Exhibit 2 – Rate Base

2.0 RATE BASE

2.1 Rate Base Overview

1. The purpose of this section is to provide ENGLP's projected rate base for its Aylmer business and explanations for deviations.

2. The mid-year rate base in 2020 Test Year is projected to be $16.36 million. The projected rate base is calculated as the utility's average in-service gross fixed assets and offset by both the accumulated depreciation and net value of contributions received. ENGLP uses the half-year rule for calculating the average in-service fixed assets for the test year.

3. Table 2.1-1 below summarizes the historical, 2019 Bridge and 2020 Test Year rate base for ENGLP. The rate base is broken down by gross plant, contributions, accumulated depreciation and working capital. ENGLP notes that the asset records received from the previous owner tracks assets on a net of contributions basis. As such, historic contributions are netted against gross plant, property and equipment from 2011 - 2017.

4. ENGLP is proposing to not include working capital in its rate base for 2017 to 2020 as further discussed in Section 2.3.

Table 2.1-1
Summary of Historical and Projected Aylmer Rate Base
($ thousands)

		A **2011 OEB Approved**	B **2011 A**	C **2012 A**	D **2013 A**	E **2014 A**	F **2015 A**	G **2016 A**	H **2017 A**	I **2017 Stub**	J **2018 F**	K **2019 B**	L **2020 T**
1	Property, Plant & Equipment*												
2	Gross Asset Value	24,204.3	23,564.6	24,123.2	24,760.9	25,543.7	24,852.2	24,999.8	26,664.2	27,292.7	28,583.9	31,730.5	33,876.3
3	Accumulated Depreciation	(10,639.9)	(10,016.0)	(10,797.0)	(11,503.7)	(12,391.7)	(12,627.4)	(12,723.8)	(13,566.5)	(14,229.5)	(14,888.7)	(16,059.9)	(16,798.2)
4	Net Book Value (Mid-year)	13,564.4	13,548.7	13,326.2	13,257.2	13,152.0	12,224.7	12,276.0	13,097.7	13,063.2	13,695.2	15,670.6	17,078.1
5													
6	less: Contributions												
7	Gross Asset Value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(6.6)	(65.7)	(417.2)	(752.2)
8	Accumulated Depreciation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.4	12.4	29.9
9	Net Book Value (Mid-year)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(6.5)	(64.3)	(404.8)	(722.3)
10													
11	add: Allowance for Working Capital												
12	Inventory	145.1	120.2	137.7	128.2	100.4	112.8	56.4	0.0	0.0	0.0	0.0	0.0
13	Working Cash Allowance	(101.4)	53.8	79.7	70.9	39.4	59.6	81.9	0.0	0.0	0.0	0.0	0.0
14	Security Deposits	(176.1)	(160.5)	(150.8)	(137.9)	(130.1)	(139.2)	(134.3)	0.0	0.0	0.0	0.0	0.0
15	Working Cash Allowance	(132.4)	13.5	66.5	61.2	9.7	33.3	3.9	0.0	0.0	0.0	0.0	0.0
16													
17	Other Adjustment to Rate Base	253.0											
18													
19	Utility Rate Base (Mid-year)	13,685.0	13,562.1	13,392.8	13,318.4	13,161.6	12,258.0	12,279.9	13,097.7	13,056.7	13,631.0	15,265.8	16,355.8
20													
21	Change from year to year ($)			(169.4)	(74.4)	(156.8)	(903.6)	21.9	839.7	776.8	574.3	1,634.8	1,090.0
22	Change from year to year (%)			-1.25%	-0.56%	-1.18%	-6.87%	0.18%	6.85%	6.33%	4.40%	11.99%	7.14%

*Net of Contributions prior to October 2017 and Gross of Contributions post October 2017.

5. The drivers for the decline in rate base over the historical period between 2011 and 2017 appears to be related to a) depreciation being close to or higher than capital expenditures in a number of years, and b) the disposal of material assets in 2015 which ENGLP understands to be mainly related to the sale of the water heater rental business. Rate base increases for the 2018 Forecast, 2019 Bridge Year and 2020 Test Year are the result of additions to gross assets which are explained in Section 2.2 below. In addition, as noted in Section 4.4 of Exhibit 4, Tab 1, Schedule 1, ENGLP has reduced depreciation rates for a number of asset categories for the test year 2020, pending Board approval. This reduces the rate at which the rate base depreciates relative to historical years.

6. The continuity schedules by major fixed asset groups are provided in Exhibit 2, Tab 1, Schedule 2 and reconciles to the gross assets and accumulated depreciation reported in Table 2.1-1 above. The Excel version of the continuity schedules are included in the financial model filed with the Application.

2.2 Gross Fixed Assets and Accumulated Depreciation

2.2.1 Breakdown by Function

7. ENGLP has categorized its gross assets into 4 primary categories or functions and has shown the breakdown in Table 2.2.1-1 below:

- Distribution Plant: Includes assets such as meters, pipelines and regulators.
- General Plant: Includes assets such as buildings, vehicles and computer hardware.
- Intangible Plant: Includes the franchise assets.
- Contributions & Grants: Includes contributions made towards capital.

Table 2.2.1-1
Gross Plant by Function
($ thousands)

		A	B	C	D	E	F	G	H	I	J	K	L
	Description	**2011 OEB Approved**	**2011 A**	**2012 A**	**2013 A**	**2014 A**	**2015 A**	**2016 A**	**2017 A**	**2017 Stub**	**2018 F**	**2019 Bridge**	**2020 Test**
1	Distribution	19,035.2	18,780.1	19,445.2	19,913.9	20,352.7	20,726.1	22,664.3	23,531.4	23,627.3	26,146.2	29,650.1	29,803.9
2	General	5,088.1	4,722.1	4,727.3	4,760.0	4,897.0	2,410.6	2,810.7	2,874.2	3,067.1	2,812.5	3,316.5	3,446.5
3	Intangible	413.1	420.7	151.1	524.4	639.5	678.6	709.3	738.6	746.8	767.9	767.9	767.9
4	Contributions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(13.2)	(118.2)	(716.2)	(788.2)
5	**Total**	**24,536.3**	**23,922.9**	**24,323.6**	**25,198.2**	**25,889.1**	**23,815.2**	**26,184.3**	**27,144.2**	**27,428.0**	**29,608.4**	**33,018.2**	**33,230.0**

8. Table 2.2.1-2 below expands Table 2.2.1-1 by USoA account.

Table 2.2.1-2
Gross Plant by Uniform System of Account (USoA)
($ thousands)

	Description	A USoA	B 2011 OEB Approved	C 2011 A	D 2012 A	E 2013 A	F 2014 A	G 2015 A	H 2016 A	I 2017 A	J 2017 Stub	K 2018 F	L 2019 Bridge	M 2020 Test
1	**Distribution Plant**													
2	Meters	478	2,325.0	2,177.0	2,250.7	2,399.3	2,659.8	2,773.6	2,508.8	2,495.6	2,496.1	2,865.0	3,120.0	2,379.8
3	Meters - IGPC	478	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.1	14.1	14.1	14.1
4	Regulators	474	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	71.0	144.0
5	Measuring and Regulating Equip	477	1,261.1	1,257.2	1,299.2	1,370.6	1,392.9	1,407.4	1,476.9	1,483.8	1,483.8	1,582.6	2,026.6	2,101.6
6	Mains	475	7,739.1	7,887.2	8,237.3	8,286.3	8,341.8	8,530.4	10,579.1	11,305.5	11,314.6	11,818.2	13,158.2	13,732.2
7	Ethanol Pipeline - IGPC Project	475	4,846.1	4,550.6	4,550.6	4,550.6	4,550.6	4,550.6	4,550.6	4,579.9	4,606.1	5,885.3	7,128.1	7,128.1
8	Plastic Service Lines	473	2,864.0	2,908.2	3,107.4	3,307.1	3,407.6	3,464.2	3,548.9	3,666.5	3,712.6	3,981.0	4,132.0	4,304.0
9	**Subtotal**		**19,035.2**	**18,780.1**	**19,445.2**	**19,913.9**	**20,352.7**	**20,726.1**	**22,664.3**	**23,531.4**	**23,627.3**	**26,146.2**	**29,650.1**	**29,803.9**
10	**General Plant**													
11	Land	480	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	122.7	122.7
12	Building	482	722.3	682.3	682.3	684.1	687.4	687.4	687.4	699.6	699.6	699.6	730.6	761.6
13	Furniture and Fixtures	483	72.2	69.2	79.3	82.2	103.9	110.1	112.5	112.5	112.5	112.5	112.5	112.5
14	Computer Hardware	490	173.4	167.8	171.4	178.4	184.5	200.1	219.3	235.6	412.2	227.7	247.7	257.7
15	Computer Software	491	205.7	213.6	217.5	225.0	234.4	245.3	463.1	538.6	551.8	334.3	580.9	606.9
16	Machinery & Equipment*	486	3,040.8	2,845.4	2,899.4	2,922.1	3,002.1	596.0	690.6	703.9	706.2	746.5	761.5	777.5
17	Communication Equipment	488	180.4	157.1	157.1	161.8	177.7	177.7	193.2	197.8	198.7	198.7	231.1	231.1
18	Automotive Equip	484	621.5	515.0	448.6	434.6	435.4	322.2	373.0	314.3	314.3	421.4	529.4	576.4
19	Automotive Equip - Heavy Equip	485	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	**Subtotal**		**5,088.1**	**4,722.1**	**4,727.3**	**4,760.0**	**4,897.0**	**2,410.6**	**2,810.7**	**2,874.2**	**3,067.1**	**2,812.5**	**3,316.5**	**3,446.5**
21	**Intangible Plant**													
22	Franchises	401	413.1	420.7	151.1	524.4	639.5	678.6	709.3	738.6	746.8	767.9	767.9	767.9
23	**Subtotal**		**413.1**	**420.7**	**151.1**	**524.4**	**639.5**	**678.6**	**709.3**	**738.6**	**746.8**	**767.9**	**767.9**	**767.9**
24	**Contributions**	**499**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**(13.2)**	**(118.2)**	**(716.2)**	**(788.2)**
25	**Grand Total**		**24,536.3**	**23,922.9**	**24,323.6**	**25,198.2**	**25,889.1**	**23,815.2**	**26,184.3**	**27,144.2**	**27,428.0**	**29,608.4**	**33,018.2**	**33,230.0**

9. Table 2.2.1-3 below provides the continuity schedule for the gross assets.

Table 2.2.1-3
Historical and Projected Fixed Assets Including Contributions
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1	**Gross Asset Value**												
2	Opening Balance	23,872.2	23,206.4	23,922.9	24,323.6	25,198.2	25,889.1	23,815.2	26,184.3	27,144.2	27,441.2	29,726.6	33,734.4
3	Addition	810.0	815.2	963.7	1,133.8	942.7	794.1	2,792.8	1,113.6	325.1	2,366.2	4,007.8	1,412.0
4	Disposal	0.0	(98.7)	(563.0)	(259.2)	(251.8)	(2,868.0)	(423.7)	(153.7)	(28.1)	(80.8)	0.0	(1,128.2)
5	Closing Balance	24,536.3	23,922.9	24,323.6	25,198.2	25,889.1	23,815.2	26,184.3	27,144.2	27,441.2	29,726.6	33,734.4	34,018.2
6	**Accumulated Depreciation**												
7	Opening Balance	(10,039.8)	(9,506.0)	(10,525.9)	(11,068.1)	(11,939.2)	(12,844.1)	(12,410.7)	(13,036.8)	(14,096.2)	(14,362.7)	(15,414.6)	(16,705.2)
8	Depreciation	(1,200.1)	(1,111.9)	(1,070.0)	(1,093.1)	(1,097.6)	(1,062.7)	(1,049.8)	(1,201.9)	(280.8)	(1,154.4)	(1,290.6)	(1,151.8)
9	Disposal	0.0	91.9	527.9	221.9	192.7	1,496.1	423.7	142.5	14.4	102.5	0.0	965.7
10	Closing Balance	(11,239.9)	(10,525.9)	(11,068.1)	(11,939.3)	(12,844.1)	(12,410.7)	(13,036.8)	(14,096.2)	(14,362.7)	(15,414.6)	(16,705.2)	(16,891.3)
11	Mid-year Net Asset Value	13,564.4	13,548.7	13,326.2	13,257.2	13,152.0	12,224.7	12,276.0	13,097.7	13,063.2	13,695.2	15,670.6	17,078.1
12	Closing Net Asset Value	13,296.4	13,396.9	13,255.5	13,258.9	13,045.0	11,404.5	13,147.4	13,048.0	13,078.5	14,312.0	17,029.2	17,126.9

10. ENGLP notes that the net amount reported in disposals of $21.7 thousand in 2018 (row 4 plus row 9) relates to disposals of computer hardware and computer software as well as a true-up required for the IGPC asset to align costs and accumulated depreciation with amounts closed to rate base as approved by the Board in EB-2010-0018. Upon acquisition of the assets in November 2017, amounts were booked that missed $321.1 thousand of gross assets and $299.5 thousand of accumulated depreciation.

11. In addition to this correction related to the IGPC pipeline, ENGLP booked disposals in 2018 relating to computer hardware and computer software for $184.5 thousand and $217.5 thousand, respectively. ENGLP considered the assets to be fully depreciated based on its review of the assets' financial information.

12. In 2020, ENGLP is forecasting a net loss on disposal of $162.5 thousand (row 4 plus row 9) relating to the disposal of meters. This is explained further in Section 2.2.4 below.

13. ENGLP confirms the depreciation expense for 2011 to 2020 in row 8 of Table 2.2.1-3, above, reconciles to the depreciation expense reported in Table 4.4-1 of Exhibit 4 (Depreciation Expense by Asset Group), as well as to the depreciation reported in the continuity schedules for each asset group, provided in Exhibit 2, Tab 1 Schedule 2. ENGLP has provided the reconciliation of depreciation expense to row 8 of Table 2.2.1-3 to USoA in Table 2.2.1-4 below:

Table 2.2.1-4
Depreciation Expense by USoA
($ thousands)

