	W2014/2015 (b)	W2015/2016 (c)	W2016/2017 (d)	W2017/2018 (e)	W2018/2019 (f)	W2019/2020 (g)	W2020/2021 (h)	W2021/2022 (i)	W2022/2023 (j)
	Dawn Parkway System										
	Included in Rates										
1	2013 Cost of Service (EB-2011-0210) Capacity	6,803	6,803	6,803	6,803	6,803	6,803	6,803	6,803	6,803	6,803
2	Incremental Dawn Parkway System Capacity (1)	-	-	433	876	1,332	1,332	1,332	1,332	1,332	1,332
3	Total	6,803	6,803	7,236	7,678	8,135	8,135	8,135	8,135	8,135	8,135
	Other Changes (No Impact to Rates)										
4	Other Dawn Parkway System Capacity Changes	-	(2)	(222)	(170)	(246)	(262)	(256)	(219)	(169)	(160)
	Annual Forecast										
5	Total Forecasted Dawn Parkway System Capacity (line 3 + line 4)	6,803	6,801	7,014	7,508	7,889	7,873	7,878	7,915	7,966	7,975
6	Total Forecasted Dawn Parkway System Demands	6,593	6,643	7,049	7,443	7,783	7,759	7,905	7,911	8,038	7,992
7	Forecast Dawn Parkway System Excess/(Shortfall) (line 5 - line 6) (2)	210 (3)	158	(35) (5)	65	106 (6)	114	(27)	4	(72)	(17)
	PDO Shift										
	Customers without M12 service										
8	Temporarily Available Capacity	-	146	23	13	-	-	-	-	-	-
9	Permanent Capacity (from Dawn-Kirkwall Turnback) (5)	-	0	123	133	200	200	200	200	200	200
10	Temporary Capacity (from exchange service)	-	-	-	-	-	-	-	-	-	27
11	Total	-	146 (4)	146	146	200	200	200	200	200	226
	Customers with M12 service - Permanent Capacity										
12	All Customers excluding TCE Halton Hills	-	19	19	19	19	19	19	19	19	19
13	TCE Halton Hills	-	48	48	48	62	132	132	132	132	132
14	Total	-	66	66	66	81	151	151	151	151	151
15	Total PDO Shift (line 11 + line 14)	-	212	212	212	280	350	350	350	350	377
	PDO Shift cost in Rates		2015 Rates	2016 Rates	2017 Rates	2018 Rates	2019 Rates	2020 Rates	2021 Rates	2022 Rates	2023 Rates
16	Dawn-Parkway Demand Costs ($000s)		5,143	5,694	6,720	9,726	10,956	11,117	11,273	11,391	11,630
17	Incremental Compressor Fuel Costs ($000s)		1,900	1,797	1,707	1,705	1,640	1,404	1,517	2,067	4,017
18	Firm Exchange Service ($000s)		-	-	-	-	-	-	-	-	1,067
19	Total		7,043	7,491	8,426	11,431	12,596	12,521	12,790	13,459	16,713
	Foregone Demand Revenue of M12 Dawn-Kirkwall Turnback										
20	Used for PDO Shift ($000s) (7)		580	4,669	5,937	9,993	11,217	11,379	11,535	11,654	11,896
21	Demand Revenue from Temporarily Available Capacity (line 8 x M12 D-P Rate x 12)		4563	796	531	0	0	0	0	0	0
22	Total		5,143	5,465	6,468	9,993	11,217	11,379	11,535	11,654	11,896
23	Demand Revenue Difference ($000s) (line 16 - line 22)		-	229	252	(267)	(261)	(262)	(261)	(263)	(266)

Notes:

(1) W2015/2016 - Incremental capacity resulting from the Brantford-Kirkwall / Parkway D Project of 433 TJ/d.
W2016/2017 - Incremental capacity resulting from the Dawn Parkway 2016 System Expansion Project of 443 TJ/d.
W2017/2018 - Incremental capacity resulting from the 2017 Dawn Parkway Project of 457 TJ/d.

(2) The PDO shift was reflected in Dawn Parkway excess/(shortfall) beginning W2015/2016.

(3) The W2013/2014 forecast filed in Union's 2013 Cost of Service proceeding (EB-2010-0210) included 210 TJ/d of excess Dawn Parkway capacity. In the EB-2011-0210 Decision, the OEB accepted Union's forecast and regulatory treatment. Union's 2013 Cost Allocation Study allocates Dawn Parkway demand costs in proportion to distance weighted design day demands. The 2013 allocation resulted in approximately 84% of costs allocated to Union's ex-franchise rate classes and 16% to Union's in-franchise rate classes.

(4) In accordance with the Settlement Framework for Reduction of Parkway Delivery Obligation ("PDO Framework") (EB-2013-0365) effective April 1, 2014, Union had temporarily available Dawn Parkway capacity which was used to facilitate 146 TJ/d of PDO shift. Parties agreed Union would include the demand and fuel costs associated with the 146 TJ/d of capacity in delivery rates. (PDO Framework, paragraph B1)

(5) Consistent with the PDO Framework, effective November 1, 2015 the temporarily available capacity was forecast to be used for other purposes leaving Parkway in a delivery shortfall position. Parties agreed that the demand and fuel costs associated with the temporarily available capacity would remain in delivery rates for Union to manage the Parkway delivery shortfall through the acquisition of incremental resources. M12 Dawn to Kirkwall turnback was to be used to first reduce the Parkway delivery shortfall and then to further reduce the remaining PDO. All incremental costs associated with the incremental PDO reduction were recovered by Union in rates (or deferral account due to timing differences). (PDO Framework, Paragraph B2)

(6) As part of the 2017 Dawn-Parkway Expansion Project (EB-2015-0200), Union had forecast a surplus of 30,393 GJ/d on the Dawn Parkway System following the completion of the project. As part of the EB-2015-0200 Settlement Agreement, Union agreed to market the surplus capacity in accordance with the Storage and Transportation Access Rule (“STAR”) and credit the revenues to the project deferral account.

(7) Exhibit I.4.7-FRPO-16 Attachment 2, line 7.

Calculation of Foregone Demand Revenue from Turnback Used for PDO Shift

Line No.	Particulars	2015 Rates W2014/2015	2016 Rates W2015/2016	2017 Rates W2016/2017	2018 Rates W2017/2018	2019 Rates W2018/2019	2020 Rates W2019/2020	2021 Rates W2020/2021	2022 Rates W2021/2022	2023 Rates W2022/2023
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
	Turnback Used For PDO Shift (TJ/d)									
1	Dawn-Kirkwall turnback - customers without M12 service (1)	-	139	151	242	242	242	242	242	242
2	Dawn-Parkway turnback - customers with M12 service (2)	19	19	19	19	19	19	19	19	19
	Rate M12 Demand Rates ($/GJ/mo) (3)									
3	Dawn to Kirkwall	2	2	3	3	3	3	3	3	3
4	Dawn to Parkway	3	3	3	4	4	4	4	4	4
	Foregone Demand Revenue from M12 Turnback Used for PDO Shift ($000s)									
5	Dawn-Kirkwall (line 1 x line 3 x 12)	-	4,027	5,179	9,165	8,886	8,959	9,037	9,096	9,270
6	Dawn-Parkway (line 2 x line 4 x 12)	580	643	758	828	803	809	817	822	838
7	Dawn-Parkway Rate T2 BCD Revenue Credit Shortfall	-	0	0	0	1,528	1,611	1,681	1,736	1,788
8	Total Foregone Revenue (line 5 + line 6 + line 7)	580	4,669	5,937	9,993	11,217	11,379	11,535	11,654	11,896

Notes:

(1) Dawn to Kirkwall contract turnback used to create permanent Dawn to Parkway capacity shown at Attachment 1, line 9 to facilitate PDO shift.

(2) Attachment 1, line 12.

(3) Demand rates from the Company's annual rates filings: 2015 Rates (EB-2014-0271), 2016 Rates (EB-2015-0116), 2017 Rates (EB-2016-0245), 2018 Rates (EB-2017-0087), 2019 Rates (EB-2018-0305), 2020 Rates (EB-2019-0194), 2021 Rates (EB-2020-0181), 2022 Rates (EB-2021-0147), and 2023 Rates (EB-2022-0133).

ENBRIDGE GAS INC.

Answer to Undertaking from
Federation of Rental-housing Providers of Ontario (FRPO)

Undertaking

Tr: 148

To provide a full description of line 4, which is other Dawn-to-Parkway System capacity changes, which results in the total in line 3 being reduced by that amount for the total forecasted Dawn-to-Parkway system capacity in line 5.

Response:

The Dawn Parkway System capacity is derived as the design day demands plus the capacity surplus or shortfall. The capacity represents the demands that can be served by the system and does not represent the demands that are able to move from Dawn to Parkway. The capacity is not static, and changes based on the specific location of demands on the Dawn Parkway System (e.g. Union South in-franchise demands, Dawn to Kirkwall, Kirkwall to Parkway or Dawn to Parkway). The capacity recognizes that gas moving further from Dawn to Parkway uses more system capacity. For example, a demand in London and a demand in Milton are each equal to one design day demand but the demand in London will have less impact on system capacity surplus or shortfall than demand in Milton, as demand in Milton travels further from Dawn on the Dawn Parkway System. For this reason, if Dawn to Kirkwall turnback is repurposed to provide Dawn to Parkway service, the amount of Dawn Parkway System capacity will decrease.

Table 1 provides the detail for the 222 TJ/d decrease of other Dawn Parkway System capacity changes for the Winter of 2015/2016 as provided at Exhibit I.4.7-FRPO-169, Attachment 1, column (c) and as discussed in Tr. Vol 7. Other years have similar changes in these categories based on both in-franchise and ex-franchise demand changes, PDO (Parkway Delivery Obligation) changes, modelling changes and heat value of gas changes.

Table 1
Winter 2015/2016 Details of Other Dawn Parkway System Capacity Changes in Line 4

Line No.	Other Dawn Parkway System Capacity Changes	(TJ/d)
1	South and North In-Franchise Demand	85
2	Ex-franchise Demand	(153)
3	PDO	(155)
4	Model	(57)
5	Heat Value	58
6	Total (1)	(222)

Note:
(1) The decrease in capacity of 222 TJ/d for the Winter 2015/2016 is relative to the forecast capacity from Union's 2013 Cost of Service (EB-2011-2010).

These changes include:

- 85 TJ/d of incremental design day demand for the Union South and North rate zones.
- (153) TJ/d of ex-franchise demands due to contracting changes. The changes include impacts of: Marcellus gas region development and the corresponding turnback of Dawn to Kirkwall capacity; increase in Kirkwall to Parkway and Dawn to Parkway path shippers; long haul to short haul shifting for eastern customers and the EGD GTA project which increased demand but also shifted EGD rate zone suction gas to Parkway discharge.
- (155) TJ/d shift in Parkway delivery obligations from Parkway to Dawn and other year-to-year PDO changes.
- (57) TJ/d of changes to gas properties, model corrections as examples.
- 58 TJ/d of changes related to higher energy content gas arriving at the utility.

UNION GAS LIMITED

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario ("FRPO")

Ref: EB-2013-0074 Schedule B, paragraph 6

Preamble: Union's evidence states: "By building the Project, Union is pro-actively addressing the impacts of future turn back. Union will be better positioned to re-purpose or re-sell turn back capacity provided market opportunities exist. The ability to re-purpose or re-sell turn back capacity would help mitigate future rate risk for Union's customers"

Please provide schematic diagrams showing the before and after impact of the Brantford to Kirkwall loop providing:

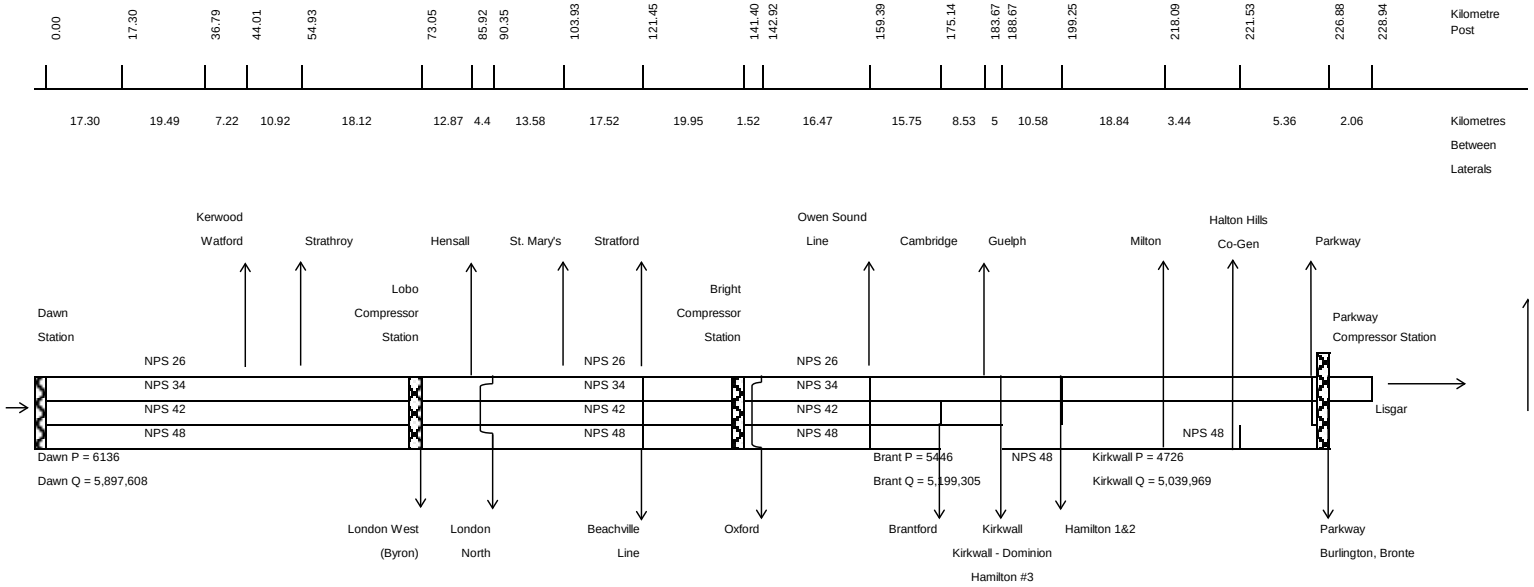
a) Design day pressures and throughputs at key nodes in the system:

   i. Dawn
   ii. Lobo
   iii. Bright
   iv. Brantford
   v. Kirkwall
   vi. Parkway

Response:

a) Please see Attachments 1 and 2.