	Description	A USoA	B 2011 OEB Approved	C 2011 A	D 2012 A	E 2013 A	F 2014 A	G 2015 A	H 2016 A	I 2017 A	J 2017 Stub	K 2018 F	L 2019 Bridge	M 2020 Test
1	**Distribution Plant**													
2	Meters	478	(77.3)	(78.8)	(81.5)	(86.9)	(96.3)	(100.4)	(232.4)	(231.1)	(34.2)	(97.0)	(108.3)	(211.8)
3	Meters - IGPC	478	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(0.3)	(0.5)	(0.5)	(2.4)
4	Regulators	474	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(1.3)	(5.4)
5	Measuring and Regulating Equip	477	(42.5)	(46.1)	(47.7)	(50.3)	(51.1)	(51.7)	(54.2)	(54.5)	(13.6)	(56.3)	(66.2)	(75.6)
6	Mains	475	(229.1)	(254.5)	(265.8)	(267.4)	(269.2)	(275.3)	(295.5)	(365.2)	(91.4)	(373.7)	(403.5)	(309.8)
7	Ethanol Pipeline - IGPC Project	475	(232.5)	(227.2)	(227.2)	(227.5)	(227.5)	(227.5)	(227.5)	(229.0)	(57.6)	(262.3)	(325.3)	(141.1)
8	Plastic Service Lines	473	(87.5)	(96.8)	(103.5)	(111.8)	(113.5)	(115.4)	(118.2)	(122.1)	(30.8)	(128.1)	(135.1)	(105.9)
9	**Subtotal**		**(668.9)**	**(703.5)**	**(725.7)**	**(743.8)**	**(757.6)**	**(770.3)**	**(927.8)**	**(1,001.9)**	**(227.9)**	**(917.9)**	**(1,040.3)**	**(851.9)**
10	**General Plant**													
11	Land	480	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Building	482	(14.7)	(15.1)	(15.1)	(15.2)	(15.3)	(15.3)	(15.3)	(15.5)	(3.9)	(15.5)	(15.9)	(14.3)
13	Furniture and Fixtures	483	(4.5)	(4.7)	(5.4)	(5.5)	(7.0)	(7.4)	(7.6)	(7.6)	(1.9)	(7.6)	(7.6)	(5.4)
14	Computer Hardware	490	(6.0)	(6.1)	(5.3)	(5.8)	(5.9)	(9.2)	(12.5)	(13.8)	(12.1)	(64.0)	(46.0)	(63.2)
15	Computer Software	491	(8.2)	(14.2)	(12.1)	(11.2)	(10.8)	(10.9)	(52.2)	(56.9)	(11.9)	(46.9)	(62.2)	(59.4)
16	Machinery & Equipment*	486	(301.0)	(173.6)	(180.4)	(182.8)	(189.0)	(149.2)	(18.9)	(18.4)	(4.2)	(18.4)	(19.3)	(51.3)
17	Communication Equipment	488	(12.8)	(12.1)	(12.1)	(12.5)	(13.7)	(13.7)	(14.9)	(15.3)	(3.8)	(15.4)	(16.6)	(15.4)
18	Automotive Equip	484	(94.6)	(85.5)	(74.5)	(72.1)	(72.3)	(53.5)	34.2	(36.2)	(6.0)	(31.6)	(45.1)	(53.3)
19	Automotive Equip - Heavy Equip	485	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	**Subtotal**		**(441.8)**	**(311.3)**	**(304.9)**	**(305.2)**	**(314.0)**	**(259.1)**	**(87.3)**	**(163.7)**	**(43.8)**	**(199.4)**	**(212.6)**	**(262.3)**
21	**Intangible Plant**													
22	Franchises	401	(89.4)	(97.1)	(39.4)	(44.1)	(25.9)	(33.3)	(34.8)	(36.2)	(9.1)	(37.1)	(37.6)	(37.6)
23	**Subtotal**		**(89.4)**	**(97.1)**	**(39.4)**	**(44.1)**	**(25.9)**	**(33.3)**	**(34.8)**	**(36.2)**	**(9.1)**	**(37.1)**	**(37.6)**	**(37.6)**
24	**Contributions**	**499**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**2.6**	**19.3**	**15.7**
25	**Grand Total**		**(1,200.1)**	**(1,111.9)**	**(1,070.0)**	**(1,093.1)**	**(1,097.6)**	**(1,062.7)**	**(1,049.8)**	**(1,201.9)**	**(280.8)**	**(1,151.8)**	**(1,271.3)**	**(1,136.1)**

2.2.1.1 Variance Analysis on Gross Asset Additions

14. As noted in Exhibit 1, ENGLP is not in a position to provide variance explanations related to the time period prior to its acquisition of the distribution system assets from NRG in November 1, 2017. As a result, variance explanations prior to 2018 are not included.

4. ENGLP has established a threshold of $0.05 million ($50,000) per asset group for variances requiring explanations, as per the Board's requirements. Table 2.2.1.1-1 provides a summary of variances by USoA between 2019 Bridge Year and 2018 Forecast and 2020 Test Year and 2019 Bridge Year. In the table, ENGLP has highlighted the variances in gray that meets the variance explanation threshold.

Table 2.2.1.1-1
Gross Asset Variances
($ thousands)

	Description	A USoA	B 2019 Bridge vs 2018 Forecast	C 2020 Test vs 2019 Bridge
1	**Distribution Plant**			
2	Meters	478	255.0	(740.2)
3	Meters - IGPC	478	0.0	0.0
4	Regulators	474	71.0	73.0
5	Measuring and Regulating Equip	477	444.0	75.0
6	Mains	475	1,340.0	574.0
7	Ethanol Pipeline - IGPC Project	475	1,242.8	0.0
8	Plastic Service Lines	473	151.0	172.0
9	**Subtotal**		**3,503.8**	**153.8**
10	**General Plant**			
11	Land	480	51.0	0.0
12	Building	482	31.0	31.0
13	Furniture and Fixtures	483	0.0	0.0
14	Computer Hardware	490	20.0	10.0
15	Computer Software	491	246.6	26.0
16	Machinery & Equipment	486	15.0	16.0
17	Communication Equipment	488	32.4	0.0
18	Automotive Equip	484	108.0	47.0
19	Automotive Equip - Heavy Equip	485	0.0	0.0
20	**Subtotal**		**504.0**	**130.0**
21	**Intangible Plant**			
22	Franchises	401	0.0	0.0
23	**Subtotal**		**0.0**	**0.0**
24	**Contributions**	499	**(598.0)**	**(72.0)**
25	**Grand Total**		**3,409.8**	**211.8**

2019 Bridge vs 2018 Forecast Variance

Account 478 – Meters

15. The $255,000 increase is related to ENGLP's Meters Annual Program as described in Section 3.4.12 of Exhibit 2 Tab 3 Schedule 1, the "Utility System Plan".

Account 474 – Regulators and Account 477 – Measuring and Regulating Equipment

16. ENGLP notes that prior to 2020, regulators (474) and measuring and regulating equipment (477) were tracked under one account, regulators. Starting in 2020, ENGLP is proposing to track these accounts separately to be consistent with the USoA.

17. The $71,000 increase in Account 474 is related to ENGLP's Regulators Annual Program as described in Section 3.4.14 of Exhibit 2 Tab 3 Schedule 1, the "Utility System Plan".

18. The $444,000 increase is due to following projects and programs:

- Lakeview Reinforcement Project ($138,000)
- SCADA Upgrade Project ($233,000)
- Regulating Stations Annual Program ($73,000)

19. The Lakeview Reinforcement Project, SCADA Upgrade Project and Regulating Stations Annual Program are discussed in Sections 3.4.2, 3.4.4 and 3.4.13, respectively of the Utility System Plan.

Account 475 – Mains

20. The $1,340,000 increase is due to:

- Main Additions Annual Program ($555,000)
- The Belmont Reinforcement Project ($439,000)
- The Lakeview Reinforcement Project ($168,000)

- Pipeline Markers Annual Program ($10,000)
- Carryover Work ($168,000) – construction work in progress from 2018 that will go into service in 2019 and is not identified separately in the Utility System Plan

21. The Main Addition Program, Belmont Reinforcement Project, Lakeview Reinforcement Project and Pipeline Markers Annual Program are discussed in Sections 3.4.10, 3.4.1, 3.4.2 and 3.4.15 of the Utility System Plan, respectively.

Account 475b – Ethanol Pipeline - IGPC Project

22. The $1,242,800 increase is primarily related to the IGPC Pipeline Realignment at Highway 401 Interchange Project (Section 3.4.3 - Utility System Plan). The total cost of this project is forecasted to be $1,235,200. As part of the project, ENGLP is required to relocate the steel IGPC pipeline as part of the construction to the interchange of Westchester Bourne and Highway 401. ENGLP notes that the Ontario Ministry of Transportation will contribute $536,000 to the cost of the project.

23. In addition to this amount, there is another $7,600 worth of carry over work to be completed in 2019 related to IGPC station upgrades.

Account 473 – Plastic Service Lines

24. The $151,000 increase is related to ENGLP's service additions annual program discussed in Section 3.4.11 of the Utility System Plan.

Account 480 – Land

25. The $51,000 increase in land is related to purchase of land rights for the Lakeview Reinforcement project. The Lakeview Reinforcement project is described in Section 3.4.2 of Utility System Plan.

Account 491 – Computer Software

26. The $246,600 increase is related to:

- UMS & Workforce Management Software ($110,000)
- Software costs as part of the Telephone System Replacement Project ($96,600) Software costs as part of the SCADA Upgrade ($40,000)

27. The UMS & Workforce Management, Telephone System Replacement Project, and SCADA Upgrade, and Computers and Office Equipment Annual Program discussed in Section 3.4.6, 3.4.7 and 3.4.4 of the Utility System Plan, respectively.

Account 484 – Automotive Equipment

28. The $108,000 increase is related to the purchase of a construction truck and fork truck for $82,000 and $26,000, respectively as part of ENGLP's Fleet Program (Section 3.4.16 – Utility System Plan).

Account 499 – Contributions

29. The $598,000 in contributions is due to:

- IGPC Pipeline Realignment at Highway 401 Interchange Project
- Plastic Service Lines

30. As previously noted, the IGPC Pipeline Realignment Project will receive a $536,000 contribution from the Ontario Ministry of Transportation. Additionally, ENGLP is forecasting $62,000 in contributions from customers related to new service connections.

2020 Test Year vs 2019 Bridge Variance

Account 478 – Meters

31. The $740,194 decrease is due to:

- A $1,128,194 decrease related to the write off of meters. This is discussed in Section 2.2.4 below.

32. This decrease is offset by:

- A $260,000 increase related to the ENGLP's annual metering program as described in Section 3.4.12 of the Utility System Plan.
- A $128,000 increase related to the purchases of additional meters as part of the SCADA Upgrade Project as discussed in Section 3.4.4 of the Utility System Plan.

Account 474 – Regulators and Account 477 – Measuring and Regulating Equipment

33. As noted above, these accounts were combined prior to 2020 but will be tracked separately starting in the 2020 Test Year. ENGLP has combined these two accounts (rows 4 and 5) to provide a comparison to 2019 which results in a $148,000 increase. The $148,000 increase is related to ENGLP's regulator and regulator station annual purchase and replacement program discussed in Section 3.4.13 and 3.4.14 of the Utility System Plan.

Account 475 – Mains

34. The $574,000 increase is due to:

- Main Additions Annual Program ($564,000)
- Pipeline Markers Annual Program ($10,000)

35. The Main Additions Annual Program and the Pipeline Markers Annual Program are discussed in Section 3.4.10 and 3.4.15, respectively, of the Utility System Plan.

Account 473 – Plastic Service Lines

36. The $172,000 increase is related to ENGLP's service additions annual program discussed in Section 3.4.11 of the Utility System Plan.

Account 499 – Contributions

37. The $72,000 in contributions is due to contributions from customers related to new service connections.

2.2.2 2020 Test Year Capital Additions

38. At the start of the 2020 Test Year, ENGLP is proposing to revise its asset descriptions to increase consistency with other gas utilities. Table 2.2.2-1 below provides the mapping of the asset description.

Table 2.2.2-1
Mapping of Old Asset Groups to New Asset Groups in 2020 Test Year

		A	B
	Existing Asset Group	**New Asset Group in 2020**	**USoA**
1	Land	Land	480
2	Building	Structures & Improvements - General Plant	482
3	Furniture & Fixtures	Furnishing / Office Equipment	483
4	Computer Hardware	Computer Equipment	490
5	Computer Software	Software - Acquired	491
6	Machinery & Equipment	Tools and Work Equipment	486
7	Communication Equipment	Communications Equipment - Hardware	488
8	Automotive Equipment - Transport Vehicles	Vehicles - Transportation Equipment (ENGLP)	484
9	Automotive Equipment - Heavy Equipment	Vehicle - Heavy Work Equipment	485
10	Meters - Residential	Meters - Residential	478
11	Meters - Commercial	Meters - Commercial	478
12	Meter - IGPC	Meter - IGPC New	478
13	Regulators (Existed as of October 2017)	Measuring and Regulating Equipment	477
14	Regulators	Regulators	474
14	Plastic Mains - Distribution	Mains - Plastic (Distribution Plant)	475
15	Steel Mains - Distribution	Mains - Metallic (Distribution Plant)	475
16	Ethanol Pipeline - IGPC Project	Mains - Metallic (IGPC)	475
17	Plastic Service Lines	Services - Plastic	473
18	Other Assets - Legacy	Franchises & Consents - Legacy	401
19	Other Assets	Franchises & Consents	401
20	Vehicles - Legacy	Vehicles - Legacy New	484
21	Regulators - IGPC Station	Regulators - IGPC Station New	474

39. Table 2.2.2-2 below provides a breakdown of the capital additions in the 2020 Test Year by asset group. ENGLP is forecasting to add $1.34 million of capital, net of contributions, in 2020.

Table 2.2.2-2
2020 Capital Additions Net of Contribution by Asset Group
($ thousands)

	Asset Group	A 2020 Test
1	Land	0.0
2	Structures & Improvements - General Plant	31.0
3	Furnishing / Office Equipment	0.0
4	Computer Equipment	10.0
5	Software - Acquired	26.0
6	Tools and Work Equipment	16.0
7	Communications Equipment - Hardware	0.0
8	Vehicles - Transportation Equipment (ENGLP)	47.0
9	Vehicle - Heavy Work Equipment	0.0
10	Meters - Residential	125.7
11	Meters - Commercial	262.3
12	Meter - IGPC New	0.0
13	Regulators - New	73.0
14	Measuring and Regulating Equipment	75.0
15	Mains - Plastic (Distribution Plant)	574.0
16	Mains - Metallic (Distribution Plant)	0.0
17	Mains - Metallic (IGPC)	0.0
18	Services - Plastic	100.0
19	Franchises & Consents - Legacy	0.0
20	Franchises & Consents	0.0
21	Vehicles - Legacy New	0.0
22	**Total**	**1,340.0**

Table 2.2.2-3
2020 Capital Additions by USoA
($)

	Description	A USoA	B 2020 Test
1	**Distribution Plant**		
2	Meters	478	388.0
3	Meters - IGPC	478	0.0
4	Regulators	474	73.0
5	Measuring and Regulating Equipment	477	75.0
6	Mains	475	574.0
7	Ethanol Pipeline - IGPC Project	475	0.0
8	Plastic Service Lines	473	172.0
9	**Subtotal**		**1,282.0**
10	**General Plant**		
11	Land	480	0.0
12	Building	482	31.0
13	Furniture and Fixtures	483	0.0
14	Computer Hardware	490	10.0
15	Computer Software	491	26.0
16	Machinery & Equipment	486	16.0
17	Communication Equipment	488	0.0
18	Automotive Equipment	484	47.0
19	Automotive Equipment - Heavy Equipment	485	0.0
20	**Subtotal**		**130.0**
21	**Intangible**		
22	Franchises	401	0.0
23	**Subtotal**		**0.0**
24	**Contributions**	499	**(72.0)**
25	**Grand Total**		**1,340.0**

2.2.3 Incremental Capital Module

40. ENGLP confirms it has not received any Incremental Capital Module ("ICM") adjustments as part of any previous IRM application. However, as discussed in Section 1.3.11 of Exhibit 1 Tab 1 Schedule 1, ENGLP is requesting approval of an ICM as part of its five-year IR plan in this Application should the need arise.

2.2.4 Meter Asset Disposals

41. ENGLP is proposing to change the depreciation rates for the residential meters asset class from 3.62% to 10% to reflect the seal life of ten years for a new residential meter (AC-250 meter). The AC-250 meters are used for lower volume customers including residential customers as well as lower volume commercial and industrial customers in Rate 1.

42. A new AC-250 meter has a seal life of ten years and historically the useful life of a meter could be extended by prolonging the seal life by compliance sampling. However, commencing in 2011 Measurement Canada refined the rules for compliance sampling which limited the chances of successful sampling and shortened the lifespan of the refurbished meter. Combining this with increased costs of refurbishment and the decreased costs of new meters the replacement of these meters became more economical than refurbishment of existing meters. Accordingly, ENGLP decided to discontinue sampling and refurbishment of the residential meters thereby changing the useful life of meters to the ten year seal life. To implement the change in depreciation rate for AC-250 meters, commencing January 1, 2020 meters in service will be depreciated over their remaining useful life, or a period of ten years minus the number of years in service at December 31, 2019. Any meters that have been in service for ten or more years will be disposed of, generating a forecasted loss on disposal of $162,461.20, equal to the remaining net book value of these meters in 2020. ENGLP is proposing to establish a deferral account to record the amount of this loss in 2020 for recovery at a future date. This is further discussed in Section 9.3.2 of Exhibit 9 Tab 1 Schedule 1

2.3 Working Capital

43. ENGLP is not requesting any working capital allowance to be included in its rate base. As such, no lead/lag study has been prepared for this application.

2.4 Capitalization Policy

44. ENGLP has included EPCOR's Capitalization Procedure for financial and regulatory accounting and reporting. These are attached as Exhibit 2, Tab 2, Schedule 1 and Exhibit 2, Tab 2, Schedule 2, respectively. As a subsidiary of EPCOR, ENGLP will adhere to EPCOR's capitalization procedures and policies.

45. ENGLP cannot confirm the capitalization procedures or policies previously used by NRG. To the extent reasonable, ENGLP has reviewed the historical records of the utility and is of the view that implementation of ENGLP's capitalization procedures and policies will not have a material impact on the revenue requirements of the utility.

2.4.1 Capitalization of Overhead

46. ENGLP has included EPCOR's Capitalization Overhead Policy as Exhibit 2, Tab 2, Schedule 3. The policy identifies the types of overhead costs that can be capitalized in the course of acquiring or constructing an item of property, plant and equipment.

47. Capital overhead includes the cost of certain supporting functions which are capitalized and charged to capital projects. These functions include, senior management oversight, supervision, project governance, accounting, and dedicated health and safety resources. Capital overhead recoveries reflect a transfer from operating expenses to capital projects as indirect costs. The capital overhead allocation is meant to allocate employee costs, for employees who support capital projects and do not directly charge time to a specific capital project.

48. The capital overhead rate will be calculated by dividing the capital overhead cost pool by the total direct labour transfers to capital projects for the business unit. Direct labour will be used as the cost driver because this more accurately assigns higher overhead to projects that require the most internal labour and oversight for which the overhead pool is meant to cover.

49. Table 2.4.1-1 below shows the forecasted capitalized overhead for 2018-2020. These amounts are identified as part of the salary transfers identified in row 7 of Table 4.3.3.1-1 in Exhibit 4 Tab 1 Schedule 1. As noted above, ENGLP cannot confirm NRG's capitalization procedures and policies and given the limited detailed historical financial records, ENGLP is not able to include the historical capitalized overhead.

Table 2.4.1-1
Capitalized Overhead on Self-Constructed Assets
($)

		A	B	C
	Capital Cost Type	**2018 F**	**2019 Bridge**	**2020 Test**
2	Capitalized Overheads	135.7	126.4	126.4

2.4.1.1 Project Development Cost Policy

50. ENGLP has included EPCOR's Project Development Costs Policy (FA-005) as Exhibit 2, Tab 2, Schedule 4. The policy provides additional guidance regarding the proper classification of project development costs (such as IT development costs), as a capital or operating expense.

2.4.2 Burden Rates

51. ENGLP cannot confirm the burden rates used by NRG prior to ENGLP's acquisition of the Aylmer distribution system assets. EPCOR's burden rates are provided at the corporate level for all of EPCOR's business units, including Aylmer. The burden rate of 44% is used by EPCOR to recover the employee's benefits (e.g., CPP, EI, medical and dental benefits and disability), vacation, statutory holidays and shift differentials when salary and labor costs are charged to operating areas or capital projects. In other words, the burden rate is applied to salary and labor costs. ENGLP has included EPCOR's Burden Procedure and Policy (FA-011) as Exhibit 2, Tab 2, Schedule 5.

2.5 Capital Expenditures Analysis

52. Table 2.5-1 below provides a summary of provides a summary of the capital expenditures from 2013 to 2024.

Table 2.5-1
2013-2024 Capital Expenditures
($ thousands)

		A	B	C	D	E	F	G	H	I	J	K	L	M
		2013 A	**2014 A**	**2015 A**	**2016 A**	**2017 A**	**2017 Stub**	**2018 F**	**2019 B**	**2020 T**	**2021 F**	**2022 F**	**2023 F**	**2024 F**
1	Net Capital Additions	1,133.8	942.7	794.1	2,792.8	1,113.6	311.8	2,261.2	3,409.8	1,340.0	1,457.0	1,239.0	1,261.0	1,288.0
2	Contributions	0.0	0.0	0.0	0.0	0.0	13.2	105.0	598.0	72.0	65.0	66.0	68.0	69.0
3	**Total Expenditure**	**1,133.8**	**942.7**	**794.1**	**2,792.8**	**1,113.6**	**325.1**	**2,366.2**	**4,007.8**	**1,412.0**	**1,522.0**	**1,305.0**	**1,329.0**	**1,357.0**

53. ENGLP notes that the OEB last approved the capital expenditures in Decision EB-2010-0018. In that Decision, the OEB approved capital expenditures of approximately $810 thousand for 2011.

2.5.1 Grants and Customer Contributions

54. ENGLP could not confirm NRG's treatment of contributions prior to the acquisition. As such, all pre-acquisition contributions were applied against the related capital costs in the opening balances post-acquisition.

55. As outlined in Board Report (EB 2008-0408):

> *"For regulatory reporting and rate making purposes the amount of customer contributions will be treated as deferred revenue to be included as an offset to rate base and amortized to income over the life of the facility to which it relates".*

56. Consistent with the Board's guidance, ENGLP records customer contributions as deferred revenue which is amortized over the life of the related asset. For the purpose of this Application, capital contributions are included as an offset to rate base and the related amortized revenue as an offset to depreciation expense.

57. The contributions in Table 2.5-1 relate to contributions from customers relating to new service additions and a contribution from the Province for their share of the IGPC Pipeline Realignment Project.

2.5.2 Treatment of Construction Work in Progress

58. Similarly, ENGLP could not confirm the CWIP amounts prior to the acquisition.

59. However, consistent with EPCOR's capitalization policy (FA-004, Exhibit 2, Tab 2, Schedule 1), the costs associated with the construction of the fixed assets that are not yet in service or incomplete are recognized in the Construction Work in Progress (CWIP) account. Interest during Construction (IDC) accumulates at the OEB prescribed rate for the time the qualified capital work is incomplete. In its application of the capitalization policy, ENGLP determines a qualifying project when it is an individual project/asset which has a construction duration of six months or longer and a cost of $100,000 or greater. ENGLP notes that IDC has not been included for any capital expenditures to date or in the 2018 Forecast, 2019 Bridge Year and 2020 Test Year as none of the projects are expected to meet the criteria outlined above. Fixed assets that are substantially complete and available for use are removed from CWIP.

60. Construction on the budgeted capital projects is expected to begin and be completed within the same calendar year. Therefore, the capital expenditures are expected to be added into and removed from the CWIP account within the same year. ENGLP does not anticipate any CWIP balances at the end of each year from 2020 to 2024 as its annual construction are expected to be completed within a construction season which typically runs from April to November. The

fixed assets coming into service will have gross book values equaling their capital expenditure and the associated IDC when applicable.

2.5.3 Key Drivers

61. ENGLP has organized its forecast capital expenditures in accordance with the work program categories in the Board's "Filing Requirements for Electricity Distribution and Transmission Applications, Consolidated Distribution System Plan Filing Requirements". Those categories are:

- System Access - investments are modifications to the distribution system to provide a new customer or group of customers with access to natural gas service. This includes the relocation of distribution assets to accommodate infrastructure development or modifications by a municipal or provincial authority, or other third-party (e.g. modifications to a highway interchange)

- System Renewal - investments are the lifecycle replacement distribution assets, or refurbishment to extend the original service life, ensuring system integrity and safe operation.

- System Service - investments are modifications to the distribution system to improve reliability, mitigate risk or introduce efficiencies and ensure that performance goals and objectives are met.

- General Plant - investments are additions, modification or replacements of assets used to support business, operations and maintenance activities but not part of the distribution system, such as fleet, tools and equipment, buildings and computers and software.

62. Table 2.5.3-1 below provides the forecast capital expenditures by the above referenced categories. ENGLP has not attempted to categorize the historical capital spending (i.e., prior to the asset acquisition) as ENGLP was not involved in past decision making process or provided with records to categorize the expenditures in this manner.

Table 2.5.3-1
Forecast Capital Expenditures by Category
($ thousands)

	Category	A 2018 F	B 2019 Bridge	C 2020 Test	D 2021 F	E 2022 F	F 2023 F	G 2024 F
1	System Access	1,536.1	1,778.5	522.6	516.0	527.1	536.3	547.9
2	System Renewal	510.9	501.6	490.4	500.5	511.7	520.5	531.9
3	System Service	150.7	1,274.7	269.0	186.5	190.3	194.3	198.3
4	General Plant	168.5	453.0	130.0	319.0	76.0	78.0	79.0
5	**Total**	**2,366.2**	**4,007.8**	**1,412.0**	**1,522.0**	**1,305.0**	**1,329.0**	**1,357.0**
6	**Variance ($)**		1,641.6	(2,595.8)	110.0	(217.0)	24.0	28.0
7	**Variance (%)**		69.38%	-64.77%	7.8%	-14.3%	1.8%	2.1%

63. Table 2.5.3-2 below expands Table 2.5.3-1 by plant account.

Table 2.5.3-2
Forecast Capital Expenditures by Expenditure Category
($ thousands)

	Category	A 2018 Forecast	B 2019 Bridge	C 2020 Test	D 2021 F	E 2022 F	F 2023 F	G 2024 F
1	**System Access**							
2	Mains - Metallic (Distribution Plant)	958.1	1,242.8	-	-	-	-	-
3	Mains - Plastic (Distribution Plant)	235.3	319.5	284.0	291.2	296.7	302.7	308.7
4	Meters	55.6	51.0	52.0	53.0	54.2	55.2	56.4
5	Regulators	18.8	14.2	14.6	14.8	15.2	15.4	15.8
6	Services - Plastic	268.4	151.0	172.0	157.0	161.0	163.0	167.0
7	**Sub-Total**	**1,536.1**	**1,778.5**	**522.6**	**516.0**	**527.1**	**536.3**	**547.9**
8	**System Renewal**							
9	Meters	313.3	204.0	208.0	212.0	216.8	220.8	225.6
10	Mains - Plastic (Distribution Plant)	117.6	167.8	149.0	153.3	156.1	159.1	162.1
11	Measuring and Regulating Equipment	72.5	73.0	75.0	76.0	78.0	79.0	81.0
12	Regulators	7.5	56.8	58.4	59.2	60.8	61.6	63.2
13	**Sub-Total**	**510.9**	**501.6**	**490.4**	**500.5**	**511.7**	**520.5**	**531.9**
14	**System Service**							
15	Mains - Plastic (Distribution Plant)	150.7	852.7	141.0	144.5	147.3	150.3	153.3
16	Computer Equipment	-	10.0	128.0	42.0	43.0	44.0	45.0
17	Software –Acquired		40.0					
18	Measuring and Regulating Equipment	-	371.0	-	-	-	-	-
98	Land	-	51.0	-	-	-	-	-
20	**Sub-Total**	**150.7**	**1,324.7**	**269.0**	**186.5**	**190.3**	**194.3**	**198.3**
21	**General Plant**							
22	Structures & Improvements - General Plant	0.0	31.0	31.0	-	-	-	-
23	Computer Equipment	-	10.0	10.0	11.0	11.0	11.0	11.0
24	Tools and Work Equipment	40.4	15.0	16.0	69.0	16.0	17.0	17.0
25	Software - Acquired	0.0	206.6	26.0	106.0	-	-	-
26	Franchises	21.1	0.0	-	-	-	-	-
26	Communication Equipment	-	32.4	-	-	-	-	-
28	Vehicles - Transportation Equipment	107.0	108.0	47.0	133.0	49.0	50.0	51.0
29	**Sub-Total**	**168.5**	**403.0**	**130.0**	**319.0**	**76.0**	**78.0**	**79.0**
30	**Total**	**2,366.2**	**4,007.8**	**1,412.0**	**1,522.0**	**1,305.0**	**1,329.0**	**1,357.0**

64. Table 2.5.3-3 below summarizes the capital expenditures by project type and reconciles to Table 2.5.3-2 above. ENGLP also notes the tables reconciles to the capital additions table provided in Section 2.2.2.

65. The drivers of the capital expenditures for the 2019 Bridge Year are primarily related to the Belmont Reinforcement Project, the Lakeview Reinforcement Project, the SCADA Upgrade Project and IGPC Pipeline Realignment Project. These projects make up over half of the anticipated capital expenditures for the 2019 Bridge Year and are discussed in the Utility System Plan.

66. The drivers of the capital expenditures for the 2020 Test Year are primarily related to the proposed spending of its annual capital programs. These programs are described in the Utility System Plan.

Table 2.5.3-3
2019-2020 Capital Spending by Capital Projects (includes contributions)
($ thousands)

	Description	A 2019 Bridge	B 2020 Test Year	C Reference to Utility System Plan
1	**Annual Program**			
2	Computers & Office Equipment	10.0	10.0	3.4.18
3	Small Tools & Equipment	15.0	16.0	3.4.17
4	Main Additions	555.0	564.0	3.4.10
5	Meters	255.0	260.0	3.4.12
6	Regulating Stations	73.0	75.0	3.4.13
7	Regulators	71.0	73.0	3.4.14
8	Service Additions	151.0	172.0	3.4.11
9	Fleet	108.0	47.0	3.4.16
10	Pipeline Markers	10.0	10.0	3.4.15
11	**Sub Total**	**1,248.0**	**1,227.0**	
12	**Projects**			
13	IGPC Pipeline Realignment	1,235.2	-	3.4.3
14	Aylmer Office Second Floor Redevelopment	31.0	31.0	3.4.5
15	UMS and Workforce Management Software Project	110.0	26.0	3.4.6
16	SCADA Upgrade	283.0	128.0	3.4.4
17	Belmont Reinforcement	439.0	-	3.4.1
18	Lakeview Reinforcement	357.0	-	3.4.2
19	Telephone System Replacement Project	129.0	-	3.4.7
20	**Sub Total**	**2,584.2**	**185.0**	
21	CWIP (Plastic Mains going into service in 2019)	168.0		
22	CWIP (IGPC Station upgrade going into service in 2019)	7.6		
23	**Total**	**4,007.8**	**1,412.0**	

2.5.4 Variance Analysis

67. This section provides the variance explanations between the 2019 Bridge Year vs 2018 Forecast and the 2020 Test Year vs 2019 Bridge Year. As previously noted, ENGLP is not in a position to provide variance explanations related to the time period prior to its acquisition of the distribution system assets from NRG in November 1, 2017. As such, variance explanations prior to 2018 including variances to prior OEB-approved amounts are not provided.

68. ENGLP has established a threshold of $0.05 million ($50,000) per system category for variances requiring explanations, as per the Board's requirements. See Section 2.2, for the detailed variance analysis provided at the asset account level. For system categories with variances greater than $50,000, ENGLP has broken down the cost at the asset level to illustrate the cost drivers.

2019 Bridge vs 2018 Forecast Variance

69. Table 2.5.4-1 shows the 2019 to 2018 variance by investment category.

Table 2.5.4-1
2019 Bridge vs 2018 Forecast Variance
($ thousands)

		A	B	C
	Category	**2018 F**	**2019 Bridge**	**Variance**
1	System Access	1,536.1	1,778.5	242.4
2	System Renewal	510.9	501.6	(9.3)
3	System Service	150.7	1,324.7	1,174.0
4	General Plant	168.5	403.0	234.5
5	**Total**	**2,366.2**	**4,007.8**	**1,641.6**

2019 Bridge vs 2018 Forecast Variance – System Access

70. Table 2.5.4-2 below shows the 2019 to 2018 variance by asset group under the System Access category.

Table 2.5.4-2
2019 Bridge vs 2018 Forecast System Access Variance
($ thousands)

	System Access	A 2018 Forecast	B 2019 Bridge	C Variance
1	Mains - Metallic (Distribution Plant)	958.1	1,242.8	284.7
2	Mains - Plastic (Distribution Plant)	235.3	319.5	84.3
3	Meters	55.6	51.0	(4.6)
4	Regulators	18.8	14.2	(4.6)
5	Services - Plastic	268.4	151.0	(117.4)
6	**Total**	**1,536.1**	**1,778.5**	**242.4**

71. Table 2.5.4-3 below summarizes the IGPC work done in 2018 and 2019 affecting the $284,746 increase under the asset category Mains – Metallic. The increase is primarily due to the IGPC Realignment Project.