DAWN to PARKWAY SYSTEM



Design Day Demands

	Southern Ontario	(GJ/d)
	Forest, Watford	6943
	Strathroy	7716
	London West	110641
U	Hensall	28569
N	London North	95825
I	St. Mary's	6384
O	Stratford	35714
N	Beachville	51808
	Oxford Line	42634
M	Owen Sound Line	233987
A	Cambridge	69021
R	Brantford	97294
K	Kirkwall - Dominion	81571
E	Guelph	80392
T	Hamilton 3	59699
S	Hamilton 1&2	254837
	Milton	71134
	Halton Hills	139754
	Parkway (Greenbelt)	35050
	Burlington, Bronte	137951
	Total Southern Ontario	1,646,924
	North and Eastern Ontario	332,744
	Kirkwall	354,023
	Parkway TCPL	3,581,727
M	Parkway Cons/Lisgar	1,238,085
1	**Total M12**	5,173,835
2	**Total Design Day Demands**	**7,153,503**

System Capacity

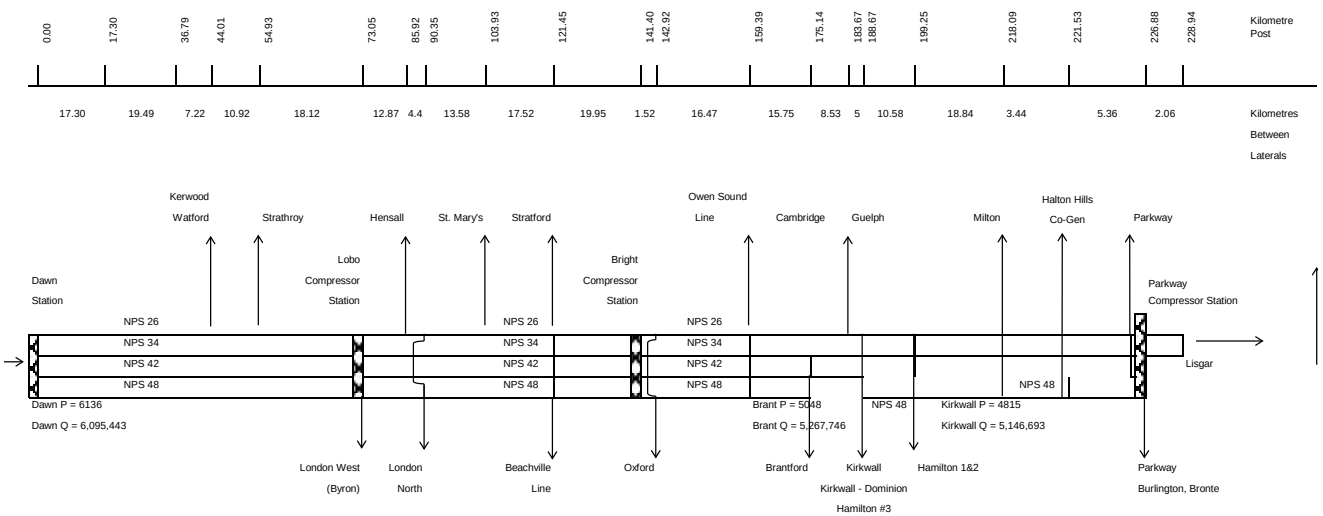
	(GJ/d)
Total System Capacity	**6,832,262**
(Including Firm Service Receipts of 638,626 GJ/d)	
Total Requirements	**7,153,503**
Total (Shortfall) Surplus	**-321,241**
Union Markets	
M12 Transportation	
Kirkwall	
Lisgar, Parkway	-321,241

WINTER DESIGN DAY
DAWN-PARKWAY SYSTEM
WINTER 2015/16
without Brantford to Kirkwall

Compressor Stations Operating Conditions at Peak Hour

STATION	LOBO	BRIGHT	PARKWAY
Power Available (MW)	36.8	91.9	87.9
Power Required (MW)	36.8	91.9	75.2
Pressure			
Suction (kPa)	4,477	3,806	3,511
Discharge (kPa)	5,252	5,922	6,453
Compression Ratio	1.17	1.56	1.84
Flow (GJ/d)	5,948,940	5,815,267	3,091,417
Daily Fuel (GJ/d)	11,513	23,421	15,821

DAWN to PARKWAY SYSTEM



Design Day Demands

	Southern Ontario	(GJ/d)
	Forest, Watford	6943
	Strathroy	7716
	London West	110641
U	Hensall	28569
N	London North	95825
I	St. Mary's	6384
O	Stratford	35714
N	Beachville	51808
	Oxford Line	42634
M	Owen Sound Line	233987
A	Cambridge	69021
R	Brantford	97294
K	Kirkwall - Dominion	81571
E	Guelph	80392
T	Hamilton 3	59699
S	Hamilton 1&2	254837
	Milton	71134
	Halton Hills	139754
	Parkway (Greenbelt)	35050
	Burlington, Bronte	137951
	Total Southern Ontario	1,646,924
	North and Eastern Ontario	332,744
	Kirkwall	354,023
	Parkway TCPL	3,581,727
M	Parkway Cons/Lisgar	1,238,085
1	**Total M12**	5,173,835
2	**Total Design Day Demands**	**7,153,503**

System Capacity

	(GJ/d)
Total System Capacity	**7,029,940**
(Including Firm Service Receipts of 638,626 GJ/d)	
Total Requirements	**7,153,503**
Total (Shortfall) Surplus	**-123,563**
Union Markets	
M12 Transportation	
Kirkwall	
Lisgar, Parkway	-123,563

Compressor Stations Operating Conditions at Peak Hour

STATION	LOBO	BRIGHT	PARKWAY
Power Available (MW)	36.8	91.9	87.9
Power Required (MW)	36.8	91.9	75.0
Pressure			
Suction (kPa)	4,488	3,653	3,513
Discharge (kPa)	5,229	5,616	6,453
Compression Ratio	1.17	1.54	1.84
Flow (GJ/d)	6,077,691	5,783,356	3,290,020
Daily Fuel (GJ/d)	11,513	23,538	17,288

WINTER DESIGN DAY
DAWN-PARKWAY SYSTEM
WINTER 2015/16
Brantford to Kirkwall

1/ DAWN -PARKWAY SYSTEM

Union's Dawn-Parkway system begins at Union's Dawn Compressor Station ("Dawn") and extends 228 km northeast to Parkway, near Oakville. This system can be seen on the map at Exhibit A1, Tab 8, Schedule 2.

The need for facilities on the Dawn-Parkway system is determined based on the design day requirement for the system. The base design day requirements for the in-franchise customers is developed using the actual volumes from the 2010/2011 winter operation. The design day demand for future years is developed using the winter season volume throughput forecast for the general service customers and the forecast increases and decreases in contract demand for the customers in the contract classes. The design day demand for the ex-franchise customers is based on the contract demands currently in place and the forecast increases and decreases for these customers. The forecast design day demands for the Dawn-Parkway system are shown in Table 1.

Table 1

Forecast Design Day Demands (GJ/d)

	2010/11 Winter	2011/12 Winter	2012/13 Winter	2013/14 Winter
Dawn-Parkway In-franchise	1,703,368	1,690,925	1,657,697	1,648,695
Dawn-Parkway Ex-franchise	5,118,197	5,012,745	4,860,004	4,681,558

Union does not require any investment on its Dawn-Parkway system in 2012 and 2013 to meet these forecast customer demands.

ENBRIDGE GAS INC.

Answer to Interrogatory from
School Energy Coalition (SEC)

Interrogatory

Reference:

2-7-1, p.22

Question(s):

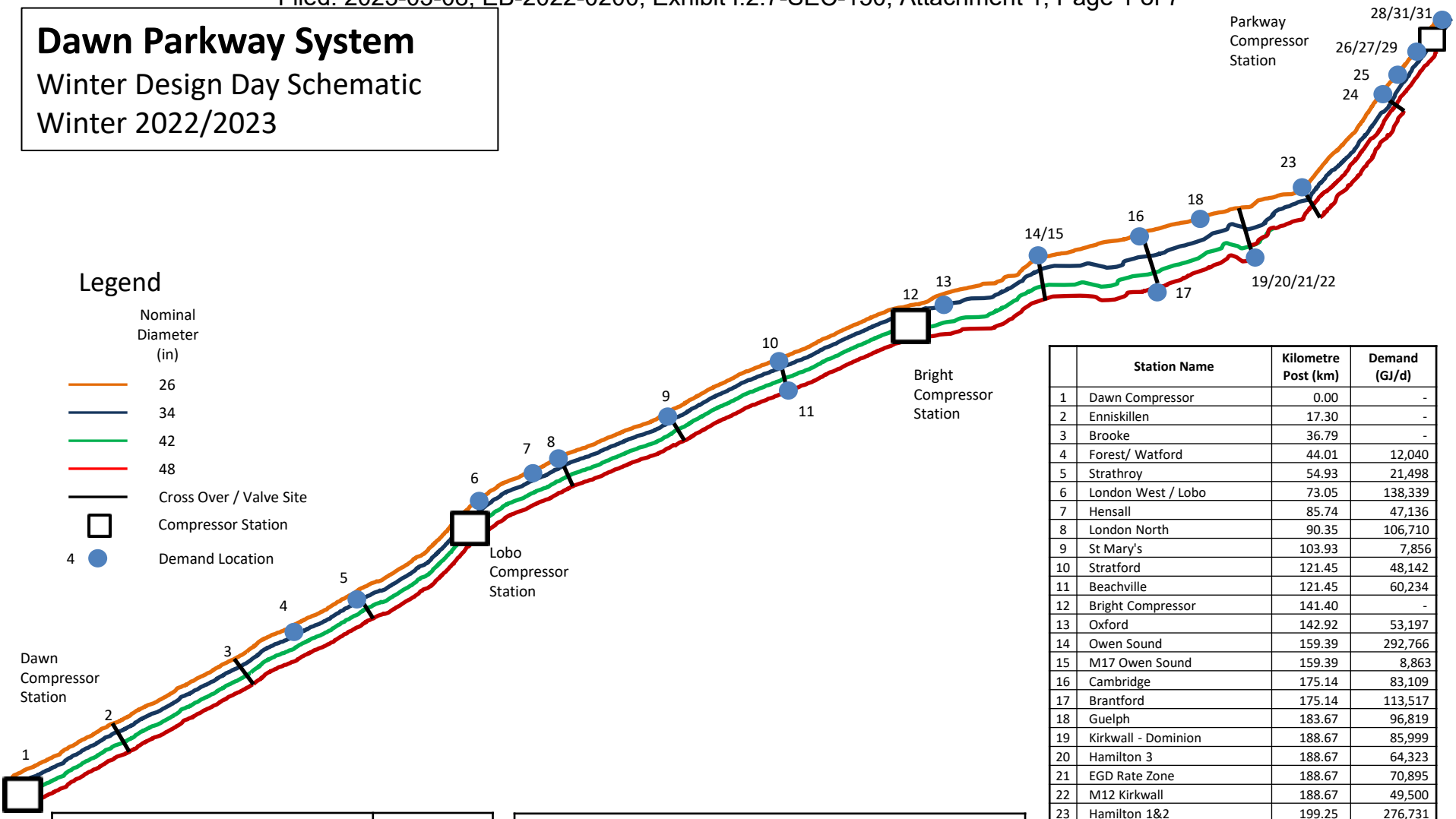
Please provide a Dawn-Parkway design day schematic (similar to file EB-2022-0133, Exhibit I.FRPO.5, Attach 1) for each winter between 2022/2023 and 2028/2029.

Response:

Please see Attachment 1.

Dawn Parkway System

Winter Design Day Schematic
Winter 2022/2023



System Capacity	GJ/d
Total System Capacity [1] [2]	8,007,974
Total Demand Requirement	7,947,988
Surplus (Shortfall)	59,986
[1] Includes Parkway Delivery Obligation 256,484 GJ/d	
[2] Includes Supply at Kirkwall for M12 Contracts and Union Sales Service customers 442,256 GJ/d	

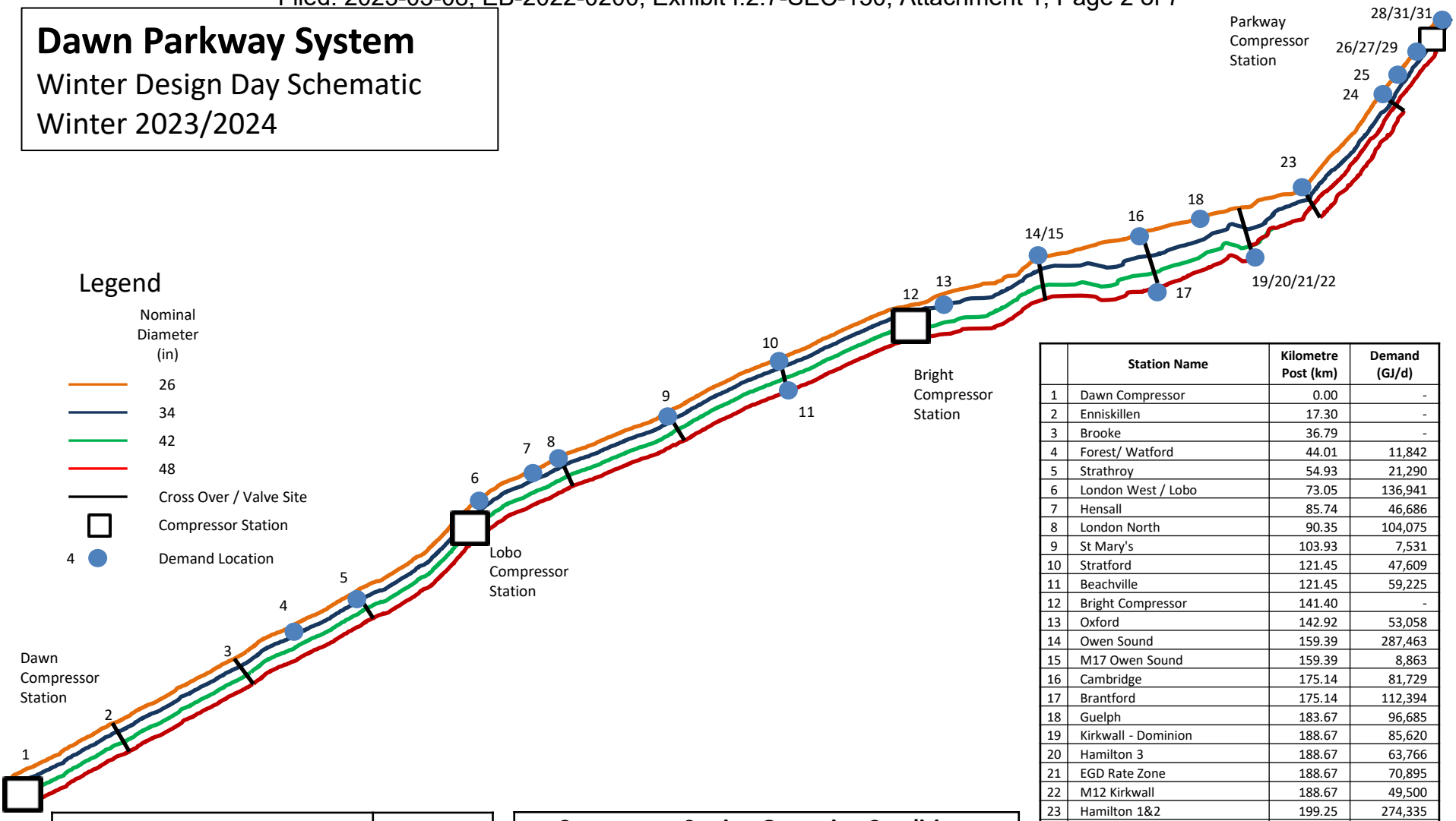
Compressor Station Operating Conditions			
Station	Lobo	Bright	Parkway
Power Available (MW)	102.9	129.0	88.1
Power Required (MW)	102.9	129.0	88.1
Suction Pressure (kPag)	3778	3522	3613
Discharge Pressure (kPag)	5571	5964	6454
Compression Ratio	1.5	1.7	1.8
Flow (GJ/d)	12376,523	6,945,661	4,316,824
Daily Fuel (GJ/d)	34,354	28,148	17,953

	Station Name	Kilometre Post (km)	Demand (GJ/d)
1	Dawn Compressor	0.00	-
2	Enniskillen	17.30	-
3	Brooke	36.79	-
4	Forest/ Watford	44.01	12,040
5	Strathroy	54.93	21,498
6	London West / Lobo	73.05	138,339
7	Hensall	85.74	47,136
8	London North	90.35	106,710
9	St Mary's	103.93	7,856
10	Stratford	121.45	48,142
11	Beachville	121.45	60,234
12	Bright Compressor	141.40	-
13	Oxford	142.92	53,197
14	Owen Sound	159.39	292,766
15	M17 Owen Sound	159.39	8,863
16	Cambridge	175.14	83,109
17	Brantford	175.14	113,517
18	Guelph	183.67	96,819
19	Kirkwall - Dominion	188.67	85,999
20	Hamilton 3	188.67	64,323
21	EGD Rate Zone	188.67	70,895
22	M12 Kirkwall	188.67	49,500
23	Hamilton 1&2	199.25	276,731
24	Milton	218.09	72,102
25	Halton Hills	221.61	145,598
26	Parkway Greenbelt	228.94	24,359
27	Burlington / Bronte	228.94	189,671
28	North Rate Zone	228.94	439,241
29	EGD Rate Zone Suction	228.94	1,393,961
30	EGD Rate Zone Discharge	228.94	1,720,246
31	M12 Parkway	228.94	2,325,135
	Total South Rate Zone		**1,940,147**
	Total North Rate Zone		**439,241**
	Total EGD Rate Zone		**3,185,102**
	Total Ex-franchise		**2,383,498**
	Total Design Day Demand		**7,947,988**

Dawn Parkway System

Winter Design Day Schematic

Winter 2023/2024



	Station Name	Kilometre Post (km)	Demand (GJ/d)
1	Dawn Compressor	0.00	-
2	Enniskillen	17.30	-
3	Brooke	36.79	-
4	Forest/ Watford	44.01	11,842
5	Strathroy	54.93	21,290
6	London West / Lobo	73.05	136,941
7	Hensall	85.74	46,686
8	London North	90.35	104,075
9	St Mary's	103.93	7,531
10	Stratford	121.45	47,609
11	Beachville	121.45	59,225
12	Bright Compressor	141.40	-
13	Oxford	142.92	53,058
14	Owen Sound	159.39	287,463
15	M17 Owen Sound	159.39	8,863
16	Cambridge	175.14	81,729
17	Brantford	175.14	112,394
18	Guelph	183.67	96,685
19	Kirkwall - Dominion	188.67	85,620
20	Hamilton 3	188.67	63,766
21	EGD Rate Zone	188.67	70,895
22	M12 Kirkwall	188.67	49,500
23	Hamilton 1&2	199.25	274,335
24	Milton	218.09	70,754
25	Halton Hills	221.61	145,048
26	Parkway Greenbelt	228.94	23,896
27	Burlington / Bronte	228.94	185,107
28	North Rate Zone	228.94	434,948
29	EGD Rate Zone Suction	228.94	1,393,961
30	EGD Rate Zone Discharge	228.94	1,720,246
31	M12 Parkway	228.94	2,298,408
	Total South Rate Zone		**1,915,055**
	Total North Rate Zone		**434,948**
	Total EGD Rate Zone		**3,185,102**
	Total Ex-franchise		**2,356,771**
	Total Design Day Demand		**7,891,876**