Table 2.5.4-3
2019 Bridge vs 2018 Forecast System Access – "Mains – Metallic" Variance
($)

	System Access – "Mains – Metallic"	A 2018 F	B 2019 Bridge	C Variance
1	IGPC Upgrade	567,129		
2	IGPC Pigging	337,266		
3	IGPC Contribution	53,659		
4	**2018 Total**	**958,054**		
5	IGPC Pipeline Realignment Project		699,200	
6	IGPC Pipeline Realignment Project Contribution		536,000	
7	IGPC carryover work for station upgrades		7,600	
8	**2019 Total**		**1,242,800**	
9	**Year over Year Variance**			**284,746**

72. Table 2.5.4-4 below summarizes the work done in 2018 and 2019 affecting the $84,333 increase under the asset category Mains – Plastic. The increase is driven primarily by the carry over work completed in 2019.

Table 2.5.4-4
2019 Bridge vs 2018 Forecast System Access – "Mains – Plastic" Variance
($)

	System Access – "Mains – Plastic"	A 2018 F	B 2019 Bridge	C Variance
1	Main Additions	452,763		
2	Carryover work from 2017 put in service in 2018	46,809		
3	Customer Contribution	4,000		
4	2018 Total Mains – Plastic	503,571		
5	2018 Allocation % of Expenditures to System Access	46.72%		
6	**2018 Total**	**235,268**		
7	Main Additions		555,000	
8	Pipeline Markers		10,000	
9	Belmont Reinforcement Project		439,000	
10	Lakeview Reinforcement Project		168,000	
11	Carryover work from 2018 put in service in 2019		168,045	
12	2019 Total Mains – Plastic		**1,340,045**	
13	2019 Allocation % of Expenditures to System Access		**23.85%**	
14	**2019 Total**		**319,601**	
15	**Year over Year Variance**			**84,333**

73. ENGLP clarifies that in Table 2.5.4-4 above, the Belmont and Lakeview Reinforcement Project are not System Access projects but are System Service projects. Hence the lower allocation of costs (46.72% vs 23.85%) to the System Access in 2019 compared to 2018. ENGLP included the projects in the Table above to reconcile to the total cost for the Mains – Plastic asset group.

74. Table 2.5.4-5 below summarizes the work done in 2018 and 2019 affecting the $117,385 decrease under the asset category Services – Plastic. The decrease is driven by lower forecasted additions in 2019 compared to 2018.

Table 2.5.4-5
2019 Bridge vs 2018 Forecast System Access – "Services – Plastic" Variance
($)

	System Access - "Services – Plastic"	A 2018 F	B 2019 Bridge	C Variance
1	Service Additions	221,039		
2	Customer Contribution	47,346		
3	**2018 Total Services – Plastic**	**268,385**		
4	Service Additions		89,000	
5	Customer Contributions		62,000	
6	**2019 Total Services – Plastic**		**151,000**	
7	**Year over Year Variance**			**(117,385)**

2019 Bridge vs 2018 Forecast Variance – System Renewal

75. Due to the small variance under this category, ENGLP has not provided any variance explanation for System Renewal

2019 Bridge vs 2018 Forecast Variance – System Service

76. Table 2.5.4-6 below shows the 2019 to 2018 variance by asset group under the System Service category.

Table 2.5.4-6
2019 Bridge vs 2018 Forecast System Service Variance
($ thousands)

	Category	A **2018 Forecast**	B **2019 Bridge**	C **Variance**
1	**System Service**			
2	Mains - Plastic (Distribution Plant)	150.7	852.7	702.0
3	Computer Equipment	-	10.0	10.0
4	Software – Acquired	-	40.0	40.0
5	Measuring and Regulating Equipment	-	371.0	371.0
6	Land	-	51.0	51.0
7	**Sub-Total**	**150.7**	**1324.7**	**1174.0**

77. Table 2.5.4-7 below summarizes the work done in 2018 and 2019 affecting the $702,003 increase under the asset category Mains – Plastic. The increase is driven primarily by Belmont and Lakeview Reinforcement Projects.

Table 2.5.4-7
2019 Bridge vs 2018 Forecast System Access – "Mains – Plastic" Variance
($)

	System Service - Mains – Plastic	A 2018 F	B 2019 Bridge	C Variance
1	Main Additions	452,763		
2	Carryover work from 2017 put in service in 2018	46,809		
3	Customer Contribution	4,000		
4	2018 Total Mains – Plastic	503,571		
5	2018 Allocation % of Expenditures to System Access	29.92%		
5	**2018 Total**	**150,668**		
6	Main Additions		555,000	
7	Pipeline Markers		10,000	
8	Belmont Reinforcement Project		439,000	
9	Lakeview Reinforcement Project		168,000	
10	Carryover work from 2018 put in service in 2019		168,045	
11	2019 Total Mains – Plastic		**1,340,045**	
12	2019 Allocation % of Expenditures to System Access		**63.63%**	
13	**2019 Total**		**852,671**	
14	**Year over Year Variance**			**702,003**

78. As noted above in the System Access section, the Belmont and Lakeview Reinforcement Project are System Service projects. Hence the higher allocation of costs (29.92% vs 63.63%) to System Access in 2019.

79. The increase in rows 2 to 6 from Table 2.5.4-6 ($472,000) is attributable to the SCADA Upgrade and Lakeview Reinforcement Project. The total 2019 SCADA project cost is $283,000. It is contributing $10,000 to Computer Equipment, $40,000 to Software and $233,000 to Measuring and Regulating Equipment. The Lakeview Reinforcement Project is contributing $138,000 to Measuring and Regulating Equipment and $51,000 to land.

2019 Bridge vs 2018 Forecast Variance – General Plant

80. Table 2.5.4-8 below shows the 2019 to 2018 variance by asset group under the General Plant category.

Table 2.5.4-8
2019 Bridge vs 2018 Forecast General Plant Variance
($ thousands)

	General Plant	A 2018 F	B 2019 Bridge	C Variance
1	Structures & Improvements - General Plant	0.0	31.0	31.0
2	Computer Equipment	-	10.0	10.0
3	Tools and Work Equipment	40.4	15.0	(25.4)
4	Software - Acquired	0.0	206.6	206.6
5	Franchises	21.1	0.0	(21.1)
6	Communication Equipment	-	32.4	32.4
7	Vehicles - Transportation Equipment	107.0	108.0	1.0
8	**Sub-Total**	**168.5**	**403.0**	**234.5**

81. The $234,538 increase in general plant is primarily due to an increase in software. The $206,600 increase in software is driven by the UMS and Workforce Management Software Project and Telephone System Replacement Project. The UMS and Workforce Management Software Project is $110,000 and the software required for the Telephone System Replacement Project is $96,600. ENGLP has not provided variance explanations due to the immateriality of the variances for the other asset groups.

2020 Test Year vs 2019 Bridge Variance

82. Table 2.5.4-9 shows the 2020 Test Year to 2019 Bridge variance by investment category.

Table 2.5.4-9
2020 Test vs 2019 Bridge Variance
($ thousands)

	Category	A 2019 Bridge	B 2020 Test	C Variance
1	System Access	1,778.5	522.6	(1,255.9)
2	System Renewal	501.6	490.4	(11.2)
3	System Service	1,324.7	269.0	(1,055.7)
4	General Plant	403.0	130.0	(273.0)
5	**Total**	**4,007.8**	**1,412.0**	**(2,595.8)**

2020 Test vs 2019 Bridge Variance – System Access

83. The $1,255,948 decrease in System Access is primarily due to the IGPC Pipeline Realignment at Highway 401 Interchange Project ($1,235,200 occurring in 2019 and not 2020.

2020 Test vs 2019 Bridge Variance – System Renewal

84. Due to the small variance under this category, ENGLP has not provided any variance explanation for System Renewal.

2020 Test vs 2019 Bridge Variance – System Service

85. The $1,055,663 decrease in System Service is primarily due to the Belmont Reinforcement Project ($439,000), the Lakeview Reinforcement Project ($357,000) and the SCADA Project ($283,000) occurring in 2019 and not 2020.

2020 Test vs 2019 Bridge Variance – General Plant

86. The $273,000decrease in General Plant is primarily due to:

- A $129,000 decrease related to The Telephone System Replacement Project occurring in 2019 and not 2020.
- A $84,000 decrease related to lower spending for the UMS and Workforce Management Software Project in 2020.
- A $61,000 decrease related to lower spending for fleet purchases in 2020.

2021 Forecast vs 2020 Test Year Variance

87. Table 2.5.4-10 shows the 2021 Forecast to 2020 Test Year variance by investment category.

Table 2.5.4-10
2021 Forecast vs 2020 Test Year Variance
($ thousands)

		A	B	C
	Category	**2020 Test**	**2021 F**	**Variance**
1	System Access	522.6	516.0	(6.6)
2	System Renewal	490.4	500.5	10.1
3	System Service	269.0	186.5	(82.5)
4	General Plant	130.0	319.0	189.0
5	**Total**	**1,412.0**	**1,522.0**	**110.0**

88. The $82,500 decrease in System Service is primarily due to lower forecast spending for the SCADA Project in 2020 compared to 2021. As explained in the Utility System Plan, ENGLP is forecasting to spend $128,000 in 2020 compared to $42,000 in 2021.

89. The $189,000 increase in General Plant is primarily due to the ARC GIS Mapping Project ($106,000) and the CNG Vehicle Fueling Station Recertification ($53,000) forecasted to be completed in 2021.

2022 Forecast and beyond

90. Outside the three main projects described in the explanations above, the forecasted capital spending in 2022 to 2024 will remain relatively flat but will allow Aylmer to continue to maintain the distribution system and infrastructure required to provide safe and reliable gas to its customers.

2.6 Utility System Plan

91. The first Utility System Plan for ENGLP covers the period January 1, 2018 through December 31, 2024. The Utility System Plan is included in this Application as Exhibit 2, Tab 3, Schedule 1. The Plan also incorporates an Asset Management Plan.

92. ENGLP engaged Cornerstone Energy Services to conduct a System Integrity Study as part of this Application. The System Integrity Study is included in this Application as Exhibit 2, Tab 3, Schedule 2.

2.7 Service Quality

93. Consistent with the Board's requirements, ENGLP has provided the last 5 years of its historical service quality performance in Table 2.7.1 below.

Table 2.7-1
2013 – 2017 Service Quality Measures
(%)

	Service Quality Measure	A OEB Standard	B 2013	C 2014	D 2015	E 2016	F 2017
1	Call Answering	minimum 75%	99.3	99.1	98.5	98.5	98.8
2	Call Abandon Rate	not exceed 10%	0.7	0.9	1.5	1.5	1.2
3	Meter Reading	not exceed 0.5%	0	0	0	0	0
4	Appointments Met	minimum 85%	99.2	99	99.6	99.3	99.1
5	Reschedule Appointments	100%	100	100	96.6	100	100
6	Emergency Call Response	minimum 90%	100	93.1	94.8	93.2	92.3
7	Days to Provide Written Response	minimum 80%	0	N/A	100	100	100
8	Days to Reconnect	minimum 85%	94.4	95.2	100	91.7	100

94. ENGLP notes that the utility has consistently performed well above the Board's targets. As such, no corrective action is currently required. ENGLP plans to continue performing at or above the Board's standard.

2.7.1 Reliability Performance

95. In the first year of ownership, ENGLP's asset management activities have focused on better understanding the current system constraints and seeking solutions to address these. Under peak demands, low operating pressure, approaching the minimum design pressure, have been observed in and around Belmont and generally in the southern extents of the system. This was confirmed through modelling done as part of the 2018 System Integrity Study and the situation will only worsen given anticipated growth. The Belmont and Lakeview reinforcement projects which are included in the Utility System Plan, will address these constraints and ensure current customers in these areas continue to receive reliable service.

Table 1 - Continuity Schedule of Land Including Contribution
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1	**Gross Asset Value**												
2	Opening Balance	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	122.7
3	Addition	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	51.0	0.0
4	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Closing Balance	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	122.7	122.7
6	**Accumulated Depreciation**												
7	Opening Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Depreciation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	Closing Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	Mid-year Net Asset Value	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	97.2	122.7
12	Closing Net Asset Value	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	122.7	122.7

Table 2 - Continuity Schedule of Building Including Contribution
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	682.3	682.3	682.3	682.3	684.1	687.4	687.4	687.4	699.6	699.6	699.6	730.6
4	Addition	40.0	0.0	0.0	1.8	3.3	0.0	0.0	12.3	0.0	0.0	31.0	31.0
5	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	722.3	682.3	682.3	684.1	687.4	687.4	687.4	699.6	699.6	699.6	730.6	761.6
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(153.8)	(152.4)	(167.6)	(182.7)	(197.9)	(213.2)	(228.4)	(243.7)	(259.2)	(263.1)	(278.6)	(294.5)
10	Depreciation	(14.7)	(15.1)	(15.1)	(15.2)	(15.3)	(15.3)	(15.3)	(15.5)	(3.9)	(15.5)	(15.9)	(14.3)
11	Disposal		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Closing Balance	(168.5)	(167.6)	(182.7)	(197.9)	(213.2)	(228.4)	(243.7)	(259.2)	(263.1)	(278.6)	(294.5)	(308.8)
13													
14	Mid-year Net Asset Value	541.2	522.3	507.2	492.9	480.2	466.6	451.3	442.0	438.5	428.8	428.6	444.5
15	Closing Net Asset Value	553.9	514.8	499.6	486.2	474.2	458.9	443.7	440.4	436.5	421.0	436.1	452.8

Table 3 - Continuity Schedule of Furniture & Fixtures Including Contribution
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	70.7	69.2	69.2	79.3	82.2	103.9	110.1	112.5	112.5	112.5	112.5	112.5
4	Addition	1.5	0.0	10.1	2.9	21.7	6.2	2.5	0.0	0.0	0.0	0.0	0.0
5	Disposal		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	72.2	69.2	79.3	82.2	103.9	110.1	112.5	112.5	112.5	112.5	112.5	112.5
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(45.4)	(44.9)	(49.6)	(54.9)	(60.4)	(67.5)	(74.9)	(82.5)	(90.1)	(92.0)	(99.6)	(107.2)
10	Depreciation	(4.5)	(4.7)	(5.4)	(5.5)	(7.0)	(7.4)	(7.6)	(7.6)	(1.9)	(7.6)	(7.6)	(5.4)
11	Disposal		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Closing Balance	(49.9)	(49.5)	(54.9)	(60.4)	(67.5)	(74.9)	(82.5)	(90.1)	(92.0)	(99.6)	(107.2)	(112.5)
13													
14	Mid-year Net Asset Value	23.8	22.0	22.0	23.1	29.1	35.8	32.6	26.3	21.5	16.8	9.2	2.7
15	Closing Net Asset Value	22.3	19.6	24.4	21.8	36.4	35.2	30.1	22.5	20.6	13.0	5.4	0.0

Table 4 - Continuity Schedule of Computer Hardware Including Contribution
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	167.4	166.6	167.8	171.4	178.4	184.5	200.1	219.3	235.6	412.2	227.7	247.7
4	Addition	6.0	1.2	3.6	7.0	6.1	15.6	19.2	16.4	176.6	0.0	20.0	10.0
5	Disposal		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(184.5)	0.0	0.0
6	Closing Balance	173.4	167.8	171.4	178.4	184.5	200.1	219.3	235.6	412.2	227.7	247.7	257.7
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(148.4)	(149.6)	(155.7)	(160.9)	(166.7)	(172.7)	(181.8)	(194.3)	(208.1)	(220.1)	(99.7)	(145.7)
10	Depreciation	(6.0)	(6.1)	(5.3)	(5.8)	(5.9)	(9.2)	(12.5)	(13.8)	(12.1)	(64.0)	(46.0)	(63.2)
11	Disposal		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	184.5	0.0	0.0
12	Closing Balance	(154.4)	(155.7)	(160.9)	(166.8)	(172.7)	(181.8)	(194.3)	(208.1)	(220.1)	(99.7)	(145.7)	(208.9)
13													
14	Mid-year Net Asset Value	19.0	14.6	11.3	11.1	11.7	15.1	21.6	26.3	109.8	160.1	115.0	75.4
15	Closing Net Asset Value	19.0	12.1	10.5	11.6	11.8	18.3	25.0	27.6	192.1	128.1	102.0	48.9

Table 5 - Continuity Schedule of Computer Software Including Contribution ($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	185.0	196.8	213.6	217.5	225.0	234.4	245.3	463.1	538.6	551.8	334.3	580.9
4	Addition	23.7	16.8	4.0	7.5	9.3	11.0	217.7	75.5	41.2	0.0	246.6	26.0
5	Disposal		0.0	0.0	0.0	0.0	0.0	0.0	0.0	(28.1)	(217.5)	0.0	0.0
6	Closing Balance	205.7	213.6	217.5	225.0	234.4	245.3	463.1	538.6	551.8	334.3	580.9	606.9
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(139.2)	(142.7)	(156.9)	(169.0)	(180.2)	(191.0)	(201.9)	(254.1)	(311.0)	(317.3)	(146.7)	(208.9)
10	Depreciation	(8.2)	(14.2)	(12.1)	(11.2)	(10.8)	(10.9)	(52.2)	(56.9)	(11.9)	(46.9)	(62.2)	(59.4)
11	Disposal		0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.6	217.5	0.0	0.0
12	Closing Balance	(147.5)	(156.9)	(169.0)	(180.2)	(191.0)	(201.9)	(254.1)	(311.0)	(317.3)	(146.7)	(208.9)	(268.2)
13													
14	Mid-year Net Asset Value	52.0	55.4	52.6	46.7	44.1	43.4	126.2	218.2	231.0	211.0	279.8	355.3
15	Closing Net Asset Value	58.2	56.7	48.5	44.8	43.3	43.4	208.9	227.6	234.5	187.6	372.0	338.6

Table 6 - Continuity Schedule of Machinery & Equipment Including Contribution ($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	2,900.1	2,786.5	2,845.4	2,899.4	2,922.1	3,002.1	596.0	690.6	703.9	706.2	746.5	761.5
4	Addition	247.3	157.6	225.6	185.6	206.3	171.0	94.6	13.4	2.2	40.4	15.0	16.0
5	Disposal		(98.7)	(171.6)	(162.9)	(126.3)	(2,577.0)	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	3,040.8	2,845.4	2,899.4	2,922.1	3,002.1	596.0	690.6	703.9	706.2	746.5	761.5	777.5
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(1,463.9)	(1,321.9)	(1,403.6)	(1,445.4)	(1,502.5)	(1,587.6)	(485.2)	(504.2)	(522.6)	(526.8)	(545.2)	(564.5)
10	Depreciation	(301.0)	(173.6)	(180.4)	(182.8)	(189.0)	(149.2)	(18.9)	(18.4)	(4.2)	(18.4)	(19.3)	(51.3)
11	Disposal		91.9	138.6	125.6	103.9	1,251.5	0.0	0.0	0.0	0.0	0.0	0.0
12	Closing Balance	(1,765.0)	(1,403.6)	(1,445.4)	(1,502.5)	(1,587.6)	(485.2)	(504.2)	(522.6)	(526.8)	(545.2)	(564.5)	(615.8)
13													
14	Mid-year Net Asset Value	1,356.0	1,453.2	1,447.9	1,436.8	1,417.0	762.6	148.6	183.9	180.4	190.4	199.2	179.4
15	Closing Net Asset Value	1,275.9	1,441.8	1,454.0	1,419.5	1,414.5	110.8	186.4	181.3	179.4	201.3	197.1	161.8

*includes Rental Equipment in years prior to 2016

Table 7 - Continuity Schedule of Communication Equipment Including Contribution
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	160.4	146.9	157.1	157.1	161.8	177.7	177.7	193.2	197.8	198.7	198.7	231.1
4	Addition	20.0	10.2	0.0	4.7	15.9	0.0	15.5	4.5	0.9	0.0	32.4	0.0
5	Disposal		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	180.4	157.1	157.1	161.8	177.7	177.7	193.2	197.8	198.7	198.7	231.1	231.1
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(56.4)	(54.2)	(66.3)	(78.5)	(91.0)	(104.7)	(118.5)	(133.4)	(148.7)	(152.5)	(167.9)	(184.5)
10	Depreciation	(12.8)	(12.1)	(12.1)	(12.5)	(13.7)	(13.7)	(14.9)	(15.3)	(3.8)	(15.4)	(16.6)	(15.4)
11	Disposal		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Closing Balance	(69.2)	(66.3)	(78.5)	(91.0)	(104.7)	(118.5)	(133.4)	(148.7)	(152.5)	(167.9)	(184.5)	(199.9)
13													
14	Mid-year Net Asset Value	107.6	91.7	84.7	74.7	71.9	66.1	59.5	54.5	47.6	38.5	38.7	38.9
15	Closing Net Asset Value	111.2	90.8	78.6	70.8	73.0	59.3	59.8	49.1	46.1	30.8	46.6	31.2

Table 8 - Continuity Schedule of Automotive Equipment - Transport Vehicles Including Contribution ($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	107.0	215.0
4	Addition	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	107.0	108.0	47.0
5	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	107.0	215.0	262.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(8.9)	(35.6)
10	Depreciation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(8.9)	(26.7)	(39.6)
11	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Closing Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(8.9)	(35.6)	(75.2)
13													
14	Mid-year Net Asset Value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49.1	138.8	183.1
15	Closing Net Asset Value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.2	179.4	186.8

Table 9 - Continuity Schedule of Meters Including Contribution ($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	2,196.7	2,154.1	2,177.0	2,250.7	2,399.3	2,659.8	2,773.6	2,508.8	2,481.4	2,496.1	2,865.0	3,120.0
4	Addition	140.0	22.9	73.7	176.6	260.4	276.0	123.0	81.4	14.6	368.9	255.0	388.0
5	Disposal		0.0	0.0	(27.9)	0.0	(162.2)	(387.7)	(94.6)	0.0	0.0	0.0	(1,128.2)
6	Closing Balance	2,325.0	2,177.0	2,250.7	2,399.3	2,659.8	2,773.6	2,508.8	2,495.6	2,496.1	2,865.0	3,120.0	2,379.8
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(1,047.8)	(1,039.4)	(1,118.2)	(1,199.7)	(1,258.6)	(1,354.9)	(1,293.1)	(1,137.7)	(1,269.5)	(1,303.7)	(1,400.8)	(1,509.1)
10	Depreciation	(77.3)	(78.8)	(81.5)	(86.9)	(96.3)	(100.4)	(232.4)	(231.1)	(34.2)	(97.0)	(108.3)	(211.8)
11	Disposal		0.0	0.0	27.9	0.0	162.2	387.7	94.6	0.0	0.0	0.0	965.7
12	Closing Balance	(1,125.1)	(1,118.2)	(1,199.7)	(1,258.6)	(1,354.9)	(1,293.1)	(1,137.7)	(1,274.2)	(1,303.7)	(1,400.8)	(1,509.1)	(755.1)
13													
14	Mid-year Net Asset Value	1,174.4	1,086.7	1,054.9	1,095.8	1,222.8	1,392.7	1,425.8	1,296.2	1,202.1	1,328.3	1,537.6	1,617.8
15	Closing Net Asset Value	1,199.9	1,058.8	1,051.0	1,140.7	1,304.9	1,480.5	1,371.1	1,221.4	1,192.3	1,464.2	1,610.9	1,624.7

* Includes IGPC in years prior to 2017 Stub

Table 10 - Continuity Schedule of Meter - IGPC Including Contribution
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.1	14.1	14.1	14.1
4	Addition	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.1	14.1	14.1	14.1
7													
8	**Accumulated Depreciation**												
9	Opening Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(4.7)	(5.0)	(5.5)	(6.0)
10	Depreciation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(0.3)	(0.5)	(0.5)	(2.4)
11	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Closing Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(5.0)	(5.5)	(6.0)	(8.4)
13													
14	Mid-year Net Asset Value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.3	8.9	8.4	6.9
15	Closing Net Asset Value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.1	8.6	8.1	5.8

Table 11 - Continuity Schedule of Regulators Including Contribution
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	1,242.8	1,240.1	1,257.2	1,299.2	1,370.6	1,392.9	1,407.4	1,476.9	1,483.8	1,483.8	1,582.6	2,026.6
4	Addition	20.0	17.1	42.4	71.4	22.3	14.5	69.5	7.0	0.0	98.8	444.0	75.0
5	Disposal		0.0	(0.3)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	1,261.1	1,257.2	1,299.2	1,370.6	1,392.9	1,407.4	1,476.9	1,483.8	1,483.8	1,582.6	2,026.6	2,101.6
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(792.1)	(788.2)	(834.3)	(882.0)	(932.3)	(983.4)	(1,035.1)	(1,089.3)	(1,143.7)	(1,157.4)	(1,213.6)	(1,279.9)
10	Depreciation	(42.5)	(46.1)	(47.7)	(50.3)	(51.1)	(51.7)	(54.2)	(54.5)	(13.6)	(56.3)	(66.2)	(75.6)
11	Disposal		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Closing Balance	(834.6)	(834.3)	(882.0)	(932.3)	(983.4)	(1,035.1)	(1,089.3)	(1,143.7)	(1,157.4)	(1,213.6)	(1,279.9)	(1,355.4)
13													
14	Mid-year Net Asset Value	438.6	437.3	420.0	427.7	423.9	390.9	380.0	363.9	333.3	347.7	557.9	746.5
15	Closing Net Asset Value	426.5	422.8	417.2	438.3	409.4	372.3	387.6	340.1	326.5	369.0	746.8	746.2

Table 12 - Continuity Schedule of Plastic Mains - Distribution Including Contribution
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	7,521.6	7,431.9	7,854.2	8,204.3	8,253.3	8,308.8	8,497.4	10,546.1	11,272.5	11,281.6	11,785.2	13,125.2
4	Addition	201.2	422.3	350.2	49.0	55.5	188.5	2,048.7	726.4	9.1	503.6	1,340.0	574.0
5	Disposal		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	7,706.1	7,854.2	8,204.3	8,253.3	8,308.8	8,497.4	10,546.1	11,272.5	11,281.6	11,785.2	13,125.2	13,699.2
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(3,083.5)	(3,060.0)	(3,314.4)	(3,580.3)	(3,847.6)	(4,116.8)	(4,392.2)	(4,687.7)	(5,052.9)	(5,135.5)	(5,509.2)	(5,912.7)
10	Depreciation	(229.1)	(254.5)	(265.8)	(267.4)	(269.2)	(275.3)	(295.5)	(365.2)	(91.4)	(373.7)	(403.5)	(309.8)
11	Disposal		0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.8	0.0	0.0	0.0
12	Closing Balance	(3,312.6)	(3,314.5)	(3,580.3)	(3,847.6)	(4,116.8)	(4,392.2)	(4,687.7)	(5,052.9)	(5,135.5)	(5,509.2)	(5,912.7)	(6,222.5)
13													
14	Mid-year Net Asset Value	4,415.8	4,455.8	4,581.9	4,514.9	4,298.8	4,148.6	4,981.8	6,039.0	6,182.9	6,211.0	6,744.2	7,344.6
15	Closing Net Asset Value	4,393.4	4,539.7	4,624.0	4,405.7	4,192.0	4,105.2	5,858.4	6,219.6	6,146.1	6,276.0	7,212.5	7,476.7

Table 13 - Continuity Schedule of Steel Mains - Distribution Including Contribution
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
4	Addition	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)
10	Depreciation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(0.0)	0.0	0.0
11	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Closing Balance	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)
13													
14	Mid-year Net Asset Value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Closing Net Asset Value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 14 - Continuity Schedule of Ethanol Pipeline - IGPC Project Including Contribution ($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	4,846.1	4,550.6	4,550.6	4,550.6	4,550.6	4,550.6	4,550.6	4,550.6	4,579.9	4,606.1	5,885.3	7,128.1
4	Addition	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.4	26.1	958.1	1,242.8	0.0
5	Disposal		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	321.2	0.0	0.0
6	Closing Balance	4,846.1	4,550.6	4,550.6	4,550.6	4,550.6	4,550.6	4,550.6	4,579.9	4,606.1	5,885.3	7,128.1	7,128.1
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(568.6)	(345.8)	(573.0)	(800.2)	(1,027.8)	(1,255.3)	(1,482.8)	(1,710.4)	(1,939.4)	(1,996.9)	(2,558.7)	(2,884.0)
10	Depreciation	(232.5)	(227.2)	(227.2)	(227.5)	(227.5)	(227.5)	(227.5)	(229.0)	(57.6)	(262.3)	(325.3)	(141.1)
11	Disposal		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(299.5)	0.0	0.0
12	Closing Balance	(801.1)	(573.0)	(800.2)	(1,027.8)	(1,255.3)	(1,482.8)	(1,710.4)	(1,939.4)	(1,996.9)	(2,558.7)	(2,884.0)	(3,025.1)
13													
14	Mid-year Net Asset Value	4,161.2	4,091.2	3,863.9	3,636.5	3,409.0	3,181.5	2,954.0	2,740.4	2,624.8	2,967.9	3,785.3	4,173.5
15	Closing Net Asset Value	4,044.9	3,977.5	3,750.3	3,522.8	3,295.2	3,067.7	2,840.2	2,640.6	2,609.1	3,326.6	4,244.1	4,102.9

Table 15 - Continuity Schedule of Plastic Service Lines Including Contribution ($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	2,794.9	2,808.1	2,908.2	3,107.4	3,307.1	3,407.6	3,464.2	3,548.9	3,666.5	3,712.6	3,981.0	4,132.0
4	Addition	75.3	100.1	199.1	199.7	100.6	56.5	84.7	117.6	46.1	268.4	151.0	172.0
5	Disposal		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	2,864.0	2,908.2	3,107.4	3,307.1	3,407.6	3,464.2	3,548.9	3,666.5	3,712.6	3,981.0	4,132.0	4,304.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(1,799.4)	(1,792.0)	(1,888.9)	(1,992.4)	(2,104.1)	(2,217.6)	(2,333.0)	(2,451.1)	(2,573.2)	(2,604.1)	(2,732.2)	(2,867.3)
10	Depreciation	(87.5)	(96.8)	(103.5)	(111.8)	(113.5)	(115.4)	(118.2)	(122.1)	(30.8)	(128.1)	(135.1)	(105.9)
11	Disposal		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Closing Balance	(1,886.9)	(1,888.9)	(1,992.4)	(2,104.1)	(2,217.6)	(2,333.0)	(2,451.1)	(2,573.2)	(2,604.1)	(2,732.2)	(2,867.3)	(2,973.1)
13													
14	Mid-year Net Asset Value	986.3	1,017.7	1,067.2	1,159.0	1,196.5	1,160.6	1,114.5	1,095.5	1,100.9	1,178.7	1,256.8	1,297.8
15	Closing Net Asset Value	977.1	1,019.3	1,115.0	1,202.9	1,190.0	1,131.2	1,097.8	1,093.3	1,108.6	1,248.8	1,264.8	1,330.9

Table 16 - Continuity Schedule of Franchises and Consents Including Contribution ($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	413.1	419.3	420.7	151.1	524.4	639.5	678.6	709.3	738.6	746.8	767.9	767.9
4	Addition	0.0	1.5	0.0	373.3	115.2	39.0	30.7	29.4	8.2	21.1	0.0	0.0
5	Disposal		0.0	(269.6)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	413.1	420.7	151.1	524.4	639.5	678.6	709.3	738.6	746.8	767.9	767.9	767.9
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(264.9)	(255.9)	(353.1)	(122.8)	(166.9)	(192.9)	(226.2)	(261.0)	(297.2)	(306.4)	(343.5)	(381.1)
10	Depreciation	(89.4)	(97.1)	(39.4)	(44.1)	(25.9)	(33.3)	(34.8)	(36.2)	(9.1)	(37.1)	(37.6)	(37.6)
11	Disposal		0.0	269.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Closing Balance	(354.2)	(353.1)	(122.8)	(166.9)	(192.9)	(226.2)	(261.0)	(297.2)	(306.4)	(343.5)	(381.1)	(418.8)
13													
14	Mid-year Net Asset Value	103.5	115.5	47.9	192.8	402.0	449.5	450.3	444.9	440.9	432.4	405.6	367.9
15	Closing Net Asset Value	58.8	67.6	28.2	357.4	446.7	452.4	448.3	441.4	440.4	424.4	386.7	349.1