System Capacity	GJ/d
Total System Capacity [1] [2]	7,980,440
Total Demand Requirement	7,891,876
Surplus (Shortfall)	88,564

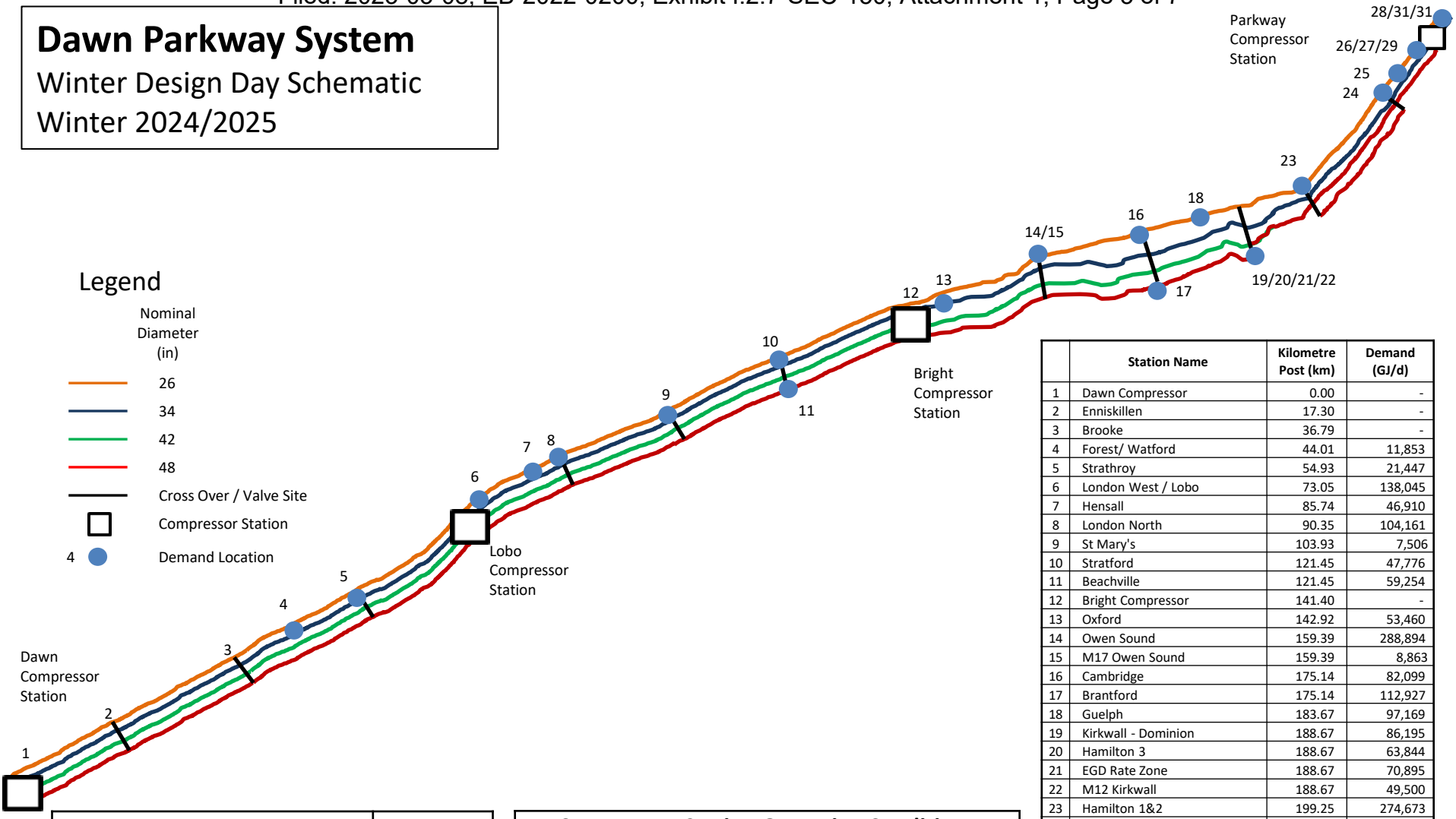
[1] Includes Parkway Delivery Obligation 253,356 GJ/d

[2] Includes Supply at Kirkwall for M12 Contracts and Union Sales Service customers 428,711 GJ/d

Compressor Station Operating Conditions			
Station	Lobo	Bright	Parkway
Power Available (MW)	102.9	129.0	88.1
Power Required (MW)	102.9	129.0	88.0
Suction Pressure (kPag)	3781	3530	3621
Discharge Pressure (kPag)	5578	5976	6454
Compression Ratio	1.5	1.7	1.8
Flow (GJ/d)	1,849,054	6,930,035	4,317,613
Daily Fuel (GJ/d)	34,319	27,676	18,045

Dawn Parkway System

Winter Design Day Schematic
Winter 2024/2025



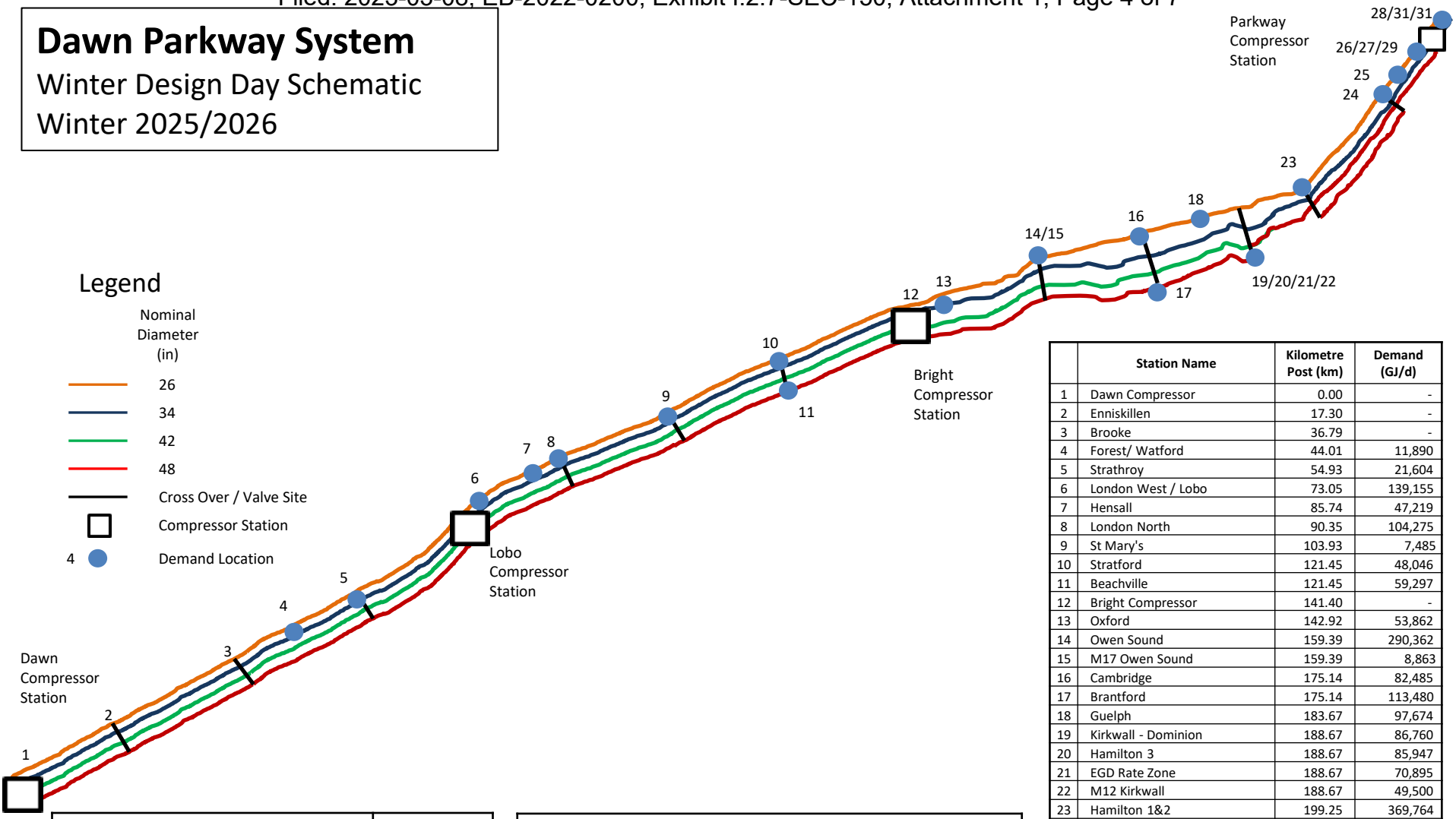
	Station Name	Kilometre Post (km)	Demand (GJ/d)
1	Dawn Compressor	0.00	-
2	Enniskillen	17.30	-
3	Brooke	36.79	-
4	Forest/ Watford	44.01	11,853
5	Strathroy	54.93	21,447
6	London West / Lobo	73.05	138,045
7	Hensall	85.74	46,910
8	London North	90.35	104,161
9	St Mary's	103.93	7,506
10	Stratford	121.45	47,776
11	Beachville	121.45	59,254
12	Bright Compressor	141.40	-
13	Oxford	142.92	53,460
14	Owen Sound	159.39	288,894
15	M17 Owen Sound	159.39	8,863
16	Cambridge	175.14	82,099
17	Brantford	175.14	112,927
18	Guelph	183.67	97,169
19	Kirkwall - Dominion	188.67	86,195
20	Hamilton 3	188.67	63,844
21	EGD Rate Zone	188.67	70,895
22	M12 Kirkwall	188.67	49,500
23	Hamilton 1&2	199.25	274,673
24	Milton	218.09	71,373
25	Halton Hills	221.61	145,014
26	Parkway Greenbelt	228.94	24,106
27	Burlington / Bronte	228.94	186,248
28	North Rate Zone	228.94	434,722
29	EGD Rate Zone Suction	228.94	1,393,961
30	EGD Rate Zone Discharge	228.94	1,737,835
31	M12 Parkway	228.94	2,147,681
	Total South Rate Zone		**1,922,952**
	Total North Rate Zone		**434,722**
	Total EGD Rate Zone		**3,202,691**
	Total Ex-franchise		**2,206,044**
	Total Design Day Demand		**7,766,408**

System Capacity	GJ/d
Total System Capacity [1] [2]	7,872,685
Total Demand Requirement	7,766,408
Surplus (Shortfall)	106,277
[1] Includes Parkway Delivery Obligation 252,909 GJ/d	
[2] Includes Supply at Kirkwall for M12 Contracts and Union Sales Service customers 285,484 GJ/d	

Compressor Station Operating Conditions			
Station	**Lobo**	**Bright**	**Parkway**
Power Available (MW)	102.9	129.0	88.1
Power Required (MW)	102.9	129.0	87.8
Suction Pressure (kPag)	3771	3487	3562
Discharge Pressure (kPag)	5556	5902	6454
Compression Ratio	1.5	1.7	1.8
Flow (GJ/d)	7,360,457	6,934,906	4,202,369
Daily Fuel (GJ/d)	34,319	28,783	17,934

Dawn Parkway System

Winter Design Day Schematic
Winter 2025/2026



	Station Name	Kilometre Post (km)	Demand (GJ/d)
1	Dawn Compressor	0.00	-
2	Enniskillen	17.30	-
3	Brooke	36.79	-
4	Forest/ Watford	44.01	11,890
5	Strathroy	54.93	21,604
6	London West / Lobo	73.05	139,155
7	Hensall	85.74	47,219
8	London North	90.35	104,275
9	St Mary's	103.93	7,485
10	Stratford	121.45	48,046
11	Beachville	121.45	59,297
12	Bright Compressor	141.40	-
13	Oxford	142.92	53,862
14	Owen Sound	159.39	290,362
15	M17 Owen Sound	159.39	8,863
16	Cambridge	175.14	82,485
17	Brantford	175.14	113,480
18	Guelph	183.67	97,674
19	Kirkwall - Dominion	188.67	86,760
20	Hamilton 3	188.67	85,947
21	EGD Rate Zone	188.67	70,895
22	M12 Kirkwall	188.67	49,500
23	Hamilton 1&2	199.25	369,764
24	Milton	218.09	71,980
25	Halton Hills	221.61	144,983
26	Parkway Greenbelt	228.94	24,313
27	Burlington / Bronte	228.94	187,389
28	North Rate Zone	228.94	434,455
29	EGD Rate Zone Suction	228.94	1,393,961
30	EGD Rate Zone Discharge	228.94	1,752,268
31	M12 Parkway	228.94	2,233,742
	Total South Rate Zone		**2,047,969**
	Total North Rate Zone		**434,455**
	Total EGD Rate Zone		**3,217,124**
	Total Ex-franchise		**2,292,105**
	Total Design Day Demand		**7,991,653**

System Capacity	GJ/d
Total System Capacity [1] [2]	7,976,708
Total Demand Requirement	7,991,653
Surplus (Shortfall)	-14,945

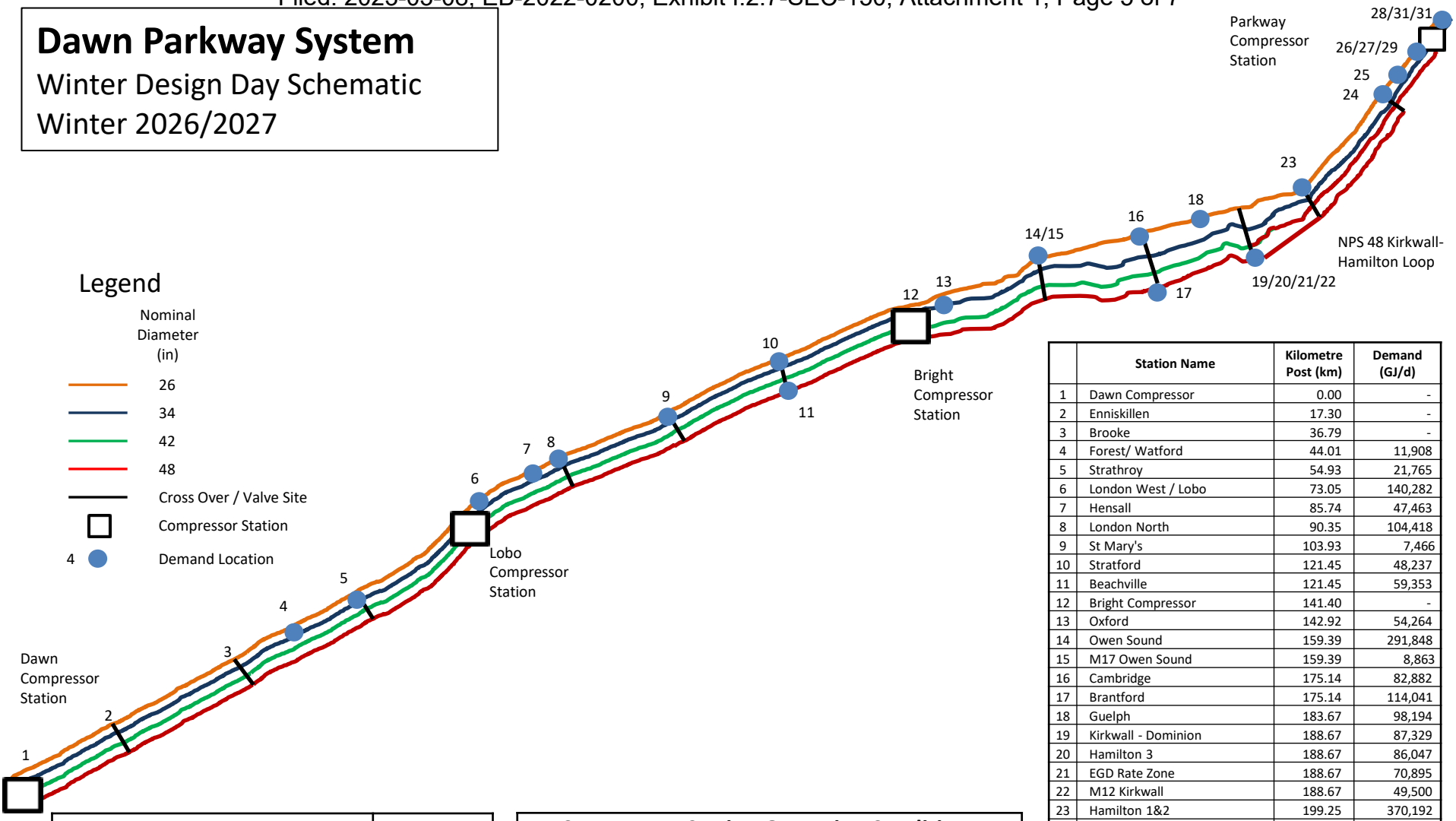
[1] Includes Parkway Delivery Obligation 338,650 GJ/d

[2] Includes Supply at Kirkwall for M12 Contracts and Union Sales Service customers 285,484 GJ/d