Table 17 - Continuity Schedule of Vehicles Existed as of September 2017 Including Contribution ($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	586.5	449.4	515.0	448.6	434.6	435.4	322.2	373.0	314.3	314.3	314.3	314.3
4	Addition	35.0	65.6	55.1	54.4	126.3	15.6	86.7	0.4	0.0	0.0	0.0	0.0
5	Disposal		0.0	(121.5)	(68.4)	(125.5)	(128.8)	(36.0)	(59.0)	0.0	0.0	0.0	0.0
6	Closing Balance	621.5	515.0	448.6	434.6	435.4	322.2	373.0	314.3	314.3	314.3	314.3	314.3
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(443.3)	(325.9)	(411.4)	(366.2)	(370.0)	(353.5)	(324.7)	(254.5)	(242.9)	(248.8)	(271.6)	(289.9)
10	Depreciation	(94.6)	(85.5)	(74.5)	(72.1)	(72.3)	(53.5)	34.2	(36.2)	(6.0)	(22.7)	(18.4)	(13.7)
11	Disposal		0.0	119.6	68.4	88.7	82.3	36.0	47.8	0.0	0.0	0.0	0.0
12	Closing Balance	(537.9)	(411.4)	(366.2)	(370.0)	(353.5)	(324.7)	(254.5)	(242.9)	(248.8)	(271.6)	(289.9)	(303.7)
13													
14	Mid-year Net Asset Value	113.4	113.6	93.0	73.5	73.3	39.7	58.0	95.0	68.5	54.1	33.6	17.5
15	Closing Net Asset Value	83.6	103.6	82.4	64.7	81.9	(2.4)	118.5	71.5	65.5	42.8	24.4	10.7

Table 18 - Continuity Schedule of Automotive Equipment - Heavy Equipment Including Contribution ($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	Addition	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	Depreciation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Closing Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13													
14	Mid-year Net Asset Value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Closing Net Asset Value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 19 - Continuity Schedule of Regulators Purchased after September 2017 Including Contribution ($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	71.0
4	Addition	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	71.0	73.0
5	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	71.0	144.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(1.3)
10	Depreciation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(1.3)	(5.4)
11	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Closing Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(1.3)	(6.7)
13													
14	Mid-year Net Asset Value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.8	103.5
15	Closing Net Asset Value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	69.7	137.3

Table 20 - Continuity Schedule of Land (Contribution)
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance								0.0	0.0	0.0	0.0	0.0
4	Addition								0.0	0.0	0.0	0.0	0.0
5	Disposal								0.0	0.0	0.0	0.0	0.0
6	Closing Balance								0.0	0.0	0.0	0.0	0.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance								0.0	0.0	0.0	0.0	0.0
10	Depreciation								0.0	0.0	0.0	0.0	0.0
11	Disposal								0.0	0.0	0.0	0.0	0.0
12	Closing Balance								0.0	0.0	0.0	0.0	0.0
13													
14	Mid-year Net Asset Value								0.0	0.0	0.0	0.0	0.0
15	Closing Net Asset Value								0.0	0.0	0.0	0.0	0.0

Table 21 - Continuity Schedule of Building (Contribution)
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance								0.0	0.0	0.0	0.0	0.0
4	Addition								0.0	0.0	0.0	0.0	0.0
5	Disposal								0.0	0.0	0.0	0.0	0.0
6	Closing Balance								0.0	0.0	0.0	0.0	0.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance								0.0	0.0	0.0	0.0	0.0
10	Depreciation								0.0	0.0	0.0	0.0	0.0
11	Disposal								0.0	0.0	0.0	0.0	0.0
12	Closing Balance								0.0	0.0	0.0	0.0	0.0
13													
14	Mid-year Net Asset Value								0.0	0.0	0.0	0.0	0.0
15	Closing Net Asset Value								0.0	0.0	0.0	0.0	0.0

Table 22 - Continuity Schedule of Furniture & Fixtures (Contribution)
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance								0.0	0.0	0.0	0.0	0.0
4	Addition								0.0	0.0	0.0	0.0	0.0
5	Disposal								0.0	0.0	0.0	0.0	0.0
6	Closing Balance								0.0	0.0	0.0	0.0	0.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance								0.0	0.0	0.0	0.0	0.0
10	Depreciation								0.0	0.0	0.0	0.0	0.0
11	Disposal								0.0	0.0	0.0	0.0	0.0
12	Closing Balance								0.0	0.0	0.0	0.0	0.0
13													
14	Mid-year Net Asset Value								0.0	0.0	0.0	0.0	0.0
15	Closing Net Asset Value								0.0	0.0	0.0	0.0	0.0

Table 23 - Continuity Schedule of Computer Hardware (Contribution)
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance								0.0	0.0	0.0	0.0	0.0
4	Addition								0.0	0.0	0.0	0.0	0.0
5	Disposal								0.0	0.0	0.0	0.0	0.0
6	Closing Balance								0.0	0.0	0.0	0.0	0.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance								0.0	0.0	0.0	0.0	0.0
10	Depreciation								0.0	0.0	0.0	0.0	0.0
11	Disposal								0.0	0.0	0.0	0.0	0.0
12	Closing Balance								0.0	0.0	0.0	0.0	0.0
13													
14	Mid-year Net Asset Value								0.0	0.0	0.0	0.0	0.0
15	Closing Net Asset Value								0.0	0.0	0.0	0.0	0.0

Table 24 - Continuity Schedule of Computer Software (Contribution)
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance								0.0	0.0	0.0	0.0	0.0
4	Addition								0.0	0.0	0.0	0.0	0.0
5	Disposal								0.0	0.0	0.0	0.0	0.0
6	Closing Balance								0.0	0.0	0.0	0.0	0.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance								0.0	0.0	0.0	0.0	0.0
10	Depreciation								0.0	0.0	0.0	0.0	0.0
11	Disposal								0.0	0.0	0.0	0.0	0.0
12	Closing Balance								0.0	0.0	0.0	0.0	0.0
13													
14	Mid-year Net Asset Value								0.0	0.0	0.0	0.0	0.0
15	Closing Net Asset Value								0.0	0.0	0.0	0.0	0.0

Table 25 - Continuity Schedule of Machinery & Equipment (Contribution)
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance								0.0	0.0	0.0	0.0	0.0
4	Addition								0.0	0.0	0.0	0.0	0.0
5	Disposal								0.0	0.0	0.0	0.0	0.0
6	Closing Balance								0.0	0.0	0.0	0.0	0.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance								0.0	0.0	0.0	0.0	0.0
10	Depreciation								0.0	0.0	0.0	0.0	0.0
11	Disposal								0.0	0.0	0.0	0.0	0.0
12	Closing Balance								0.0	0.0	0.0	0.0	0.0
13													
14	Mid-year Net Asset Value								0.0	0.0	0.0	0.0	0.0
15	Closing Net Asset Value								0.0	0.0	0.0	0.0	0.0

includes Rental Equipment in years prior to 2016.

Table 26 - Continuity Schedule of Communication Equipment (Contribution)
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance								0.0	0.0	0.0	0.0	0.0
4	Addition								0.0	0.0	0.0	0.0	0.0
5	Disposal								0.0	0.0	0.0	0.0	0.0
6	Closing Balance								0.0	0.0	0.0	0.0	0.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance								0.0	0.0	0.0	0.0	0.0
10	Depreciation								0.0	0.0	0.0	0.0	0.0
11	Disposal								0.0	0.0	0.0	0.0	0.0
12	Closing Balance								0.0	0.0	0.0	0.0	0.0
13													
14	Mid-year Net Asset Value								0.0	0.0	0.0	0.0	0.0
15	Closing Net Asset Value								0.0	0.0	0.0	0.0	0.0

Table 27 - Continuity Schedule of Automotive Equipment - Transport Vehicles (Contribution)
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance								0.0	0.0	0.0	0.0	0.0
4	Addition								0.0	0.0	0.0	0.0	0.0
5	Disposal								0.0	0.0	0.0	0.0	0.0
6	Closing Balance								0.0	0.0	0.0	0.0	0.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance								0.0	0.0	0.0	0.0	0.0
10	Depreciation								0.0	0.0	0.0	0.0	0.0
11	Disposal								0.0	0.0	0.0	0.0	0.0
12	Closing Balance								0.0	0.0	0.0	0.0	0.0
13													
14	Mid-year Net Asset Value								0.0	0.0	0.0	0.0	0.0
15	Closing Net Asset Value								0.0	0.0	0.0	0.0	0.0

Table 28 - Continuity Schedule of Meters (Contribution)
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance								0.0	0.0	0.0	0.0	0.0
4	Addition								0.0	0.0	0.0	0.0	0.0
5	Disposal								0.0	0.0	0.0	0.0	0.0
6	Closing Balance								0.0	0.0	0.0	0.0	0.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance								0.0	0.0	0.0	0.0	0.0
10	Depreciation								0.0	0.0	0.0	0.0	0.0
11	Disposal								0.0	0.0	0.0	0.0	0.0
12	Closing Balance								0.0	0.0	0.0	0.0	0.0
13													
14	Mid-year Net Asset Value								0.0	0.0	0.0	0.0	0.0
15	Closing Net Asset Value								0.0	0.0	0.0	0.0	0.0

Table 29 - Continuity Schedule of Meter - IGPC (Contribution)
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance								0.0	0.0	0.0	0.0	0.0
4	Addition								0.0	0.0	0.0	0.0	0.0
5	Disposal								0.0	0.0	0.0	0.0	0.0
6	Closing Balance								0.0	0.0	0.0	0.0	0.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance								0.0	0.0	0.0	0.0	0.0
10	Depreciation								0.0	0.0	0.0	0.0	0.0
11	Disposal								0.0	0.0	0.0	0.0	0.0
12	Closing Balance								0.0	0.0	0.0	0.0	0.0
13													
14	Mid-year Net Asset Value								0.0	0.0	0.0	0.0	0.0
15	Closing Net Asset Value								0.0	0.0	0.0	0.0	0.0

Table 30 - Continuity Schedule of Regulators (Contribution)
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance								0.0	0.0	0.0	0.0	0.0
4	Addition								0.0	0.0	0.0	0.0	0.0
5	Disposal								0.0	0.0	0.0	0.0	0.0
6	Closing Balance								0.0	0.0	0.0	0.0	0.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance								0.0	0.0	0.0	0.0	0.0
10	Depreciation								0.0	0.0	0.0	0.0	0.0
11	Disposal								0.0	0.0	0.0	0.0	0.0
12	Closing Balance								0.0	0.0	0.0	0.0	0.0
13													
14	Mid-year Net Asset Value								0.0	0.0	0.0	0.0	0.0
15	Closing Net Asset Value								0.0	0.0	0.0	0.0	0.0

Table 31 - Continuity Schedule of Plastic Mains - Distribution (Contribution)
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance								0.0	0.0	0.0	4.0	4.0
4	Addition								0.0	0.0	4.0	0.0	0.0
5	Disposal								0.0	0.0	0.0	0.0	0.0
6	Closing Balance								0.0	0.0	4.0	4.0	4.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance								0.0	0.0	0.0	(0.1)	(0.2)
10	Depreciation								0.0	0.0	(0.1)	(0.1)	(0.1)
11	Disposal								0.0	0.0	0.0	0.0	0.0
12	Closing Balance								0.0	0.0	(0.1)	(0.2)	(0.3)
13													
14	Mid-year Net Asset Value								0.0	0.0	2.0	3.9	3.8
15	Closing Net Asset Value								0.0	0.0	3.9	3.8	3.7

Table 32 - Continuity Schedule of Steel Mains - Distribution (Contribution)
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance								0.0	0.0	0.0	0.0	0.0
4	Addition								0.0	0.0	0.0	0.0	0.0
5	Disposal								0.0	0.0	0.0	0.0	0.0
6	Closing Balance								0.0	0.0	0.0	0.0	0.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance								0.0	0.0	0.0	0.0	0.0
10	Depreciation								0.0	0.0	0.0	0.0	0.0
11	Disposal								0.0	0.0	0.0	0.0	0.0
12	Closing Balance								0.0	0.0	0.0	0.0	0.0
13													
14	Mid-year Net Asset Value								0.0	0.0	0.0	0.0	0.0
15	Closing Net Asset Value								0.0	0.0	0.0	0.0	0.0

Table 33 - Continuity Schedule of Ethanol Pipeline - IGPC Project (Contribution)
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance								0.0	0.0	0.0	53.7	589.7
4	Addition								0.0	0.0	53.7	536.0	0.0
5	Disposal								0.0	0.0	0.0	0.0	0.0
6	Closing Balance								0.0	0.0	53.7	589.7	589.7
7													
8	**Accumulated Depreciation**												
9	Opening Balance								0.0	0.0	0.0	(1.3)	(17.4)
10	Depreciation								0.0	0.0	(1.3)	(16.1)	(11.7)
11	Disposal								0.0	0.0	0.0	0.0	0.0
12	Closing Balance								0.0	0.0	(1.3)	(17.4)	(29.1)
13													
14	Mid-year Net Asset Value								0.0	0.0	26.2	312.3	566.4
15	Closing Net Asset Value								0.0	0.0	52.3	572.2	560.6

Table 34 - Continuity Schedule of Plastic Service Lines (Contribution)
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance								0.0	0.0	13.2	60.6	122.6
4	Addition								0.0	13.2	47.3	62.0	72.0
5	Disposal								0.0	0.0	0.0	0.0	0.0
6	Closing Balance								0.0	13.2	60.6	122.6	194.6
7													
8	**Accumulated Depreciation**												
9	Opening Balance								0.0	0.0	(0.1)	(1.3)	(4.4)
10	Depreciation								0.0	(0.1)	(1.2)	(3.0)	(4.0)
11	Disposal								0.0	0.0	0.0	0.0	0.0
12	Closing Balance								0.0	(0.1)	(1.3)	(4.4)	(8.4)
13													
14	Mid-year Net Asset Value								0.0	6.5	36.1	88.7	152.2
15	Closing Net Asset Value								0.0	13.1	59.2	118.2	186.2

Table 35 - Continuity Schedule of Franchises and Consents (Contribution)
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance								0.0	0.0	0.0	0.0	0.0
4	Addition								0.0	0.0	0.0	0.0	0.0
5	Disposal								0.0	0.0	0.0	0.0	0.0
6	Closing Balance								0.0	0.0	0.0	0.0	0.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance								0.0	0.0	0.0	0.0	0.0
10	Depreciation								0.0	0.0	0.0	0.0	0.0
11	Disposal								0.0	0.0	0.0	0.0	0.0
12	Closing Balance								0.0	0.0	0.0	0.0	0.0
13													
14	Mid-year Net Asset Value								0.0	0.0	0.0	0.0	0.0
15	Closing Net Asset Value								0.0	0.0	0.0	0.0	0.0

Table 36 - Continuity Schedule of Vehicles Existed as of September 2017 (Contribution)
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance								0.0	0.0	0.0	0.0	0.0
4	Addition								0.0	0.0	0.0	0.0	0.0
5	Disposal								0.0	0.0	0.0	0.0	0.0
6	Closing Balance								0.0	0.0	0.0	0.0	0.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance								0.0	0.0	0.0	0.0	0.0
10	Depreciation								0.0	0.0	0.0	0.0	0.0
11	Disposal								0.0	0.0	0.0	0.0	0.0
12	Closing Balance								0.0	0.0	0.0	0.0	0.0
13													
14	Mid-year Net Asset Value								0.0	0.0	0.0	0.0	0.0
15	Closing Net Asset Value								0.0	0.0	0.0	0.0	0.0