Compressor Station Operating Conditions			
Station	Lobo	Bright	Parkway
Power Available (MW)	102.9	129.0	88.1
Power Required (MW)	102.9	129.0	87.1
Suction Pressure (kPag)	3765	3464	3525
Discharge Pressure (kPag)	5545	5861	6454
Compression Ratio	1.5	1.7	1.8
Flow (GJ/d)	366,877	6,940,220	4,095,650
Daily Fuel (GJ/d)	34,319	29,669	17,713

Dawn Parkway System

Winter Design Day Schematic
Winter 2026/2027



System Capacity	GJ/d
Total System Capacity [1] [2]	8,030,409
Total Demand Requirement	8,012,142
Surplus (Shortfall)	18,266

[1] Includes Parkway Delivery Obligation 336,109 GJ/d

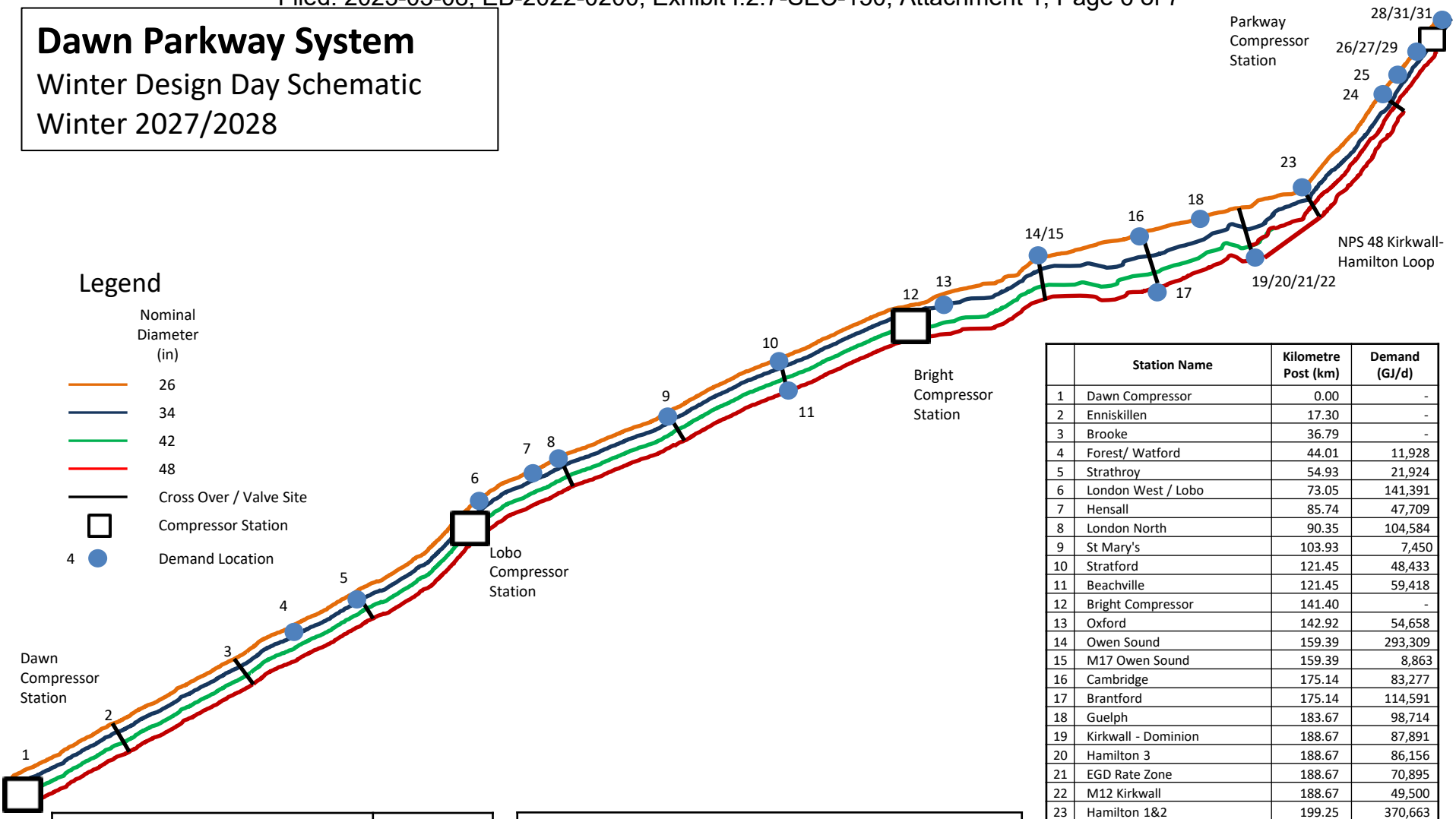
[2] Includes Supply at Kirkwall for M12 Contracts and Union Sales Service customers 285,484 GJ/d

Compressor Station Operating Conditions			
Station	Lobo	Bright	Parkway
Power Available (MW)	102.9	129.0	88.1
Power Required (MW)	102.9	120.1	87.5
Suction Pressure (kPag)	3761	3448	3539
Discharge Pressure (kPag)	5536	5638	6454
Compression Ratio	1.5	1.6	1.8
Flow (GJ/d)	370,531	6,939,223	4,143,474
Daily Fuel (GJ/d)	34,319	29,890	16,938

	Station Name	Kilometre Post (km)	Demand (GJ/d)
1	Dawn Compressor	0.00	-
2	Enniskillen	17.30	-
3	Brooke	36.79	-
4	Forest/ Watford	44.01	11,908
5	Strathroy	54.93	21,765
6	London West / Lobo	73.05	140,282
7	Hensall	85.74	47,463
8	London North	90.35	104,418
9	St Mary's	103.93	7,466
10	Stratford	121.45	48,237
11	Beachville	121.45	59,353
12	Bright Compressor	141.40	-
13	Oxford	142.92	54,264
14	Owen Sound	159.39	291,848
15	M17 Owen Sound	159.39	8,863
16	Cambridge	175.14	82,882
17	Brantford	175.14	114,041
18	Guelph	183.67	98,194
19	Kirkwall - Dominion	188.67	87,329
20	Hamilton 3	188.67	86,047
21	EGD Rate Zone	188.67	70,895
22	M12 Kirkwall	188.67	49,500
23	Hamilton 1&2	199.25	370,192
24	Milton	218.09	72,593
25	Halton Hills	221.61	144,956
26	Parkway Greenbelt	228.94	24,522
27	Burlington / Bronte	228.94	188,560
28	North Rate Zone	228.94	435,607
29	EGD Rate Zone Suction	228.94	1,393,961
30	EGD Rate Zone Discharge	228.94	1,763,254
31	M12 Parkway	228.94	2,233,742
	Total South Rate Zone		**2,056,321**
	Total North Rate Zone		**435,607**
	Total EGD Rate Zone		**3,228,110**
	Total Ex-franchise		**2,292,105**
	Total Design Day Demand		**8,012,142**

Dawn Parkway System

Winter Design Day Schematic
Winter 2027/2028



System Capacity	GJ/d
Total System Capacity [1] [2]	8,029,008
Total Demand Requirement	8,035,096
Surplus (Shortfall)	-6,089
[1] Includes Parkway Delivery Obligation 331,641 GJ/d	
[2] Includes Supply at Kirkwall for M12 Contracts and Union Sales Service customers 285,484 GJ/d	

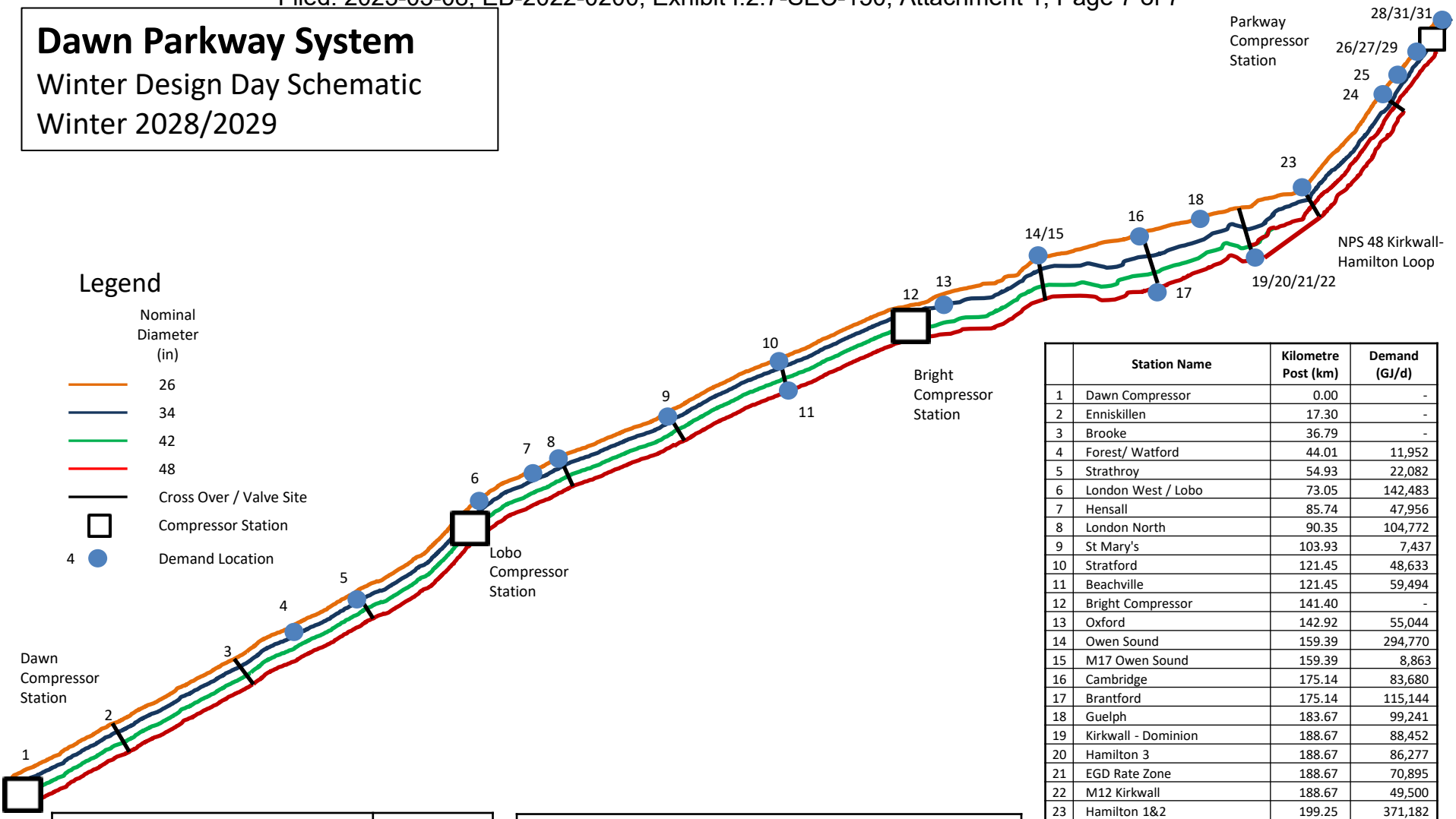
Compressor Station Operating Conditions			
Station	**Lobo**	**Bright**	**Parkway**
Power Available (MW)	102.9	129.0	88.1
Power Required (MW)	102.9	120.0	87.4
Suction Pressure (kPag)	3761	3448	3539
Discharge Pressure (kPag)	5535	5635	6454
Compression Ratio	1.5	1.6	1.8
Flow (GJ/d)	17,373,077	6,939,998	4,138,160
Daily Fuel (GJ/d)	34,319	29,890	16,827

	Station Name	Kilometre Post (km)	Demand (GJ/d)
1	Dawn Compressor	0.00	-
2	Enniskillen	17.30	-
3	Brooke	36.79	-
4	Forest/ Watford	44.01	11,928
5	Strathroy	54.93	21,924
6	London West / Lobo	73.05	141,391
7	Hensall	85.74	47,709
8	London North	90.35	104,584
9	St Mary's	103.93	7,450
10	Stratford	121.45	48,433
11	Beachville	121.45	59,418
12	Bright Compressor	141.40	-
13	Oxford	142.92	54,658
14	Owen Sound	159.39	293,309
15	M17 Owen Sound	159.39	8,863
16	Cambridge	175.14	83,277
17	Brantford	175.14	114,591
18	Guelph	183.67	98,714
19	Kirkwall - Dominion	188.67	87,891
20	Hamilton 3	188.67	86,156
21	EGD Rate Zone	188.67	70,895
22	M12 Kirkwall	188.67	49,500
23	Hamilton 1&2	199.25	370,663
24	Milton	218.09	73,200
25	Halton Hills	221.61	144,934
26	Parkway Greenbelt	228.94	24,730
27	Burlington / Bronte	228.94	189,736
28	North Rate Zone	228.94	436,874
29	EGD Rate Zone Suction	228.94	1,393,961
30	EGD Rate Zone Discharge	228.94	1,776,564
31	M12 Parkway	228.94	2,233,742
	Total South Rate Zone		**2,064,697**
	Total North Rate Zone		**436,874**
	Total EGD Rate Zone		**3,241,420**
	Total Ex-franchise		**2,292,105**
	Total Design Day Demand		**8,035,096**

Dawn Parkway System

Winter Design Day Schematic

Winter 2028/2029



System Capacity	GJ/d
Total System Capacity [1] [2]	8,024,596
Total Demand Requirement	8,061,683
Surplus (Shortfall)	-37,086

[1] Includes Parkway Delivery Obligation 329,056 GJ/d

[2] Includes Supply at Kirkwall for M12 Contracts and Union Sales Service customers 285,484 GJ/d

Compressor Station Operating Conditions			
Station	Lobo	Bright	Parkway
Power Available (MW)	102.9	129.0	88.1
Power Required (MW)	102.9	119.8	87.2
Suction Pressure (kPag)	3760	3448	3539
Discharge Pressure (kPag)	5534	5633	6454
Compression Ratio	1.5	1.6	1.8
Flow (GJ/d)	370,974	6,936,124	4,127,865
Daily Fuel (GJ/d)	34,319	29,890	16,827

	Station Name	Kilometre Post (km)	Demand (GJ/d)
1	Dawn Compressor	0.00	-
2	Enniskillen	17.30	-
3	Brooke	36.79	-
4	Forest/ Watford	44.01	11,952
5	Strathroy	54.93	22,082
6	London West / Lobo	73.05	142,483
7	Hensall	85.74	47,956
8	London North	90.35	104,772
9	St Mary's	103.93	7,437
10	Stratford	121.45	48,633
11	Beachville	121.45	59,494
12	Bright Compressor	141.40	-
13	Oxford	142.92	55,044
14	Owen Sound	159.39	294,770
15	M17 Owen Sound	159.39	8,863
16	Cambridge	175.14	83,680
17	Brantford	175.14	115,144
18	Guelph	183.67	99,241
19	Kirkwall - Dominion	188.67	88,452
20	Hamilton 3	188.67	86,277
21	EGD Rate Zone	188.67	70,895
22	M12 Kirkwall	188.67	49,500
23	Hamilton 1&2	199.25	371,182
24	Milton	218.09	73,806
25	Halton Hills	221.61	144,916
26	Parkway Greenbelt	228.94	24,938
27	Burlington / Bronte	228.94	190,933
28	North Rate Zone	228.94	438,155
29	EGD Rate Zone Suction	228.94	1,393,961
30	EGD Rate Zone Discharge	228.94	1,793,376
31	M12 Parkway	228.94	2,233,742
	Total South Rate Zone		**2,073,191**
	Total North Rate Zone		**438,155**
	Total EGD Rate Zone		**3,258,232**
	Total Ex-franchise		**2,292,105**
	Total Design Day Demand		**8,061,683**

ENBRIDGE GAS INC.

Answer to Undertaking from
School Energy Coalition (SEC)

Undertaking

Tr: 23

To provide the year end versions of the annual asset health report, as far back as they go, for the years that it has been in place.

Response:

Annual asset health reports for Enbridge Gas were first produced for 2019. The year-end Asset Management Program (MP-01) Health Checks dating back to 2019 can be found in Attachment 1. The dates on the attached pages reflect the dates on which information was being reported for the prior year.