Table 37 - Continuity Schedule of Automotive Equipment - Heavy Equipment (Contribution)
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance								0.0	0.0	0.0	0.0	0.0
4	Addition								0.0	0.0	0.0	0.0	0.0
5	Disposal								0.0	0.0	0.0	0.0	0.0
6	Closing Balance								0.0	0.0	0.0	0.0	0.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance								0.0	0.0	0.0	0.0	0.0
10	Depreciation								0.0	0.0	0.0	0.0	0.0
11	Disposal								0.0	0.0	0.0	0.0	0.0
12	Closing Balance								0.0	0.0	0.0	0.0	0.0
13													
14	Mid-year Net Asset Value								0.0	0.0	0.0	0.0	0.0
15	Closing Net Asset Value								0.0	0.0	0.0	0.0	0.0

Table 38 - Continuity Schedule of Regulators Purchased after September 2017 (Contribution)
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance								0.0	0.0	0.0	0.0	0.0
4	Addition								0.0	0.0	0.0	0.0	0.0
5	Disposal								0.0	0.0	0.0	0.0	0.0
6	Closing Balance								0.0	0.0	0.0	0.0	0.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance								0.0	0.0	0.0	0.0	0.0
10	Depreciation								0.0	0.0	0.0	0.0	0.0
11	Disposal								0.0	0.0	0.0	0.0	0.0
12	Closing Balance								0.0	0.0	0.0	0.0	0.0
13													
14	Mid-year Net Asset Value								0.0	0.0	0.0	0.0	0.0
15	Closing Net Asset Value								0.0	0.0	0.0	0.0	0.0

Table 39 - Continuity Schedule of Land Net of Contribution
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	122.7
4	Addition	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	51.0	0.0
5	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	122.7	122.7
7													
8	**Accumulated Depreciation**												
9	Opening Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	Depreciation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Closing Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13													
14	Mid-year Net Asset Value	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	97.2	122.7
15	Closing Net Asset Value	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	122.7	122.7

Table 40 - Continuity Schedule of Building Net of Contribution
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	682.3	682.3	682.3	682.3	684.1	687.4	687.4	687.4	699.6	699.6	699.6	730.6
4	Addition	40.0	0.0	0.0	1.8	3.3	0.0	0.0	12.3	0.0	0.0	31.0	31.0
5	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	722.3	682.3	682.3	684.1	687.4	687.4	687.4	699.6	699.6	699.6	730.6	761.6
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(153.8)	(152.4)	(167.6)	(182.7)	(197.9)	(213.2)	(228.4)	(243.7)	(259.2)	(263.1)	(278.6)	(294.5)
10	Depreciation	(14.7)	(15.1)	(15.1)	(15.2)	(15.3)	(15.3)	(15.3)	(15.5)	(3.9)	(15.5)	(15.9)	(14.3)
11	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Closing Balance	(168.5)	(167.6)	(182.7)	(197.9)	(213.2)	(228.4)	(243.7)	(259.2)	(263.1)	(278.6)	(294.5)	(308.8)
13													
14	Mid-year Net Asset Value	541.2	522.3	507.2	492.9	480.2	466.6	451.3	442.0	438.5	428.8	428.6	444.5
15	Closing Net Asset Value	553.9	514.8	499.6	486.2	474.2	458.9	443.7	440.4	436.5	421.0	436.1	452.8

Table 41 - Continuity Schedule of Furniture & Fixtures Net of Contribution
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	70.7	69.2	69.2	79.3	82.2	103.9	110.1	112.5	112.5	112.5	112.5	112.5
4	Addition	1.5	0.0	10.1	2.9	21.7	6.2	2.5	0.0	0.0	0.0	0.0	0.0
5	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	72.2	69.2	79.3	82.2	103.9	110.1	112.5	112.5	112.5	112.5	112.5	112.5
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(45.4)	(44.9)	(49.6)	(54.9)	(60.4)	(67.5)	(74.9)	(82.5)	(90.1)	(92.0)	(99.6)	(107.2)
10	Depreciation	(4.5)	(4.7)	(5.4)	(5.5)	(7.0)	(7.4)	(7.6)	(7.6)	(1.9)	(7.6)	(7.6)	(5.4)
11	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Closing Balance	(49.9)	(49.5)	(54.9)	(60.4)	(67.5)	(74.9)	(82.5)	(90.1)	(92.0)	(99.6)	(107.2)	(112.5)
13													
14	Mid-year Net Asset Value	23.8	22.0	22.0	23.1	29.1	35.8	32.6	26.3	21.5	16.8	9.2	2.7
15	Closing Net Asset Value	22.3	19.6	24.4	21.8	36.4	35.2	30.1	22.5	20.6	13.0	5.4	0.0

Table 42 - Continuity Schedule of Computer Hardware Net of Contribution ($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	167.4	166.6	167.8	171.4	178.4	184.5	200.1	219.3	235.6	412.2	227.7	247.7
4	Addition	6.0	1.2	3.6	7.0	6.1	15.6	19.2	16.4	176.6	0.0	20.0	10.0
5	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(184.5)	0.0	0.0
6	Closing Balance	173.4	167.8	171.4	178.4	184.5	200.1	219.3	235.6	412.2	227.7	247.7	257.7
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(148.4)	(149.6)	(155.7)	(160.9)	(166.7)	(172.7)	(181.8)	(194.3)	(208.1)	(220.1)	(99.7)	(145.7)
10	Depreciation	(6.0)	(6.1)	(5.3)	(5.8)	(5.9)	(9.2)	(12.5)	(13.8)	(12.1)	(64.0)	(46.0)	(63.2)
11	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	184.5	0.0	0.0
12	Closing Balance	(154.4)	(155.7)	(160.9)	(166.8)	(172.7)	(181.8)	(194.3)	(208.1)	(220.1)	(99.7)	(145.7)	(208.9)
13													
14	Mid-year Net Asset Value	19.0	14.6	11.3	11.1	11.7	15.1	21.6	26.3	109.8	160.1	115.0	75.4
15	Closing Net Asset Value	19.0	12.1	10.5	11.6	11.8	18.3	25.0	27.6	192.1	128.1	102.0	48.9

Table 43 - Continuity Schedule of Computer Software Net of Contribution ($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	185.0	196.8	213.6	217.5	225.0	234.4	245.3	463.1	538.6	551.8	334.3	580.9
4	Addition	23.7	16.8	4.0	7.5	9.3	11.0	217.7	75.5	41.2	0.0	246.6	26.0
5	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(28.1)	(217.5)	0.0	0.0
6	Closing Balance	205.7	213.6	217.5	225.0	234.4	245.3	463.1	538.6	551.8	334.3	580.9	606.9
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(139.2)	(142.7)	(156.9)	(169.0)	(180.2)	(191.0)	(201.9)	(254.1)	(311.0)	(317.3)	(146.7)	(208.9)
10	Depreciation	(8.2)	(14.2)	(12.1)	(11.2)	(10.8)	(10.9)	(52.2)	(56.9)	(11.9)	(46.9)	(62.2)	(59.4)
11	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.6	217.5	0.0	0.0
12	Closing Balance	(147.5)	(156.9)	(169.0)	(180.2)	(191.0)	(201.9)	(254.1)	(311.0)	(317.3)	(146.7)	(208.9)	(268.2)
13													
14	Mid-year Net Asset Value	52.0	55.4	52.6	46.7	44.1	43.4	126.2	218.2	231.0	211.0	279.8	355.3
15	Closing Net Asset Value	58.2	56.7	48.5	44.8	43.3	43.4	208.9	227.6	234.5	187.6	372.0	338.6

Table 44 - Continuity Schedule of Machinery & Equipment Net of Contribution ($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	2,900.1	2,786.5	2,845.4	2,899.4	2,922.1	3,002.1	596.0	690.6	703.9	706.2	746.5	761.5
4	Addition	247.3	157.6	225.6	185.6	206.3	171.0	94.6	13.4	2.2	40.4	15.0	16.0
5	Disposal	0.0	(98.7)	(171.6)	(162.9)	(126.3)	(2,577.0)	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	3,040.8	2,845.4	2,899.4	2,922.1	3,002.1	596.0	690.6	703.9	706.2	746.5	761.5	777.5
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(1,463.9)	(1,321.9)	(1,403.6)	(1,445.4)	(1,502.5)	(1,587.6)	(485.2)	(504.2)	(522.6)	(526.8)	(545.2)	(564.5)
10	Depreciation	(301.0)	(173.6)	(180.4)	(182.8)	(189.0)	(149.2)	(18.9)	(18.4)	(4.2)	(18.4)	(19.3)	(51.3)
11	Disposal	0.0	91.9	138.6	125.6	103.9	1,251.5	0.0	0.0	0.0	0.0	0.0	0.0
12	Closing Balance	(1,765.0)	(1,403.6)	(1,445.4)	(1,502.5)	(1,587.6)	(485.2)	(504.2)	(522.6)	(526.8)	(545.2)	(564.5)	(615.8)
13													
14	Mid-year Net Asset Value	1,356.0	1,453.2	1,447.9	1,436.8	1,417.0	762.6	148.6	183.9	180.4	190.4	199.2	179.4
15	Closing Net Asset Value	1,275.9	1,441.8	1,454.0	1,419.5	1,414.5	110.8	186.4	181.3	179.4	201.3	197.1	161.8

*includes Rental Equipment in years prior to 2016.

Table 45 - Continuity Schedule of Communication Equipment Net of Contribution ($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	160.4	146.9	157.1	157.1	161.8	177.7	177.7	193.2	197.8	198.7	198.7	231.1
4	Addition	20.0	10.2	0.0	4.7	15.9	0.0	15.5	4.5	0.9	0.0	32.4	0.0
5	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	180.4	157.1	157.1	161.8	177.7	177.7	193.2	197.8	198.7	198.7	231.1	231.1
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(56.4)	(54.2)	(66.3)	(78.5)	(91.0)	(104.7)	(118.5)	(133.4)	(148.7)	(152.5)	(167.9)	(184.5)
10	Depreciation	(12.8)	(12.1)	(12.1)	(12.5)	(13.7)	(13.7)	(14.9)	(15.3)	(3.8)	(15.4)	(16.6)	(15.4)
11	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Closing Balance	(69.2)	(66.3)	(78.5)	(91.0)	(104.7)	(118.5)	(133.4)	(148.7)	(152.5)	(167.9)	(184.5)	(199.9)
13													
14	Mid-year Net Asset Value	107.6	91.7	84.7	74.7	71.9	66.1	59.5	54.5	47.6	38.5	38.7	38.9
15	Closing Net Asset Value	111.2	90.8	78.6	70.8	73.0	59.3	59.8	49.1	46.1	30.8	46.6	31.2

Table 46 - Continuity Schedule of Transport Vehicles Net of Contribution ($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	107.0	215.0
4	Addition	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	107.0	108.0	47.0
5	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	107.0	215.0	262.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(8.9)	(35.6)
10	Depreciation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(8.9)	(26.7)	(39.6)
11	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Closing Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(8.9)	(35.6)	(75.2)
13													
14	Mid-year Net Asset Value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49.1	138.8	183.1
15	Closing Net Asset Value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.2	179.4	186.8

Table 47 - Continuity Schedule of Meters Net of Contribution
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	2,196.7	2,154.1	2,177.0	2,250.7	2,399.3	2,659.8	2,773.6	2,508.8	2,481.4	2,496.1	2,865.0	3,120.0
4	Addition	140.0	22.9	73.7	176.6	260.4	276.0	123.0	81.4	14.6	368.9	255.0	388.0
5	Disposal	0.0	0.0	0.0	(27.9)	0.0	(162.2)	(387.7)	(94.6)	0.0	0.0	0.0	(1,128.2)
6	Closing Balance	2,325.0	2,177.0	2,250.7	2,399.3	2,659.8	2,773.6	2,508.8	2,495.6	2,496.1	2,865.0	3,120.0	2,379.8
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(1,047.8)	(1,039.4)	(1,118.2)	(1,199.7)	(1,258.6)	(1,354.9)	(1,293.1)	(1,137.7)	(1,269.5)	(1,303.7)	(1,400.8)	(1,509.1)
10	Depreciation	(77.3)	(78.8)	(81.5)	(86.9)	(96.3)	(100.4)	(232.4)	(231.1)	(34.2)	(97.0)	(108.3)	(211.8)
11	Disposal	0.0	0.0	0.0	27.9	0.0	162.2	387.7	94.6	0.0	0.0	0.0	965.7
12	Closing Balance	(1,125.1)	(1,118.2)	(1,199.7)	(1,258.6)	(1,354.9)	(1,293.1)	(1,137.7)	(1,274.2)	(1,303.7)	(1,400.8)	(1,509.1)	(755.1)
13													
14	Mid-year Net Asset Value	1,174.4	1,086.7	1,054.9	1,095.8	1,222.8	1,392.7	1,425.8	1,296.2	1,202.1	1,328.3	1,537.6	1,617.8
15	Closing Net Asset Value	1,199.9	1,058.8	1,051.0	1,140.7	1,304.9	1,480.5	1,371.1	1,221.4	1,192.3	1,464.2	1,610.9	1,624.7

Table 48 - Continuity Schedule of Meter - IGPC Net of Contribution
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.1	14.1	14.1	14.1
4	Addition	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.1	14.1	14.1	14.1
7													
8	**Accumulated Depreciation**												
9	Opening Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(4.7)	(5.0)	(5.5)	(6.0)
10	Depreciation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(0.3)	(0.5)	(0.5)	(2.4)
11	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Closing Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(5.0)	(5.5)	(6.0)	(8.4)
13													
14	Mid-year Net Asset Value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.3	8.9	8.4	6.9
15	Closing Net Asset Value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.1	8.6	8.1	5.8

Table 49 - Continuity Schedule of Regulators Net of Contribution
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	1,242.8	1,240.1	1,257.2	1,299.2	1,370.6	1,392.9	1,407.4	1,476.9	1,483.8	1,483.8	1,582.6	2,026.6
4	Addition	20.0	17.1	42.4	71.4	22.3	14.5	69.5	7.0	0.0	98.8	444.0	75.0
5	Disposal	0.0	0.0	(0.3)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	1,261.1	1,257.2	1,299.2	1,370.6	1,392.9	1,407.4	1,476.9	1,483.8	1,483.8	1,582.6	2,026.6	2,101.6
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(792.1)	(788.2)	(834.3)	(882.0)	(932.3)	(983.4)	(1,035.1)	(1,089.3)	(1,143.7)	(1,157.4)	(1,213.6)	(1,279.9)
10	Depreciation	(42.5)	(46.1)	(47.7)	(50.3)	(51.1)	(51.7)	(54.2)	(54.5)	(13.6)	(56.3)	(66.2)	(75.6)
11	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Closing Balance	(834.6)	(834.3)	(882.0)	(932.3)	(983.4)	(1,035.1)	(1,089.3)	(1,143.7)	(1,157.4)	(1,213.6)	(1,279.9)	(1,355.4)
13													
14	Mid-year Net Asset Value	438.6	437.3	420.0	427.7	423.9	390.9	380.0	363.9	333.3	347.7	557.9	746.5
15	Closing Net Asset Value	426.5	422.8	417.2	438.3	409.4	372.3	387.6	340.1	326.5	369.0	746.8	746.2