Health Check:
MP-01 Asset Management Program

Date: January 27, 2020
Accountable Person: Hilary Thompson
Lead: Catherine McCowan

Management Program Activities

1. Copperleaf (C55) implementation complete with work ongoing to get investments and value frameworks in the system, as well as use for Forecasting
2. Integrated Asset Plan – high level plan complete with details under development. Some sections drafted and in review
3. MP – 01 integration being re-planned based on constrained resources. Alignment in terms of process execution but documentation required.
4. Records integration plan developed and in implementation

Top Risks

Top Risk Name	Planned or Current Mitigation	Risk Owner	Mitigation Due Date
Indirect fired heaters at stations in SW and SE Districts **(High)**	All In-Direct fired heaters in the Legacy Union Gas franchise have been site visited and risk assessed. A multi-year replacement plan has been developed, which would see all risk II stations mitigated by 2021.	Dean Dalpe	2021
Leaks on Barton Street Low Pressure System in Hamilton **(High)**	Phase 1 (2018) and Phase 2 (2019) of the replacement work are complete. Phase 3 will be completed in 2020 and Phase 4 should be completed 2021 (pending budget approval). This will eliminate all old leaky Low Pressure (wall to wall) main on Barton St E leaving one distribution regulator station to feed the LP main within the residential subdivision south of Barton St with minimal leakage/corrosion concerns.	Murray Costello	2021
Windsor line – age and condition **(High)**	Replacement of approximately 61.5 km of the Windsor line	Steven Jelich	ISD Nov 2020 with abandonment in 2021
NPS 30 Don River Bridge failure **(Very High)**	Install 325m of NPS 30 river crossing to replace existing Don River bridge crossing.	Tracey Teed Martin	Q2 2020

Objectives and Metric Tracking

Target End Date	Actual % Complete	Objectives	On Track
Jan 1 2020	Complete	Copperleaf/C55 implementation	Yes
Oct 2020	15%	Combine legacy AM programs into MP-01	No*
Oct 2020	40%	Combined asset plan for EGI	No**
March 31, 2020	50%	Asset Data Quality (Existing Records)	No***
Target Year-end	**Actual YTD**	**Metrics**	**On track**
Excl. ICM 389.8 Incl ICM 520.3	Excl. ICM 390.6 Incl ICM 492.1	Forecast vs Budget UGL (meets +/- $5M)	No****
Excl ICM 510.2 Incl. ICM 539.8	Excl, ICM 502.8 Incl. ICM 537.4	Forecast vs Budget EGD (meets +/- $5M)	No****
TBD	TBD	Delivery to plan capital portfolio UGL	Yes***
TBD	TBD	Delivery to plan capital portfolio EGD	Yes***

* Re-planning for MP-01 integration is in place, **High level combined Asset Plan is complete – detailed plans are underway, ***Reprioritized to 2020, ****See details in Capital Management section

TMR Ask

Support development of 2021-30 investments by February 7 Support diligent monthly forecast reviews, Support teams as they start to use C55, Advise on any functional needs, and resources to support the heavy lift for the Asset Plan

1

1

Health Check: MP-01 Asset Management Program

Date: January 25th, 2021
Accountable Person: Shawn Khoshaien
Lead: Catherine McCowan

MP Quarterly Accomplishments & Key Deliverables

- Value Framework improvements identified based on learnings from optimization activities in 2020
- 2023-2032 Asset Management Plan approved as a cross-functional initiative
- Asset Data Gap project Charter completed and endorsed by Shawn Khoshaien
- Completed Asset Data Gap Survey of key stakeholders
- GDS's Operational Risk Management and Assessment Standards / Processes developed for internal review
- Life Cycle Strategy project charters developed for key asset classes and deliverables
- Server upgrade for iViewer completed

CER-Regulated Asset Activity

CER Risk Review	• CER annual risk workshop on Dec. 14th

2020 Goals, Objectives and Metrics Tracking

Target End Date	Actual % Complete	Annual Objective	On Track
June 2021	15%	*Combine legacy AM programs into MP-01*	Yes
Oct 2020	100%	*Combined asset plan for GDS*	Yes
June 2021	75%	*Integrated Asset Management Processes (AIPM)*	Yes
Budget	**Forecast**	**Metrics**	**On Track**
542.3	474.1	*Forecast vs Budget UGL (meets +/- $5M) (Core + ICM)*	No
470.0	461.2	*Forecast vs Budget EGD (meets +/- $5M) (Core + ICM)*	Yes
Target – 80%	YTD 37%	*New Records – Failure Codes*	No
Target – 95%	YTD 97%	*New Records – Mains & Services*	Yes

Compliance Confirmation & Requirements Update

Requirement/ Issue	Impact/Actions
Requirement	• *Enterprise Asset Management maturity assessment complete – Q3 2020 – Planning underway to incorporate into AM Roadmap*

Resources Evaluation

- Dates have been extended for program and process integration – with these extensions we are on track.
- 3 Risk Engineers being hired in Risk Services
- 1 AM Governance Senior Advisor being hired to support Asset Plan and IMS

TMR Ask

- Awareness and support for Life Cycle Strategy completion for 2023-2032 Asset Management Plan by Q2 2021.

Summary of Comments on EGI_Undertakings_Exhibit JT_2024 Rebasing_20230504 DRQ.pdf

Page: 1847

Number: 1 Author: Presenter Notes Subject: Presentation Notes Date: 3/29/2023 6:52:32 AM

MP Quarterly Accomplishments & Key Deliverables: Highlight top accomplishments, deliverables and activities from the past quarter
Evaluation of Resources: Summary of Evaluation of Resources Slide – positive confirmation that resources have been assessed.
Requirements Update & Compliance Issues: Add upcoming regulations, emerging compliance issues, or gaps to compliance.
CER-Regulated Asset Activity: Positive confirmation of activity related to CER-regulated assets. If no activity, state it. Merge or unmerge cells as needed to include multiple assets.

1

Health Check: MP-01 Asset Management Program

Date: February 1st , 2022
Accountable Person: Shawn Khoshaien
Lead: Catherine McCowan

MP Quarterly Accomplishments & Key Deliverables

- SAMP (Section 2-4) reviewed and approved
- AMP Section 5 drafted
- Investments complete in Copperleaf for optimization consideration in 2023-2032 AMP
- Record Quality Index under development and to be completed in 2022
- Substantial completion of value assessments in support of 2023 Asset Plan including incorporation of DIMP Risk Model outputs

CER-Regulated Asset Activity

Panhandle Replacement (aka Ojibway or Detroit River Crossing)	• Business Development is in discussion with Energy Transfer Partners on path forward.

TMR Ask

N/A

2021 Goals, Objectives and Metrics Tracking

Target End Date	% Complete	Annual Objective	On Track
Sep-21	100%	2022 AMP Addendum	Yes
Sep-21	100%	MP-01 Integrated Documentation	Yes
Jan-22	90%	Approval of 2023-2032 AMP Strategies	Yes
Dec-21	90%	Completion of 2023-2032 Investments for AMP	Yes
Dec-21	53%	Development of Records Quality Index	No
Records Quality Index under development and training/role out of new processes in 2022			
Target	**Actual**	**Metrics**	**On Track**
678.5M	628.2M	Core Capital Forecast (UGL RZ)	Yes*
632.1M	570.2M	Core Capital Forecast (EGD RZ)	Yes*
*The base capital spend in both rate zones was very close to target – although there were significant variances in some asset classes and work was deferred from 2021 to 2022. There were significant deferrals of work on the ICM projects and the London Lines is expected to come in below budget.			
-	-	Failure Code Reporting	-
70%	36%	LEGD Distribution	No**
70%	38%	LUG Distribution	No**
TBD	77%	LUG Stations	N/A
TBD	83%	LUG STO	N/A
**Failure Code Mitigation: Improvement plan for both are in progress			

Compliance Confirmation & Requirements Update

Requirement/ Issue	Impact/Actions
Requirement	• Target Operating Model initiatives continue to address gaps/program maturity based on Enterprise Asset Management maturity assessment completed in 2020 • Enterprise AM Maturity Assessment completed in November 2021. Gaps used to develop 2022 priorities)

Resources Evaluation

- With resource turnover, and the need to focus on Value Assessment, have impacted the delivery of some risk standards in Q4. Normal activity to be resumed in Q1.
- Resource Plan Process work to be kicked off in 2022.

Page: 1848

Number: 1 Author: Presenter Notes Subject: Presentation Notes Date: 3/29/2023 6:52:32 AM

SAMP – Strategic Asset Management Plan (section 2-4 is the SAMP)
AMP – Asset Management Plan (section 5 – asset class strategies)
MP Quarterly Accomplishments & Key Deliverables: Highlight top accomplishments, deliverables and activities from the past quarter
Evaluation of Resources: Summary of Evaluation of Resources Slide – positive confirmation that resources have been assessed.
Requirements Update & Compliance Issues: Add upcoming regulations, emerging compliance issues, or gaps to compliance.
CER-Regulated Asset Activity: Positive confirmation of activity related to CER-regulated assets. If no activity, state it. Merge or unmerge cells as needed to include multiple assets.

Metrics Comments:
Core Capital Forecast (EGD RZ) – Not on track - Project deferrals and shifting ISDs are impacting in-service capital. Actively looking for work that can be pulled forward from 2022 to accommodate work that will slide from 2021.
LEGD Distribution - Not on track – Improvement plan for both external and internal workforce are in progress.
LUG Distribution - Not on track – Improvement plan for both external and internal workforce are in progress.

Line No.	Investment Code	Appendix A Investment Name	AMP Planning Group	2023-2032 Forecast Including Overheads	2023-2032 Overhead Allocation	In Service Date
	(a)	(b)	(c)	(d)	(e)	(f)
	Asset Class (EGI) - Compression Stations					
1	48715	Dawn C Compression Lifecycle	Significant Invetsments (>$10M) - Fixed Timing	$166,338,152	$41,178,152	2027
2	48732	Waubuno Compression Lifecycle	Value Driven - Fixed Timing	$29,218,620	$6,141,720	2025
3	100901	Dawn to Corunna	Value Driven - Fixed Timing	$200,337,430	$45,845,900	2023
4	734634	Dawn to Corunna (Dawn Tie-in)	Value Driven - Fixed Timing	$105,753,129	$23,718,491	2023
	Asset Class (EGI) - Distribution Pipe					
5	10088	NPS 20 Lake Shore Replacement (Cherry to Bathurst)	Value Driven - Fixed Timing	$20,896,371	$4,797,127	2022
6	10290	St. Laurent Phase 3 - Coventry/Cummings/St. Laurent (Plastic)	Value Driven - Fixed Timing	$25,033,190	$5,478,112	2024
7	10293	St. Laurent Phase 3 - North/South (NPS12/16 Steel)	Value Driven - Fixed Timing	$121,804,143	$26,503,360	2025
8	10294	St. Laurent Phase 4 - East/West (NPS12 Steel)	Value Driven - Fixed Timing	$53,906,876	$11,800,108	2024
9	11443	NPS 12 Martin Grove Rd Main Replacement: Lavington to St. Albans Rd.	Value Driven - Value Framework	$30,613,585	$7,603,920	2026, subject to EDIMP assessment
10	100295	Div_04: NPS 8 Port Stanley, London, Replacement	Value Driven - Fixed Timing	$18,916,863	$4,025,457	2025, subject to EDIMP assessment
11	100339	A10: Wilson Avenue, Toronto, VSM Replacement	Executing - Re-Optimize	$106,992,932	$25,192,932	2026/2031, refer to Exhibit I.2.6- ED-100
12	503350	Moulton Replacement BU	Executing - Re-Optimize	$18,165,905	$3,813,905	2025
13	740604	NPS20 KOL - Parliament St.	Mandatory - Fixed Timing	$13,131,787	$3,014,631	2023
	Asset Class (EGI) - Distribution Stations					
14	13034	SCRW:Station-Renewal In-Place	Mandatory - Fixed Timing	$28,244,162	$6,171,173	2025
15	503369	Lisgar Station	Executing - Re-Optimize	$20,124,611	$4,242,407	2025
16	734676	SARN: 13F-220R Vidal St	Value Driven - Value Framework	$17,192,992	$4,712,992	2031
17	735022	Sarnia Industrial Station 2029 Rebuild	Value Driven - Fixed Timing	$14,849,863	$3,849,863	2029
	Asset Class (EGI) - Growth					
18	1024	NW 6581 Ottawa Reinforcement Phase 2 SRP	Mandatory - Fixed Timing	$70,698,549	$17,209,549	2029
19	30542	SRP_Southeast_Owen Sound_County Rd 40_Reinforcement_NPS12_11800m_4670kPa	Mandatory - Fixed Timing	$33,636,531	$7,236,531	2025
20	30579	SRP_Southwest_Wonderland_New STN & MOP Upgrade	Mandatory - Fixed Timing	$20,506,933	$4,306,933	2025
21	100703	SRP_LUG East_Kingston_Creekford Rd_Reinforcement_NPS8_6200m_6895kPa	Mandatory - Fixed Timing	$45,292,234	$11,283,270	2027
22	736259	Hamilton Reinforcement Project	Mandatory - Fixed Timing	$125,821,854	$26,713,062	2025
23	736975	Enbridge Gas Distribution System Hydrogen Feasibility Study	Value Driven - Fixed Timing	$15,315,942	$3,398,275	2022

Line No.	Investment Code	Appendix A Investment Name	AMP Planning Group	2023-2032 Forecast Including Overheads	2023-2032 Overhead Allocation	In Service Date
	Asset Class (EGI) - LNG					
24	48709	Hagar KVGR and Cycle Mix Cooler	Value Driven - Value Framework	$24,740,190	$5,648,190	2032
25	48714	Hagar Cold Box	Value Driven - Value Framework	$14,401,282	$3,401,282	2032
26	49955	Hagar JVG Compressor Upgrade	Value Driven - Value Framework	$20,873,854	$4,781,854	2032
	Asset Class (EGI) - Real Estate & Workplace Services					
27	3640	Station B New Building	Value Driven - Fixed Timing	$38,590,879	$8,590,879	2025
28	8782	VPC Core and Shell	Value Driven - Value Framework	$35,420,035	$9,420,035	2031
29	100621	Dawn Administrative Centre	Value Driven - Value Framework	$16,349,278	$4,349,278	2028
30	101136	New London Site	Executing - Re-Optimize	$49,500,658	$11,959,058	2026
31	737272	Kennedy Road New Build	Value Driven - Value Framework	$49,647,957	$11,803,457	2026
32	737374	Ottawa - New Building	Value Driven - Value Framework	$46,337,933	$10,498,150	2026
33	737754	Thorold Operations Centre - New Building	Value Driven - Value Framework	$21,533,430	$5,033,430	2026
34	739714	GTA East - New Build - Peterborough	Value Driven - Value Framework	$14,722,478	$3,722,478	2024
35	739715	GTA West - New Build - Halton Hills	Value Driven - Value Framework	$42,675,572	$9,790,356	2026
	Asset Class (EGI) - TIS					
36	102291	Contract Market Harmonization	Value Driven - Value Framework	$19,195,783	$4,335,783	2026
37	102364	Records Management Technology Obsolescence (2024-2026)	Value Driven - Value Framework	$23,566,261	$5,516,261	2026
38	736081	General Service Rebasing Changes	Value Driven - Value Framework	$17,914,329	$3,914,329	2025
39	736942	Contract Market Systems - Technology Obsolescence	Mandatory - Fixed Timing	$69,786,961	$15,776,961	2026
	Asset Class (EGI) Transmission Pipe & Underground Storage					
40	48654	Dawn Parkway Expansion Project (Kirkwall-Hamilton NPS 48)	Mandatory - Fixed Timing	$251,357,572	$63,082,988	2027
41	49758	Panhandle Regional Expansion Project	Mandatory - Fixed Timing	$224,328,497	$47,088,489	2024
42	100086	Panhandle Line Replacement	Value Driven - Fixed Timing	$37,899,145	$8,128,866	2025
43	100699	Dawn Parkway Expansion Project (Dawn-Enniskillen NPS 48)	Mandatory - Fixed Timing	$332,803,728	$86,169,476	2029
44	735972	PREP: NPS 36 looping to Comber Transmission	Mandatory - Fixed Timing	$95,496,455	$25,496,455	2030
45	736923	Panhandle Regional Expansion Project - Leamington Interconnect	Mandatory - Fixed Timing	$118,751,452	$28,443,901	2026
46	740055	Panhandle Regional Expansion Project - Dawn Facilities	Mandatory - Fixed Timing	$92,044,573	$19,910,796	2025

ENBRIDGE GAS INC.

Answer to Undertaking from
Pollution Probe (PP)

Undertaking

Tr: 136

To file the document that describes the technical evaluation, outlined in STAFF-81, with the steps that are being taken as part of that technical evaluation. To include the completed IRP screening form for a project that passed and a project that failed.

Response:

Please see Attachments 1 and 2 which outline the steps being taken as part of the Technical Evaluation.

There was a specific request for additional information on Investment # 10293 and Investment # 30087 (please see TC Tr. Vol 5 137, lines 21-25).

i. For Investment # 10293 [St. Laurent Phase 3 - North/South (NPS12/16 Steel)], this investment passed the Binary screening and Enbridge is currently working with the City of Ottawa to review the energy needs in the St. Laurent area. See JT5.37 for information regarding preliminary IRP scenario analyses for the St. Laurent project.

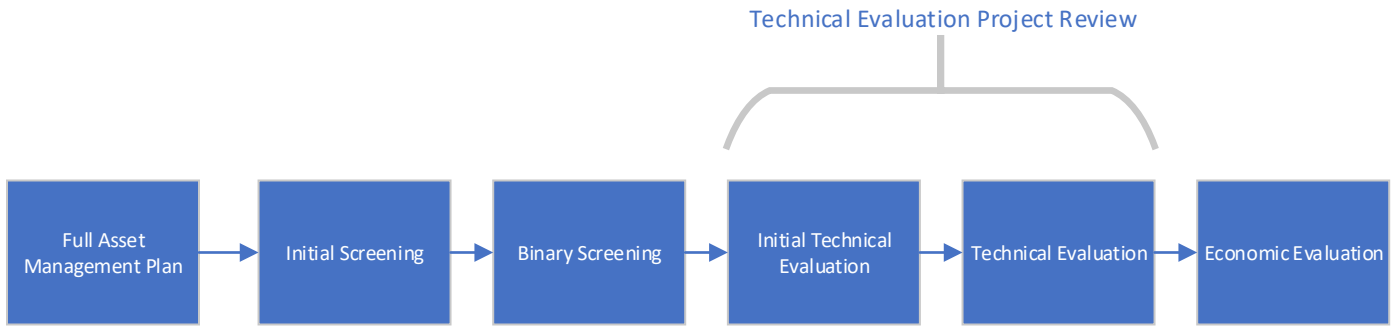
ii. For Investment # 30087 [Main St - Area 50 – 1223], this project failed Binary Screening due to Dollar Threshold (which is discussed in Attachment 2, page 3 of 12, under “Investments failing based on $ Threshold”) as the project was under the $2 M threshold and thus did not progress to the Technical Evaluation.

In addition, Enbridge Gas has provided two documents in Attachments 3 and 4, which demonstrate an example of a project that passed and a project that failed the IRP Technical Evaluation.

iii. Investment # 30536 [Guelph Ave Cambridge Reinforcement] passed the Technical Evaluation (please see Attachment 3).

iv. Investment # 30278 [Briscoe St W - Southwest - London –1735] failed the Technical Evaluation (please see Attachment 4).

IRP Binary Screening & Evaluation Process - DRAFT



See accompanying Word Document for details on each step

Binary & Technical Screening

Introduction

The IRP Binary Screening and Technical Evaluation described in this paper are conducted using the direction and guiding principles provided by the Ontario Energy Board in the IRP Decision and Order (EB-2020-0091). The investments considered as part of this Binary Screening and Technical Evaluation process include investments within Enbridge's Asset Management Plan and are limited to regulated Enbridge Gas investments.

As Enbridge has worked through its first IRP Binary Screening and Technical Evaluation of the investments in the Asset Management Plan, certain learnings have been identified. These learnings have led to some investments being removed either ahead of the Binary Screening (this was identified as "Initial Screening") or in the process of completing the Technical Evaluation (this was identified as "Initial Technical Evaluation"). The rationale for the removal of these investments from further evaluation is outlined in this document. In future Asset Management Plan (AMP) investment evaluations, Enbridge Gas will systematically apply these learnings so that time can be focused on the geographical areas and investment types that are most likely to yield an IRP Plan that is both Technically and Economically Feasible.

Initial Screening

Ahead of the Binary Screening, investments in non-Gas Carrying assets were removed. These investments are in **Real Estate & Workplace Services**, **Fleet & Equipment**, and **Technology & Information Services**.

Binary Screening based on the OEB Decision

Based on Binary Screening criteria provided by the OEB, investments were removed from further evaluation.

Investments deemed Emergent Safety Issue

These investment dollars are not yet tied to specific investment projects. Most of the dollars budgeted within this category are what Enbridge Gas refers to as "programmatic spend", which means that they are dollars budgeted to be spent on emergent safety issues when they arise. The programmatic dollars budgeted for Emergent Safety Issues are allocated by region and based on historical spend. Emergent safety issues that this budget would be spent on include replacing mains and services after a leak has occurred. Once an asset is leaking the issue must be addressed quickly for safety reasons and to avoid further GHG emissions. There is no time for an IRP Plan to be developed and implemented.

- ***Investments failing based on Timing***

  These investment dollars are not yet tied to specific investment projects. Most of the dollars budgeted within this category are what Enbridge Gas refers to as "programmatic spend" and are to be spent on various Integrity Management Programs and Station Replacement projects as they arise. The programmatic dollars budgeted are based on historical spend and known drivers such as changes to codes and standards. Specific projects in this category include (1) Integrity Digs, (2) Integrity Retrofits, and (3) the replacement of bypassing valves at Storage Facilities. Although most projects that arise from the Integrity Management Program will not be suitable for IRPA's (see below for a description of these investments and why the investment type and timing would not allow for an IRPA – see Table 1 below, specifically Rows 13, 14, and 27), **any pipeline replacements identified will be subject to the IRP Binary Screening and Technical Evaluation process**.

- ***Investments failing based on $ Threshold***

  As noted in the OEB Decision, "A minimum cost of the facility project that would be built to meet a system need (in the absence of IRP) is required to justify the time and effort to conduct an IRP evaluation and potentially develop an IRP Plan. Projects under $2 million should be screened out unless the government makes regulatory changes establishing a $10 million threshold for OEB Leave to Construct approvals, in which case, the criteria should use $10 million to determine if an IRP evaluation is appropriate."[1] Enbridge used a $ value of $2M to screen projects out at this stage. In addition, as part of this binary screen step, programmatic budgets that have an estimated annual spend of less than $2M were screened out. Programmatic budgeted spend that was removed at this stage includes main replacement and main relocation programmatic spend. The annual main replacement programmatic spend budget is based on historical spend and allows Regions to respond to leaking mains and services. Note: moving forward, Enbridge Gas will remove all spend for leaking mains and services through the Emergent Safety Issue category as noted above. The Main Relocation programmatic spend budget is based on the capital expenditures required to replace or relocate segments of pipeline to accommodate municipal infrastructure work. Any specific Main Relocation investments that are identified will be subject to the IRP Binary Screening and Technical Evaluation Process. In addition to the main replacement and relocation programmatic spend removed at this stage, there are several other small programmatic budgets that were screened out. These other small programmatic budgets are designed to address specific issues that arise annually on Enbridge Gas' facilities.

- ***Customer-Specific Build***

  If an identified system constraint/need has been underpinned by a specific customer's (or group of customers') clear determination for a facility option and either the choice to pay a Contribution in Aid of Construction or to contract for

[1] EB-2020-0091 Decision and Order, Integrated Resource Planning Proposal, July 22, 2021, p. 49

long-term firm services delivered by such facilities (including new subdivision or small main extensions) then it is not appropriate to conduct IRP analysis for those projects."[2] In this first IRP Binary Screen and Technical Evaluation, Enbridge Gas chose not to Binary Screen out (1) customer-specific build investment projects which includes the Customer Connections budget. The Customer Connections budget is informed by the anticipated number of customer additions and the historical cost to add customers to the system.

- ***Community Expansion & Economic Development:***
  "If a facility project has been driven by government legislation or policy with related funding explicitly aimed at delivering natural gas into communities, then an IRP evaluation is not required."[3] As noted in the Asset Management Plan[4], Community Expansion and Economic Development projects are not included in the Asset Management Plan and there will be no IRP evaluation.

Technical Evaluation

Enbridge has been completing detailed Technical Evaluation project reviews of its investments to verify that the forecasted needs haven't changed, the project costs are sufficient, and that the project drivers haven't changed. While completing this detailed project review, Enbridge has identified certain trends and groupings of projects for which IRPA's will not be effective. The rationale for this is described below and in Table 1. In the future, Enbridge will remove these investments systematically from IRP Technical Evaluation.

As the Technical Evaluation Project Reviews proceeded, the Enhanced Distribution Integrity Management Program (EDIMP) was being established and matured. As this program has clarified its scope, some of the planned replacement projects will be within that scope and there is a potential for their scope and timing to change (increase or decrease, sooner or later), as a result of the EDIMP findings. This could, in turn, affect their treatment in the IRP Binary Screen and Technical Evaluation Process.

Technical Evaluation Project Reviews will continue to be completed on the remaining investments. These continued detailed Technical Evaluation Project Reviews could identify additional categories of work for which there are no technically feasible IRPA's. Any additional categories would be described in a future draft of Enbridge's "Binary and Technical Evaluation Screening Process".

Initial Technical Evaluation

As noted above, as projects moved through the Technical Evaluation Project Review, Enbridge Gas identified categories of investments that do not have a technically feasible IRP alternative (IRPA). The first five categories were identified, and their associated projects were removed from further Technical Evaluation, in what Enbridge Gas has labelled its "Initial Technical Evaluation". Provided below are the categories of projects that, through this Initial Technical Evaluation, have been deemed not to have a technically feasible IRPA.

[2] EB-2020-0091 Integrated Resource Planning Proposal, Decision and Order July 21, 2021, p. 44.
[3] EB-2020-0091 Integrated Resource Planning Proposal, Decision and Order July 21, 2021, p. 48.
[4] EB-2022-0200 Exhibit 2, Tab 6, Schedule 2, p. 282

Customer Connections

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

Compressor Stations

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

Hydrogen Blending

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

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

Storage Pools & Wells

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

Project Status

Through the Technical Evaluation Project Review, Enbridge Gas identified several investments that would not have an IRP Technical Evaluation completed due to their project status. Projects that fall within this category are those that are already under construction, already granted Leave to Construct by the Ontario Energy Board or are projects that have been cancelled.

Technical Evaluation

As Enbridge continued to complete its Technical Evaluation Project Review of each investment for the purpose of completing an IRP Technical Evaluation, further categories of spend were identified for which no technically feasible IRPA could be established. These categories are described below and in the analysis of future Asset Management Plans, these will be systematically removed (with noted

exceptions) so that better progress can be made on the areas for which a technically feasible IRP may exist.

Distribution Station condition related, IRPA's not applicable

Through the Technical Evaluation Project Review, the Distribution Station investments were assessed to confirm that the projects were driven by the condition and not by growth. These Distribution Station Condition related projects are prioritized based on inspections that evaluate the condition of various components (regulators, valves, piping, etc) and systems (heating, odourant, communications, etc) at the stations. Sometimes, the specific projects are time constrained and low in dollar value meaning that they fail at the binary screening stage. For larger projects, an understanding of the impact on upstream and downstream facilities is required and replacement size for size is usually preferable – particularly if a full station replacement is not being planned. As such, all condition related station rebuilds, and replacements will be excluded from IRP Technical Evaluation. **However, any station rebuilds that involve an element of growth will be included in IRP Evaluation**.

See investment description – IRPA's not applicable for CNG

Through the Technical Evaluation Project Review, these investments were assessed to confirm that they are related to the ongoing replacement and upgrade of CNG facilities to fuel Enbridge's natural gas vehicles. These needs cannot be replaced through IRPA's and these investments will not proceed through IRP Technical Evaluation going forward.

See investment description, IRPAs not applicable

Through the Technical Evaluation Project Review, it was established that there would not be a technically feasible IRPA for a set of investments. This set of investments are classified as **"See investment description, IRPAs not applicable"**. Investments in this category are described below along with the reasons that they will not yield a technically feasible IRPA. Where applicable, there are notes as to how these will be systematically removed prior to IRP Technical Evaluation in future.

Table 1 – Description of Investments Screened out of the Technical Evaluation Project Review

	Sub-category	Asset Class	Asset Program	Description
1	AMI Pilot	Utilization	UTIL-Monitoring Systems	The AMI Pilot will establish the technical and economic benefits related to the installation of AMI meters and associated infrastructure. No technically feasible IRPA's can replace this spend and the investment will be removed from further Technical Evaluation.
2	AMP Fitting	Distribution Pipe	DP-Service Relay	An AMP fitting is a mechanical fitting installed between 1969 and 1984, on below ground residential gas service lines, to transition from a plastic service line to a copper riser. Locations with an AMP Fitting are identified annually and prioritized based on risk. As such the investments should be excluded based on timing and the fact that individual service replacements cannot be offset by IRPA's.
3	Class Location	Distribution Pipe & Transmission Pipe & Underground Storage	DP-Class Location TPUS-Class Location	This is one of the Integrity Management Programs in which the spend is held in a Programmatic spend budget to cover specific projects that are identified each year. Class locations projects arise when a facility needs to be relocated because of increased development and associated population density around the facility. Going forward this programmatic spend budget will be removed from IRP Technical Evaluation, but any **specific pipeline replacements will be included for IRP Evaluation**
4	Compression Stations	Compression Stations	All	See section above on Compression Stations
5	Corrosion	Distribution Pipe	DP-Corrosion	This programmatic spend covers the replacement of depleted anodes, work arising from bridge crossing inspections, and repairs to rectifier beds. Once found, these problems must be addressed quickly to avoid degradation of the pipe and, as such, will be removed from IRP Evaluation based on timing.
6	Depth of Cover Program	Transmission Pipe & Underground Storage	TPUS-Integrity	This programmatic spend budget is for facilities that are identified each year as exposed or shallow leading to an increased risk of 3rd party damage. Once identified the pipeline must be lowered, replaced, or otherwise protected to control risk. Going forward this programmatic budget spend will be excluded from IRP Technical Evaluation, but any **resultant pipeline replacements be included for IRP Evaluation.**
7	District Station	Distribution Stations	DS-Station Rebuilds & B & C Stations	These investments hold $ for specific station rebuild investments that have been identified through annual inspections and that have been prioritized for rebuild based on condition. Currently there are 53 such investments, each of which failed the binary screen based on the $ threshold and because the asset condition once identified, are planned for the following year. As such they will be excluded based on Timing going forward.

8	Farm Taps	Utilization	UTIL-Regulator Refit	This is programmatic spend that is budgeted to cover the costs of remediating situations in which there are problems with the first or second cut of the regulation at a customer's premise. These are repaired as they are found and should be eliminated based on timing.
9	Facilities Integrity Management Program (FIMP)	Distribution Stations	DS-Integrity	This is programmatic spend that is budgeted to cover the costs of large station inspections that must be completed annually to scope the extent of work that is required at each large station investment identified in the AMP. Going forward, all such Station programmatic spend that is driven by condition, end-of-life, and compliance will be removed from IRP Technical Evaluation.
10	Fire Suppression	Distribution Stations	DS-Gate, Feeder & A Stations	These investments relate to the installation of Fire Suppression at Distribution Stations with Odourant. 3 similar investments were eliminated at Binary Screening because of Timing, and another was eliminated at Binary Screening because of the $ threshold. Going forward all such Station programs that are driven by condition, end-of-life, and compliance will be removed from IRP Technical Evaluation.
11	Geohazard	Distribution Pipe	DP-Integrity	This integrity management programmatic spend is budgeted to cover the costs related to identifying pipelines that must be replaced because of risks related to geohazards. This spend will be excluded from IRP Technical Evaluation going forward but **any resultant replacement projects will be included in IRP Technical Evaluation.**
12	Independent Asset Integrity Review (IAIR)	Distribution Pipe & Transmission Pipe & Underground Storage	DP-Integrity, TPUS-Integrity	This is programmatic spend that is budgeted for work that results from the Independent Asset Integrity Review. Although the programmatic spend budgeted here cannot be assessed for IRP Alternatives, **any resultant pipeline replacements will be included in the IRP Technical Evaluation.**
13	Integrity Digs	Distribution Pipe & Transmission Pipe & Underground Storage	DP-Integrity, TPUS-Integrity	This programmatic spend is budgeted to cover the costs related to repairs and replacements that are identified through in-line inspections. This programmatic budgeted spend will be excluded from future IRP Technical Evaluation but **pipeline replacement projects found as a result of the integrity dig work will be included in the IRP Evaluation**.
14	Integrity Retrofit	Distribution Pipe, Distribution Stations & Transmission Pipe & Underground Storage	DP-Integrity, DS-Integrity, TPUS-Integrity	This is programmatic spend that is budgeted for installing pig launchers and receivers, allowing annual in-line inspection to be accomplished more easily and the life of transmission pipelines to be potentially extended. This work takes place at stations and does not affect the distribution system itself. No technically feasible IRPA's exist for this type of work, and it will be removed from the Technical Evaluation going forward.

15	Inside Room Regulators (IRR)	Distribution Stations	DS-Inside Regulator & ERR Program	This is programmatic spend that is budgeted for remediation of inside regulation sets based on risk. There is no technically feasible IRPA that could address this need and they will be removed from the Technical Evaluation going forward.
16	Large stations	Distribution Stations	DS-Gate, Feeder & A Stations	These stations are identified through inspections and prioritized for rebuild based on condition. Each year, this programmatic spend is converted into specific projects. **Any identified investments for which growth plays a role will be included in the IRP Evaluation.** It should be noted that there is also the possibility that reduced load will drive some investment in stations.
17	Liquified Natural Gas (LNG)	LNG	All	These investments relate to the maintenance of the Hagar LNG facility that is used to peak shave the load in the Sudbury area. Unless driven by Growth, all investments at the Hagar facility will be excluded from the Technical Evaluation moving forward.
18	Low Pressure Delivery Meter Sets (LPDMS)	Utilization	UTIL-Remediation	This is programmatic spend budgeted to cover the inspection and remediation of Low-Pressure Delivery Meter sets, which are usually at commercial customer locations. Similar investments were excluded at binary screening based on the dollar threshold. Going forward, these investments will be removed from the Technical Evaluation.
19	Main & Service Repl - Leaking	Distribution Pipe	DP-Service Relay	Similar investments in the EGD Rate Zone were excluded at Binary Screening and going forward these too will be excluded at Binary Screening as Emergent Safety Issue. Aside from the safety concern, leaks must be addressed quickly to avoid GHG's.
20	Meter exchanges	Utilization	UTIL-Regulator Refit	This programmatic spend is budgeted to cover the costs of replacing meters through the Measurement Canada approved processes.
21	Maximum Operating Pressure (MOP) Verification	Distribution Pipe & Transmission Pipe & Underground Storage	DP-Replacements, TPUS-Replacements	This programmatic spend is budgeted to cover the replacement of pipelines where this may be required because of a review of records for pipeline systems operating above 30 per cent SMYS. Once the MOP has been identified and based on the associated risk, the pressure in these pipelines may need to be reduced until the pipeline can be replaced. The programmatic budgeted spend will be removed from Technical Evaluation going forward but **specific pipeline replacement projects will be included in IRP Evaluation when they are identified**.
22	Odourant Program	Distribution Stations	DS-Gate, Feeder & A Stations	These investments are for the upgrade of odourant systems at stations. Similar investments failed at binary screening because of timing and because of the dollar threshold. Going forward all such Station programs that are driven by condition, end-of-life, and compliance will be removed from IRP Technical Evaluation.

23	Pressure Factoring Metering (PFM) Program	Stations	DS-Station Rebuilds & B and C Stations	This programmatic spend is budgeted to cover the costs of PFM stations that require a bypass. There is no technically feasible IRPA to address this need and this programmatic budgeted spend will be removed from Technical Evaluation moving forward.
24	Re-class to CNG	Distribution Stations	DS-CNG	One investment relates to CNG and should have been allocated to the "See investment description – IRPA not applicable for CNG investments".
25	Relocation Program	Distribution Pipe	DP-Relocations	This programmatic spend has been budgeted to cover the costs of projects that are identified annually in response to the requirements of municipalities and other agencies. This programmatic budgeted spend will be removed from Technical Evaluation moving forward but **specific pipeline replacement projects will be included in IRP Evaluation**.
26	Remote Terminal Units (RTU)	Distribution Stations	DS-Gate, Feeder & A Stations	These investments are for the replacement of Remote Terminal Units that are no longer supported by the manufacturer. Similar investments were eliminated at Binary Screening because of Timing. Going forward all such Station programs that are driven by condition, end-of-life, and compliance will be removed from IRP Technical Evaluation.
27	Storage Facility	Transmission Pipe & Underground Storage	TPUS-Improvements	As noted above, investments related to Storage Pools and Wells will be excluded from Technical Evaluation going forward unless they are driven by growth.
28	Telemetry	Distribution Stations	DS-Gate, Feeder & A Stations	These investments are for telemetry at distribution stations. Similar investments failed at binary screening because of the dollar threshold. Going forward all such Station programs that are driven by condition, end-of-life, and compliance will be eliminated from IRP Technical Evaluation.
29	Vintage Steel Main (VSM)	Distribution Pipe	DP-Replacement	There is a programmatic spend budgeted for Vintage Steel Main projects that have not yet been identified. Although this programmatic spend will not- be put through Technical Evaluation **projects, once identified, will go through IRP Evaluation.**
30	Well Laterals	Transmission Pipe & Underground Storage	TPUS-Integrity	As noted above, investments in Storage Pools & Wells, and their associated Integrity Management Programs will be similarly excluded from Technical Evaluation.

Scope is NPS 2, cannot downsize further or retire

The existing scope is already NPS and thus cannot be further downsized. These investments were then reviewed to determine whether they could be retired. These scopes had services coming off the pipe that needed to be maintained to serve those customers and thus cannot be retired. Since the pipe size can't be reduced beyond NPS 2 and the pipe couldn't be eliminated, IRP wouldn't impact the project scope, so these were failed.

Potential to be downsized to NPS 2. Further assessment closer to ISD

When completing Technical Evaluation, it was determined that the project scope could potentially be replaced with NPS 2 prior to any IRP assessment. If the pipe size can be reduced, then IRP will not be applicable to the project scope; the scope will be confirmed when the project enters the detailed design phase.

Potential to be downsized to NPS 2, but need to avoid bottlenecks and maintain system resiliency

A portion of the project scope could potentially be replaced with NPS 2 prior to any IRP assessment. It is recommended that pipe size is maintained for segments of trunk main and for system resiliency. Thus, IRP is not applicable to the project scope; the scope will be confirmed when the project enters the detailed design phase. These projects may benefit from having a broader assessment of the needs in the area and the potential for reductions via a geographically focused IRP Plan. This type of analysis was beyond the capacity of the team for this first pass through the IRP Technical Evaluation process but is an area that will be explored in the future.

ETEE could reduce pipe size, but it is a trunk main

There are investments for which ETEE could potentially reduce the pipe diameter, but this would introduce a bottleneck in a trunk main which is not desirable from a network operations perspective.

Timing – Market Based Supply Side not available

Some investments failed because they are required in the near term (1-3 years) and there is no technically feasible supply-side alternative that can meet the need.

Summary

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

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

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

And so at 2015/2016, I didn't want to pause the discussions with Ms. Mikhaila, but something that has escaped our understanding and it is reflected in this report for each year starting in 2015, is a significant amount in the line 4 called, "Other Dawn-Parkway system capacity changes."

And in respect of 2015, line 2 says that Enbridge -- sorry, Union at the time -- added 433 TJs of capacity in 2015, and then netted out other Dawn-Parkway capacity changes to arrive at the amount of capacity that was forecasted.

So I am not sure if this is you, Mr. Dillon, or somebody else, but can you describe for me what is included in the other Dawn-Parkway system capacity changes?

MR. DILLON: Can we confer for one moment?

MS. MIKHAILA: Mr. Quinn, I have a base understanding of this, and I can answer your question based on my knowledge. Line 5, the total forecasted Dawn-Parkway system capacity, is the sum of all the demands on the system, including the ex-franchise demands. And what I mean by that is to the extent there are demands that are something shorter than the Dawn-Parkway total path, for example, Dawn-Kirkwall or Kirkwall-Parkway, then those -- a Dawn-Parkway, one TJ of Dawn-Parkway is equal to one TJ of system capacity, as is one TJ of Dawn-Kirkwall or Kirkwall-Parkway.

So as far as the capacity goes, my understanding is it is the sum of the demands. So when, for example, 200 Dawn-

ONTARIO ENERGY BOARD

FILE NO.:	**EB-2022-0200**	**Enbridge Gas Inc.**

VOLUME:	**7**	
DATE:	**July 24, 2023**	
BEFORE:	**Patrick Moran**	**Presiding Commissioner**
	Allison Duff	**Commissioner**
	Emad Elsayed	**Commissioner**

the technical conference, that it is one of the desired outcomes. It will depend very much on the condition of the asset upon the time of the inspection and the required response to mitigate any risk.

MR. RUBENSTEIN: But you haven't included any deferrals or delays as a results of EDIMP in the asset management plan or the 2024 budget. Correct?

MR. WELLINGTON: No, not at the moment, no.

MR. RUBENSTEIN: But there could be some?

MR. WELLINGTON: I am hard pressed to provide an answer right now. I would say, subject to check, there could be.

MR. SANDERS: Maybe I will add to that, Mr. Rubenstein: I think as we discovered in the St-Laurent project, the caution in this is that, by its very nature, we don't know the condition of these assets. And this is what the enhanced DIMP program will provide, is that additional integrity information. So to be absolute about it at this point wouldn't be accurate. We don't know.

The goal of this is to be more specific, and in many of these circumstances and much like you see in our TIMP program today, where we have run the free swimming tools across our transmission pipelines, we can find specific anomalies or damages to the pipeline, go in and prepare those specifically, and not have to do a major replacement.

The challenge, of course in a distribution pipeline, we can't use a free swimming tool. These crawler tools are very -- are limited in their ability to cover the entire

pipeline. And that is one of the challenges that we have is that it's a great tool, it is providing better technology and provides some information, but it won't cover the entire asset.

So I think it's prudent at this point to say the goal is to minimize the replacement requirement, and we hope that that's the outcome that we will see. But we can't guarantee that.

MR. RUBENSTEIN: There is a variance to cover EDIMP costs. Should there be a variance to cover, on the capital side, reductions in spending that may be a result of work that you undertake through EDIMP?

MR. SANDERS: That's an interesting idea. I hadn't contemplated that.

MR. RUBENSTEIN: Let me ask you about integrity digs. With respect to distribution pipes, as I understand you have two programs primarily that deal with integrity digs. Do I have that correct?

MR. WELLINGTON: That's correct.

MR. RUBENSTEIN: If we can go to page 216 of the compendium? This is the TIMP retrofit and digs, and then the inspection program, integrity retrofit and digs? Sorry, program. Do I have that right?

MR. WELLINGTON: Yes, correct.

MR. RUBENSTEIN: Now my understanding of an integrity dig is this is where you dig up or excavate a pipeline or a round-up pipeline to inspect it and do some work on it?

MR. WELLINGTON: So the intent of a dig is once we

2024, no further efficiencies, further productivity?

MS. BURNHAM: So if we do see efficiencies in the execution of our capital program, those are usually captured at the project level. Sorry, it is Jennifer Burnham: So, like I was saying, typically, productivity savings at the execution level for capital projects would be captured within that capital project. So when we estimate those projects, we are taking into account any efficiencies. And that would be the budget amount that goes into the asset plan as we move through the years. So if there are some in there, they are captured already within the asset management plan and within the capital.

MR. RUBENSTEIN: And that would be known efficiencies at the time you do the capital budgeting?

MS. BURNHAM: Correct.

MR. RUBENSTEIN: And so there are no further efficiencies that you didn't know about at the time but you are going to try to achieve in 2023 or 2024, like was done on the O&M side?

MS. BURNHAM: No, not for 2023, which we are currently executing, or in 2024 which we would have costed and had probably no dramatic changes to our execution plans for 2024.

MR. RUBENSTEIN: And would you expect to come up with some new measures and new efficiencies since the application was filed, as relates to the capital?

MS. BURNHAM: For 2024?

MR. RUBENSTEIN: 2023 and 2024.

MS. BURNHAM: So I would say one area of potential productivity savings is through our renewed alliance partner contracts. So we've just completed the RFP and awarded that contract, and it will kick off in 2024, the new contract. Within that contract, there is an expectation of productivity savings within that contract, of about 1 percent of the contract value, so we would expect to achieve those in 2024. But, other than that, we have not baked in any other potential productivity savings that we may get out of the execution of our capital plan.

MR. RUBENSTEIN: No, my question wasn't having you bake the cost in. My question is: Are you seeking to achieve more productivity and more efficiency in 2024? Will you?

MS. BURNHAM: We are definitely seeking to achieve that 1 percent within the alliance partner contract, but there are no others to my knowledge at this point in time that we're -- go ahead.

MR. SANDERS: Maybe I can help out with that. What I'm hearing you ask is are we seeking them. We're always seeking them, so we look at all of our projects and the total capital spend. We are looking for opportunities. One that comes to mind in particular, I look at the Dawn-Corunna project, if you think of that as a combination of pre-integration, the compressor replacements would have gone ahead for the Corunna compressor plan independent of the opportunity that we had to lay the pipeline instead and find efficiencies that way. So we're looking for those all

the time. Another example that I might use would be the -- if you look at our technology systems, all our programs that are systems that are operating across the country, we are looking to reduce duplications, find efficiencies that way. So your question of: Are we looking for them? Absolutely, we are looking for them.

MR. RUBENSTEIN: Why would you build in a better productivity on the O&M side but not the capital side?

MR. SANDERS: That's a good question. I don't know why.

MR. RUBENSTEIN: I'd like to talk about the St-Laurent project. Now, as I understand, you brought forward a leave to construct for that project in 2022 for phases 3 and 4. Correct? Sorry, I think the decision was in 2022. The application was before that, but it was for phase 3 and 4. Correct?

MR. WELLINGTON: That's correct.

MR. RUBENSTEIN: My understanding is that the OEB denied the company leave to construct phase 3 and 4 in its decision that was released in May of 2022. Correct?

MR. WELLINGTON: Correct.

MR. RUBENSTEIN: Maybe we can go to that decision, and it is page 116 of the compendium or at least part of the decision. My understanding at a high level is that the OEB denied it leave on the basis that the company had not demonstrated the risk associated with the pipeline warranted at the time replacement. Correct?

MR. WELLINGTON: That's correct.

ENBRIDGE

Investment Summary Report

Investment Code	Report Start Year	Number of Years
100703	**2023**	**10**

Investment Name

SRP_LUG East_Kingston_Creekford Rd_Reinforcement_NPS8_6200m_6895kPa

Investment Description

Issue/Concern/Opportunity: Kingston lateral replacement to be completed from Westbrook CMS to Woodbine TBS to account for forecasted growth, and to address Class Location and depth of cover issues which exist on the current Kingston lateral.

Assets: Kingston Lateral Replacement

Related Program: N/A

Recommended Alternative Description

Scope of Work: The project will replace the existing NPS 6 ST 6895 kPa distribution pipeline from the Westbrook TCPL takeoff to the Woodbine Town Border Station with an NPS 8 ST 6895 kPa pipeline. This project supports all pressures downstream to Kingston. The project is required to support growth and address additional other depth of cover, station and class location issues.

Resources: Company crews, 3rd party contractor crews and 3rd party vendors.

Solution Impact: Organic growth on the Kingston system wide. This reinforcement supports the entire system and downstream networks.

Project Timing & Execution Risks: System reinforcement is required in 2024 as per current plan and significant growth on systems. Risks include weather, resource availability, procurement of materials, etc.

Investment Type	Project (EGI)	Planning Portfolio	UG - Core - Growth - System Reinforcement
Investment Stage	Executing		

Investment Overview

1. Project Information	State/Province	Ontario
	Operating Area (EGI)	Div_22 - Kingston
	Asset Program (EGI)	GTH - System Reinforcement
	Asset Class (EGI)	Growth
2. Compliance	Compliance Investment	
	Compliance Justification & Code	
3. Must Do	Must Do Investment	Yes
	Intolerable Risk (EGI)	No
	Third Party Relocation (EGI)	No
	Program work with sufficient history and risk to warrant continuation (EGI)	No

Spend Profile

Name	Net Base Capex O (CA)
SRP_LUG East_Kingston_Creekford Rd_Reinforcement_NPS8_6200m_6895kPa	$ 24,321,527

Account Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Base CAPEX O	$ 3,700,000	$ 18,800,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Contributions	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Dismantlement	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Alternative Value - Recommended

Report Generation Date: 5/30/2022

ENBRIDGE GAS INC.

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario (FRPO)

Interrogatory

Reference:

Ex. 2, Tab 5, Schedule 1, pg. 5-6 & Table 1

Preamble:

EGI evidence states: *Through consultation with internal stakeholders and in consideration of the asset class strategies, management of risk, ability to complete mandatory work, Customer Engagement Survey results and total in-service capital spend, a constraint of $1.2 billion with a 2% escalation factor was recommended. Enbridge Gas is not able to complete mandatory work or support the demand for growth at a constraint below $1.2 billion.*

We would like to understand more about this assessment.

Question(s):

Please file the study, summary report or memo from which EGI determined that $1.2B constraint was not sufficient to complete mandatory work or support demand.

a) If there is no documentation of an assessment that lead to a $1.2B value, please provide a summary of how EGI determined that $1.2B was not sufficient.

b) If not contained in the study, report or memo, please provide a list of all projects or programs over $20M that are mandatory or growth related.

    i. For each project or program, please describe the impact of deferring one or more years.

    ii. For program, please provide the 2018 to 2022 spending.

Response:

a) There is no study, summary report, or memo from which Enbridge Gas determined that a constraint below $1.2 billion was not sufficient to complete mandatory work or support demand. As provided at Exhibit 2, Tab 6, Schedule 2, page 253, Enbridge

Gas looked at scenarios between the 2023 Materiality Threshold of ~$1.4 billion and the historical average spend of ~$1.17 billion. Optimization constraints lower than $1.2 billion (i.e. $1.1 billion) cause the optimization to fail as they do not accommodate all investments with fixed timing. Therefore, it was through iterative scenario modelling that Enbridge Gas determined that $1.2 billion with a 2% escalation factor was the appropriate minimum constraint.

b) Table 1 outlines projects and programs with a 2023 to 2032 forecast greater than $20 million inclusive of overheads. The planning groups provided at Exhibit 2, Tab 6, Schedule 2, Table 6.1-1 were used to categorize and determine the mandatory and growth-related investments (including “Mandatory – Fixed Timing”, “Mandatory – Optimize”, “Significant Investments (>$10M) – Fixed Timing” categories). Enbridge Gas is assessing applicable investments to determine if IRPAs can provide a feasible alternative to these investments. When an investment is chosen to proceed with an IRP Plan, reductions to the required capital are anticipated, as the majority of IRPA spend is often classified as O&M.

Table 1
2023-2032 Projects and Programs forecast > $20 Million Inclusive of Overheads

Investment Code	Investment Name	2023-2032 Forecast with Overheads	Investment Type	Impact of deferral for 1 or more years
Customer Connections				
3402	Area 10 – Apartment Ensuite – New Construction	33,932,813	Program (EGI)	Inability to provide new or upgraded services to customers in accordance with EBO 188
3406	Area 10 – Commercial – New Construction	88,357,565	Program (EGI)	
3407	Area 10 – Commercial – Replacement	20,036,048	Program (EGI)	
3408	Area 10 – Residential – Replacement	98,154,218	Program (EGI)	
3700	Area 10 – Residential – New Construction	118,460,850	Program (EGI)	
3726	Area 20 – Commercial – New Construction	43,123,319	Program (EGI)	

Investment Code	Investment Name	2023-2032 Forecast with Overheads	Investment Type	Impact of deferral for 1 or more years
3729	Area 20 – Residential – New Construction	65,585,877	Program (EGI)	
3730	Area 20 – Residential – Replacement	30,865,248	Program (EGI)	
3735	Area 30 – Commercial – New Construction	46,840,812	Program (EGI)	
3738	Area 30 – Residential – New Construction	77,074,340	Program (EGI)	
3739	Area 30 – Residential – Replacement	42,584,538	Program (EGI)	
3744	Area 40 – Commercial – New Construction	40,540,507	Program (EGI)	
3747	Area 40 – Residential – New Construction	52,089,891	Program (EGI)	
3748	Area 40 – Residential – Replacement	62,612,624	Program (EGI)	
3756	Area 50 – Residential – New Construction	89,321,709	Program (EGI)	
3757	Area 50 – Residential – Replacement	61,102,549	Program (EGI)	
3761	Area 60 – Commercial – New Construction	25,177,089	Program (EGI)	
3762	Area 60 – Industrial – New Construction	34,475,558	Program (EGI)	
3764	Area 60 – Residential – New Construction	237,751,447	Program (EGI)	
3765	Area 60 – Residential – Replacement	169,789,900	Program (EGI)	

Investment Code	Investment Name	2023-2032 Forecast with Overheads	Investment Type	Impact of deferral for 1 or more years
3769	Area 80 – Commercial – New Construction	23,213,667	Program (EGI)	
3772	Area 80 – Residential – New Construction	53,055,300	Program (EGI)	
48306	WIND: Generic Greenhouse Windsor	81,077,243	Program (EGI)	
48347	LOND: Company Program – New Business – Scattered Mains – Contractor	38,833,990	Program (EGI)	
48396	WATE: Company Program – New Business – Scattered Mains – Contractor	29,699,613	Program (EGI)	
48427	HAMI: Company Program – New Business – Scattered Mains – Contractor	37,827,801	Program (EGI)	
48452	HALT: Company Program – New Business – Scattered Mains – Contractor	37,840,249	Program (EGI)	
48471	KING: 22-21-001 Company Program – New Business – Scattered Mains – Contractor	27,108,231	Program (EGI)	
500415	WIND: Company Program – Customer Connections	50,761,394	Program (EGI)	
500418	LOND: Company Program - Customer Connections	108,963,296	Program (EGI)	
500419	BRAN: Company Program – Customer Connections	31,915,261	Program (EGI)	
500420	WATE: Company Program – Customer Connections	88,065,710	Program (EGI)	
500421	HAMI: Company Program - Customer Connections	43,466,496	Program (EGI)	

Investment Code	Investment Name	2023-2032 Forecast with Overheads	Investment Type	Impact of deferral for 1 or more years
500422	HALT: Company Program – Customer Connections	40,491,554	Program (EGI)	
500423	KING: Company Program - Customer Connections	68,257,533	Program (EGI)	
500425	SUDB: Company Program – Customer Connections	29,806,515	Program (EGI)	
500427	NBAY: Company Program – Customer Connections	48,587,762	Program (EGI)	
Compression Stations				
48715	Dawn C Compression Lifecycle	163,382,650	Project (EGI)	Impacts will depend on occurrence of equipment failure. Current equipment is obsolete, and the original equipment manufacturer does not have a long term support strategy as stated in Exhibit 2, Tab 6, Schedule 2, Page 189 of 288.
Distribution Pipe				
48288	WIND: Dist-Repl-Contr-Mains Municipal	71,550,345	Program (EGI)	Delaying municipal infrastructure projects can have impacts for the municipality with schedule delays, potential inflationary drivers, availability and coordination of work schedules and crews with potential for increased project costs, and carrying costs for any
48348	LOND: Dist-Repl-Contr-Mains Municipal	45,104,908	Program (EGI)	
48397	WATE: Dist-Repl-Contr-Mains Municipal	105,647,508	Program (EGI)	
48428	HAMI: Dist-Repl-Contr-Mains Municipal	42,151,611	Program (EGI)	
48453	HALT: Dist-Repl-Contr-Mains Municipal	38,392,868	Program (EGI)	

Investment Code	Investment Name	2023-2032 Forecast with Overheads	Investment Type	Impact of deferral for 1 or more years
102420	Relocation Program – Area 20	39,569,299	Program (EGI)	procured material. This delay can also affect the collaborative working relationships that currently exist with the municipalities in which Enbridge Gas operates.
102422	Relocation Program – Area 40	42,520,689	Program (EGI)	
102423	Relocation Program – Area 50	31,261,154	Program (EGI)	
502013	Relocation Program – Engineering Construction	22,737,340	Program (EGI)	
Distribution Stations				
48744	Distribution Operations Station Painting	26,848,160	Program (EGI)	As stated in the asset class strategy in Exhibit 2, Tab 6, Schedule 2, Section 5.2.4.6.4.2 (page 141), “High performance paint reduces the probability of leaks and piping /equipment failure due to significant corrosion”. Therefore, delaying expenditures in this area increases the likelihood of reduced equipment lifespans and potential increased renewal costs earlier in the asset’s lifecycle.
Growth				
1024	NW 6581 Ottawa Reinforcement Phase 2 SRP	71,584,955	Project (EGI)	Unless an IRPA is considered to be

Investment Code	Investment Name	2023-2032 Forecast with Overheads	Investment Type	Impact of deferral for 1 or more years
30523	SRP_North_Parry Sound_Seguin Trail_Reinforcement_NPS6_8 500m_4960kPa	23,764,847	Project (EGI)	technically or economically feasible, or updates to growth forecast change the need to proceed, deferral of one or more years may result in lost sustainment of system pressures and unplanned customer outages for those systems experiencing growth. Please note, as referenced in Exhibit I.2.6-ED-106, and Exhibit I.2.6-ED-107, Projects 100703 and 736075 respectively have been deferred and cancelled.
30542	SRP_Southeast_Owen Sound_County Rd 40_Reinforcement_NPS12_1 1800m_4670kPa	34,094,285	Project (EGI)	
100703	SRP_LUG East_Kingston_Creekford Rd_Reinforcement_NPS8_62 00m_6895kPa	28,702,886	Project (EGI)	
736075	WIND: Wheatley-1B – Panhandle Distribution Reinforcement – Wheatley Lateral Replacement and Reinforcement	21,106,551	Project (EGI)	
736259	Hamilton Industrial Reinforcement	132,907,739	Project (EGI)	
Utilization				
23228	Meter Purchases- New Customer Additions	66,275,270	Project (EGI)	Meter Purchases – New and SMC-Meter & Regulator Additions South: Inability to purchase meters to support customer attachments in accordance with EBO 188. Meter Purchases MXGI's – MXOT's and SMC Meter & Regulator Replacements –
48500	SMC-Meter & Regulator Additions South	41,354,891	Project (EGI)	
738580	Meter Purchases- MXGI's, MXG's, MXOT's	115,594,243	Project (EGI)	
738583	SMC_Meter & Regulator Replacements – South	53,923,496	Project (EGI)	

Investment Code	Investment Name	2023-2032 Forecast with Overheads	Investment Type	Impact of deferral for 1 or more years
				South: non-compliance and penalties under the Electricity and Gas Inspection Act (see Exhibit 2, Tab 6, Schedule 2, Page 150 of 288, Table 5.2.5-3.)
TIS				
736942	Contract Market Systems – Technology Obsolescence	68,414,861	Project (EGI)	As outlined in Exhibit 2, Tab 6, Schedule 2, Appendix A, page 47, this project supports Enbridge Gas's critical contract markets, including Large Volume (LV) Distribution, Storage and Transmission (S&T), Direct Purchase (DP), Gas Management, Gas Procurement & Accounting processes. Many of these systems are 20-30 years old and are built using technology that is or will become unsupported in the near future and require upgrading. Failure to refresh aging systems and applications increases the risks of non-compliance, ,

Investment Code	Investment Name	2023-2032 Forecast with Overheads	Investment Type	Impact of deferral for 1 or more years
				service outages, degraded performance, business and customer interruptions, increased costs, difficulty in acquiring support and diminished ability to address cybersecurity risks In addition, delaying this project would delay the implementation of harmonized services to the contract market, delay improvements in customer experience, and defer operational efficiencies through the elimination of duplicate / manual work.
Transmission Pipe & Underground Storage				
48654	Dawn Parkway Expansion Project (Kirkwall-Hamilton NPS 48)	245,855,289	Project (EGI)	Inability to meet market demands in the projected in-service year.
49758	Panhandle Regional Expansion Project	219,431,846	Project (EGI)	
100699	Dawn Parkway Expansion Project (Dawn-Enniskillen NPS 48)	339,185,787	Project (EGI)	

Investment Code	Investment Name	2023-2032 Forecast with Overheads	Investment Type	Impact of deferral for 1 or more years
735972	PREP: NPS 36 looping to Comber Transmission	95,914,556	Project (EGI)	
736923	Panhandle Regional Expansion Project – Leamington Interconnect	69,934,844	Project (EGI)	

ii) Table 2 outlines programs with a 2023 to 2032 forecast greater than $20 million inclusive of overheads and the 2018 to 2022 historical spend. Note: the asset class historical spend profiles from 2018 to 2020 do not include associated overheads. The 2018 and 2019 historical actuals are mapped to the asset program as they do not map to the discrete investment ID.

Table 2

Investment Code	Investment Name	2023-2032 Forecast	2018 Actuals	2019 Actuals	2020 Actuals	2021 Actuals	2022 Actuals
Customer Connections							
3402	Area 10 - Apartment Ensuite - New Construction	33,932,813			2,411,339	3,201,658	3,214,220
3406	Area 10 - Commercial - New Construction	88,357,565			2,418,583	6,480,794	8,369,500
3407	Area 10 - Commercial - Replacement	20,036,048			1,255,108	3,746,454	1,897,876
3408	Area 10 - Residential - Replacement	98,154,218			4,945,848	9,261,131	9,297,469
3700	Area 10 - Residential -	118,460,850			12,530,237	15,544,866	16,112,959

Investment Code	Investment Name	2023-2032 Forecast	2018 Actuals	2019 Actuals	2020 Actuals	2021 Actuals	2022 Actuals
	New Construction						
3726	Area 20 - Commercial - New Construction	43,123,319			1,464,881	4,050,548	4,084,773
3729	Area 20 - Residential - New Construction	65,585,877			5,286,064	8,228,575	8,141,974
3730	Area 20 - Residential - Replacement	30,865,248			2,483,291	1,469,870	2,923,651
3735	Area 30 - Commercial - New Construction	46,840,812			1,883,394	2,151,966	4,436,905
3738	Area 30 - Residential - New Construction	77,074,340			8,273,162	11,082,924	9,494,024
3739	Area 30 - Residential - Replacement	42,584,538			2,312,164	2,854,680	4,033,738
3744	Area 40 - Commercial - New Construction	40,540,507			1,788,471	2,007,544	3,840,121
3747	Area 40 - Residential - New Construction	52,089,891			5,928,562	9,671,700	6,937,803

Investment Code	Investment Name	2023-2032 Forecast	2018 Actuals	2019 Actuals	2020 Actuals	2021 Actuals	2022 Actuals
3748	Area 40 - Residential - Replacement	62,612,624			4,280,460	5,785,209	5,930,860
3756	Area 50 - Residential - New Construction	89,321,709			6,047,845	10,774,824	10,538,726
3757	Area 50 - Residential - Replacement	61,102,549			2,231,627	5,300,125	5,787,821
3761	Area 60 - Commercial - New Construction	25,177,089			5,741,640	4,674,953	2,390,077
3762	Area 60 - Industrial - New Construction	34,475,558			-	2,681,298	3,265,631
3764	Area 60 - Residential - New Construction	237,751,447			20,191,970	28,978,071	28,531,614
3765	Area 60 - Residential - Replacement	169,789,900			7,624,981	11,388,779	16,083,020
3769	Area 80 - Commercial - New Construction	23,213,667			925,661	1,212,806	2,198,870
3772	Area 80 - Residential - New Construction	53,055,300			8,047,335	8,048,011	6,342,609

Investment Code	Investment Name	2023-2032 Forecast	2018 Actuals	2019 Actuals	2020 Actuals	2021 Actuals	2022 Actuals
48306	WIND: Generic Greenhouse Windsor	81,077,243			-	-	7,856,067
48347	LOND: Company Program - New Business - Scattered Mains - Contractor	38,833,990			-	-	3,578,580
48396	WATE: Company Program - New Business - Scattered Mains - Contractor	29,699,613			-	-	2,642,056
48427	HAMI: Company Program - New Business - Scattered Mains - Contractor	37,827,801			-	-	3,673,013
48452	HALT: Company Program - New Business - Scattered Mains - Contractor	37,840,249			-	-	3,674,222
48471	KING: 22-21-001	27,108,231			-	-	4,478,032

Investment Code	Investment Name	2023-2032 Forecast	2018 Actuals	2019 Actuals	2020 Actuals	2021 Actuals	2022 Actuals
	Company Program - New Business - Scattered Mains - Contractor						
500415	WIND: Company Program - Customer Connections	50,761,394			7,406,880	14,571,943	4,861,718
500418	LOND: Company Program - Customer Connections	108,963,296			9,292,981	12,115,097	9,354,836
500419	BRAN: Company Program - Customer Connections	31,915,261			4,465,052	4,949,330	3,098,916
500420	WATE: Company Program - Customer Connections	88,065,710			9,036,683	10,644,208	8,551,026
500421	HAMI: Company Program - Customer Connections	43,466,496			6,710,327	8,814,167	3,824,092
500422	HALT: Company Program -	40,491,554			4,983,116	7,745,234	4,028,349

Investment Code	Investment Name	2023-2032 Forecast	2018 Actuals	2019 Actuals	2020 Actuals	2021 Actuals	2022 Actuals
	Customer Connections						
500423	KING: Company Program - Customer Connections	68,257,533			7,230,682	11,796,116	7,143,838
500425	SUDB: Company Program - Customer Connections	29,806,515			3,150,606	5,159,851	2,894,160
500427	NBAY: Company Program - Customer Connections	48,587,762			4,487,316	6,142,482	4,717,787
Customer Connections		-	2018 - 146,019,260 2019 - 190,424,281				
48288	WIND: Dist-Repl-Contr-Mains Municipal	71,550,345			3,901,952	6,645,225	6,451,221
48348	LOND: Dist-Repl-Contr-Mains Municipal	45,104,908			2,733,598	4,612,936	6,784,561
48397	WATE: Dist-Repl-Contr-Mains Municipal	105,647,508			4,428,337	9,245,295	6,636,563
48428	HAMI: Dist-Repl-Contr-	42,151,611			372,421	4,775,402	4,230,190

Investment Code	Investment Name	2023-2032 Forecast	2018 Actuals	2019 Actuals	2020 Actuals	2021 Actuals	2022 Actuals
	Mains Municipal						
48453	HALT: Dist-Repl-Contr-Mains Municipal	38,392,868			2,511,276	3,424,094	3,384,152
102420	Relocation Program - Area 20	39,569,299			1,943,395	5,022,282	1,863,277
102422	Relocation Program - Area 40	42,520,689			1,970,709	3,082,676	2,235,933
102423	Relocation Program - Area 50	31,261,154			1,600,792	2,189,897	2,111,714
502013	Relocation Program - Engineering Construction	22,737,340			-	6,697,019	1,762,014
DP - Relocations	DP - Relocations	-	2018 - 3,418,449 2019 - 26,910,702				
23228	Meter Purchases-New Customer Additions	66,275,270			7,993,543	9,043,646	7,066,591
48500	SMC-Meter & Regulator Additions South	41,354,890.59			2,355,897	12,216,642	3,576,570
UTIL - Meters (growth)		-	2018 - 5,059,559 2019 - 7,995,418				

Investment Code	Investment Name	2023-2032 Forecast	2018 Actuals	2019 Actuals	2020 Actuals	2021 Actuals	2022 Actuals
738580	Meter Purchases-MXGI's, MXG's, MXOT's	115,594,243			-	-	-
738583	SMC_Meter & Regulator Replacements - South	53,923,496			-	-	-
UTIL - Meters (mtc)		-	2018 - 11,805,637 2019 - 18,655,975				
Utilization		-	2018 - 47,367,310 2019 - 58,419,480				