Table 50 - Continuity Schedule of Plastic Mains - Distribution Net of Contribution
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	7,521.6	7,431.9	7,854.2	8,204.3	8,253.3	8,308.8	8,497.4	10,546.1	11,272.5	11,281.6	11,781.2	13,121.2
4	Addition	201.2	422.3	350.2	49.0	55.5	188.5	2,048.7	726.4	9.1	499.6	1,340.0	574.0
5	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	7,706.1	7,854.2	8,204.3	8,253.3	8,308.8	8,497.4	10,546.1	11,272.5	11,281.6	11,781.2	13,121.2	13,695.2
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(3,083.5)	(3,060.0)	(3,314.4)	(3,580.3)	(3,847.6)	(4,116.8)	(4,392.2)	(4,687.7)	(5,052.9)	(5,135.5)	(5,509.1)	(5,912.5)
10	Depreciation	(229.1)	(254.5)	(265.8)	(267.4)	(269.2)	(275.3)	(295.5)	(365.2)	(91.4)	(373.6)	(403.4)	(309.7)
11	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.8	0.0	0.0	0.0
12	Closing Balance	(3,312.6)	(3,314.5)	(3,580.3)	(3,847.6)	(4,116.8)	(4,392.2)	(4,687.7)	(5,052.9)	(5,135.5)	(5,509.1)	(5,912.5)	(6,222.3)
13													
14	Mid-year Net Asset Value	4,415.8	4,455.8	4,581.9	4,514.9	4,298.8	4,148.6	4,981.8	6,039.0	6,182.9	6,209.1	6,740.4	7,340.8
15	Closing Net Asset Value	4,393.4	4,539.7	4,624.0	4,405.7	4,192.0	4,105.2	5,858.4	6,219.6	6,146.1	6,272.0	7,208.7	7,472.9

Table 51 - Continuity Schedule of Steel Mains - Distribution Net of Contribution
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
4	Addition	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)
10	Depreciation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(0.0)	0.0	0.0
11	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Closing Balance	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)	(33.0)
13													
14	Mid-year Net Asset Value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Closing Net Asset Value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 52 - Continuity Schedule of Ethanol Pipeline - IGPC Project Net of Contribution
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	4,846.1	4,550.6	4,550.6	4,550.6	4,550.6	4,550.6	4,550.6	4,550.6	4,579.9	4,606.1	5,831.6	6,538.4
4	Addition	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.4	26.1	904.4	706.8	0.0
5	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	321.2	0.0	0.0
6	Closing Balance	4,846.1	4,550.6	4,550.6	4,550.6	4,550.6	4,550.6	4,550.6	4,579.9	4,606.1	5,831.6	6,538.4	6,538.4
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(568.6)	(345.8)	(573.0)	(800.2)	(1,027.8)	(1,255.3)	(1,482.8)	(1,710.4)	(1,939.4)	(1,996.9)	(2,557.3)	(2,866.6)
10	Depreciation	(232.5)	(227.2)	(227.2)	(227.5)	(227.5)	(227.5)	(227.5)	(229.0)	(57.6)	(260.9)	(309.3)	(129.4)
11	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(299.5)	0.0	0.0
12	Closing Balance	(801.1)	(573.0)	(800.2)	(1,027.8)	(1,255.3)	(1,482.8)	(1,710.4)	(1,939.4)	(1,996.9)	(2,557.3)	(2,866.6)	(2,996.0)
13													
14	Mid-year Net Asset Value	4,161.2	4,091.2	3,863.9	3,636.5	3,409.0	3,181.5	2,954.0	2,740.4	2,624.8	2,941.7	3,473.1	3,607.1
15	Closing Net Asset Value	4,044.9	3,977.5	3,750.3	3,522.8	3,295.2	3,067.7	2,840.2	2,640.6	2,609.1	3,274.3	3,671.8	3,542.4

Table 53 - Continuity Schedule of Plastic Service Lines Net of Contribution
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	2,794.9	2,808.1	2,908.2	3,107.4	3,307.1	3,407.6	3,464.2	3,548.9	3,666.5	3,699.4	3,920.5	4,009.5
4	Addition	75.3	100.1	199.1	199.7	100.6	56.5	84.7	117.6	32.9	221.0	89.0	100.0
5	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	2,864.0	2,908.2	3,107.4	3,307.1	3,407.6	3,464.2	3,548.9	3,666.5	3,699.4	3,920.5	4,009.5	4,109.5
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(1,799.4)	(1,792.0)	(1,888.9)	(1,992.4)	(2,104.1)	(2,217.6)	(2,333.0)	(2,451.1)	(2,573.2)	(2,604.0)	(2,730.8)	(2,862.9)
10	Depreciation	(87.5)	(96.8)	(103.5)	(111.8)	(113.5)	(115.4)	(118.2)	(122.1)	(30.8)	(126.9)	(132.0)	(101.9)
11	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Closing Balance	(1,886.9)	(1,888.9)	(1,992.4)	(2,104.1)	(2,217.6)	(2,333.0)	(2,451.1)	(2,573.2)	(2,604.0)	(2,730.8)	(2,862.9)	(2,964.8)
13													
14	Mid-year Net Asset Value	986.3	1,017.7	1,067.2	1,159.0	1,196.5	1,160.6	1,114.5	1,095.5	1,094.4	1,142.5	1,168.1	1,145.7
15	Closing Net Asset Value	977.1	1,019.3	1,115.0	1,202.9	1,190.0	1,131.2	1,097.8	1,093.3	1,095.5	1,189.6	1,146.6	1,144.7

Table 54 - Continuity Schedule of Franchises and Consents Net of Contribution
($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	413.1	419.3	420.7	151.1	524.4	639.5	678.6	709.3	738.6	746.8	767.9	767.9
4	Addition	0.0	1.5	0.0	373.3	115.2	39.0	30.7	29.4	8.2	21.1	0.0	0.0
5	Disposal	0.0	0.0	(269.6)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	413.1	420.7	151.1	524.4	639.5	678.6	709.3	738.6	746.8	767.9	767.9	767.9
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(264.9)	(255.9)	(353.1)	(122.8)	(166.9)	(192.9)	(226.2)	(261.0)	(297.2)	(306.4)	(343.5)	(381.1)
10	Depreciation	(89.4)	(97.1)	(39.4)	(44.1)	(25.9)	(33.3)	(34.8)	(36.2)	(9.1)	(37.1)	(37.6)	(37.6)
11	Disposal	0.0	0.0	269.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Closing Balance	(354.2)	(353.1)	(122.8)	(166.9)	(192.9)	(226.2)	(261.0)	(297.2)	(306.4)	(343.5)	(381.1)	(418.8)
13													
14	Mid-year Net Asset Value	103.5	115.5	47.9	192.8	402.0	449.5	450.3	444.9	440.9	432.4	405.6	367.9
15	Closing Net Asset Value	58.8	67.6	28.2	357.4	446.7	452.4	448.3	441.4	440.4	424.4	386.7	349.1

Table 55 - Continuity Schedule of Vehicles Existing as of September 2017 Net of Contribution ($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	586.5	449.4	515.0	448.6	434.6	435.4	322.2	373.0	314.3	314.3	314.3	314.3
4	Addition	35.0	65.6	55.1	54.4	126.3	15.6	86.7	0.4	0.0	0.0	0.0	0.0
5	Disposal	0.0	0.0	(121.5)	(68.4)	(125.5)	(128.8)	(36.0)	(59.0)	0.0	0.0	0.0	0.0
6	Closing Balance	621.5	515.0	448.6	434.6	435.4	322.2	373.0	314.3	314.3	314.3	314.3	314.3
7													
8	**Accumulated Depreciation**												
9	Opening Balance	(443.3)	(325.9)	(411.4)	(366.2)	(370.0)	(353.5)	(324.7)	(254.5)	(242.9)	(248.8)	(271.6)	(289.9)
10	Depreciation	(94.6)	(85.5)	(74.5)	(72.1)	(72.3)	(53.5)	34.2	(36.2)	(6.0)	(22.7)	(18.4)	(13.7)
11	Disposal	0.0	0.0	119.6	68.4	88.7	82.3	36.0	47.8	0.0	0.0	0.0	0.0
12	Closing Balance	(537.9)	(411.4)	(366.2)	(370.0)	(353.5)	(324.7)	(254.5)	(242.9)	(248.8)	(271.6)	(289.9)	(303.7)
13													
14	Mid-year Net Asset Value	113.4	113.6	93.0	73.5	73.3	39.7	58.0	95.0	68.5	54.1	33.6	17.5
15	Closing Net Asset Value	83.6	103.6	82.4	64.7	81.9	(2.4)	118.5	71.5	65.5	42.8	24.4	10.7

Table 56 - Continuity Schedule of Automotive Equipment - Heavy Equipment Net of Contribution ($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	Addition	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	Depreciation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Closing Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13													
14	Mid-year Net Asset Value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Closing Net Asset Value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 57 - Continuity Schedule of Regulators Purchased after September 2017 Net of Contribution ($ thousands)

	Asset Group	A 2011 OEB Approved	B 2011 A	C 2012 A	D 2013 A	E 2014 A	F 2015 A	G 2016 A	H 2017 A	I 2017 Stub	J 2018 F	K 2019 Bridge	L 2020 Test
1													
2	**Gross Asset Value**												
3	Opening Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	71.0
4	Addition	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	71.0	73.0
5	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Closing Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	71.0	144.0
7													
8	**Accumulated Depreciation**												
9	Opening Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(1.3)
10	Depreciation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(1.3)	(5.4)
11	Disposal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	Closing Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(1.3)	(6.7)
13													
14	Mid-year Net Asset Value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.8	103.5
15	Closing Net Asset Value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	69.7	137.3

EPCOR Utilities Inc. Finance and Accounting Policy and Procedures			
Topic	**Capitalization**	Number	FA-004
Category	Property, Plant and Equipment Intangible Assets	Revision Number	4
Issued by	Accounting Standards Committee	Issued and Effective	23-Sep-04
Approved by	Corporate Controller	Revised	June 24, 2015

Payment."[3] The cost of an asset may include site preparation costs incurred to remove a previous asset when it is located at the site of the replacement asset.[4]

2.7. **Capital work-in-progress (CWIP)** – an account that includes all costs of capital projects that are incomplete or not yet in service at year-end. Capitalized interest, if any, is included in CWIP.

2.8. **Qualifying asset – "**an asset that necessarily takes a substantial period of time to get ready for its intended use or sale."[5] For EPCOR, a qualifying asset is determined as a capital project that takes over 6 months to construct or get ready for use.

2.9. **Useful life –** "is:

- the period over which an asset is expected to be available for use by an entity; or
- the number of production or similar units expected to be obtained from the asset by the entity."[6]

The useful life can be either physical or economic. For example, the end of physical life will generally be reached when the asset is no longer capable of performing its intended function because of physical wear. The end of the economic life of an asset is generally reached when a replacement asset is more economical to use than the current asset in place.

3. Detailed Capitalization Criteria

3.1. An asset comes into existence when the expenditure results in a tangible item with a useful life greater than one year.

3.2. An expenditure that results in extending the original life of an existing asset should be capitalized.

3.3. A cost incurred to ensure that an asset reaches its projected life (i.e. normal O&M) will not be capitalized. Such a cost is an expense of the period.

3.4. An expenditure should be capitalized if it enhances the capacity or efficiency of an existing asset.

3.5. An expenditure which is determined to be an asset under FA-005 – Project Development Costs Policy should be capitalized.

[3] Source: IAS 16.6
[4] Source: IAS 16.17(b)
[5] Source: IAS 23.5
[6] Source: IAS 16.6

EPCOR Utilities Inc. Finance and Accounting Policy and Procedures			
Topic	**Capitalization**	Number	FA-004
Category	Property, Plant and Equipment Intangible Assets	Revision Number	4
Issued by	Accounting Standards Committee	Issued and Effective	23-Sep-04
Approved by	Corporate Controller	Revised	June 24, 2015

3.6. Related components purchased simultaneously with the intention of connecting them for use (e.g. computers) will be capitalized as a single asset if the combined cost exceeds the capitalization dollar threshold. Unrelated projects should not be grouped together so as to meet or exceed the threshold outlined in section 4.1.

4. Capitalized Dollar Threshold

4.1. All projects meeting the capitalization criteria should be capitalized if the cost exceeds $5,000.

4.2. All land has to be capitalized regardless of the amount.

5. Capital Spares

Capital spares which meet the definition in Section 2.4 above and exceed $5,000 should be capitalized.

6. Capital Work in Progress (CWIP)

An asset is transferred to PPE when it moves into service. This occurs when an asset "is available for use, i.e. when it is in the location and condition necessary for it to be capable of operating in the manner intended by management."[7]

As noted in Depreciation and Amortization Policy FA-007 paragraph 5.4, the half year rule may be used for calculating depreciation. If this is the case, a July 1 date is used as the in service date for calculating depreciation.

7. Capitalized Interest

7.1. Capitalized interest is calculated for all business units.

7.2. Capitalized interest is added to the value of the asset.

7.3. Capitalized interest is only computed on qualifying assets. Interest should be calculated on a periodic basis as determined by the respective business unit controller's professional judgement, but as a minimum on a quarterly basis.

7.4. Capitalization of interest ceases when an item of property, plant and equipment is substantially complete and ready for productive use.

[7] Source: IFRS Section 16.55

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8. References

IFRS – Framework

IFRS - IAS 16 – Property, Plant and Equipment

IFRS - IAS 23 – Borrowing Costs

IFRS - IAS 38 – Intangible Assets

9. Related Policies, Procedures and Guidelines

EPCOR's Project Development Costs Policy FA-005

EPCOR's Amortization and Depreciation Policy FA-007

EPCOR's Capital Asset Contributions Policy FA-008

EPCOR Regulatory Accounting Procedures			
Topic	**Capitalization for Regulatory Accounting Purposes**	Number	RA-004
Category	Property, Plant and Equipment Other Intangible Assets	Revision Number	3
Issued by	EDTI, EEAI, EWSI Finance	Issued and Effective	2011
Approved by	Pamela Chung Controller, EDTI Pat Bradley, Controller EEAI Lillian Zenari, Controller, EWSI	Revised	18-Oct-11

1. Purpose and Scope

The capitalization policy functions as a guide in respect of what should be recognized as a tangible asset or intangible asset other than goodwill for regulatory accounting and reporting. The intent is to ensure that fixed assets are properly reported in accordance with applicable regulatory accounting pronouncements.

This policy refers to capitalization of rate-regulated assets and intangible assets other than goodwill, primarily software. Related policies include Customer Acquisition Costs, Project Development Costs and Amortization and Depreciation.

2. Definitions and Background

Asset - "a resources controlled by the entity as a result of past events and from which future economic benefits are expected to flow to the entity"[1]

Property, Plant and Equipment (PPE) - " tangible items that: are held for use in the production or supply of goods and services, for rental to others, or for administrative purposes and; are expected to be used during more than one period"[2]

Rate-regulated property, plant and equipment - items of property, plant and equipment held for use in operations meeting all of the following criteria:

(a) the rates for regulated services or products provided to customers are established by or are subject to approval by a regulator or a governing body empowered by statute or contract to establish rates to be charged for services or products;

[1] Source: IFRS The Conceptual Framework for Financial Reporting. Chapter 4.4
[2] Source: IAS 16.6

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(b) the regulated rates are designed to recover the cost of providing the services or products; and it is reasonable to assume that rates set at levels that will recover the cost can be charged to and collected from customers in view of the demand for services or products and the level of direct and indirect competition. This criterion requires consideration of expected changes in levels of demand or competition during the recovery period for any.

Allowance for Funds Used during Construction (AFUDC) – AFUDC is the amount that a rate-regulated enterprise may be allowed to earn, if approved by its regulator, to recover its cost of financing assets under construction. It is equal to the average cost of the capital-work-in-progress, times a financing rate, which is usually equal to the enterprise's cost of capital rate. AFUDC is included in the cost of the related assets and recovered in future periods through the depreciation charge.

Capital Asset Contributions - Contributions toward a capital asset owned by EPCOR which are received from an unrelated party or from another EPCOR entity, either in the form of cash or a non-monetary transfer of an asset. These contributions are recorded in a contra account as an offsetting credit to the related asset cost on the regulatory reporting balance sheet.

Capital Spares – major spare parts and stand-by equipment qualify as PP&E when an entity expects to use them during more than one period, or if the spare part can be used only in connection with an item of PP&E they are capitalized.

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Cost – the amount of consideration given up to acquire, construct, develop, or better an item of property, plant and equipment. This incorporates all costs directly attributable to the acquisition, construction, development or betterment of the asset including installing it at the location and in the condition necessary for its intended use. For transmission, distribution and Regulated Rate Tariff PPE, the cost of the asset should include the costs to remove the previous asset, net of any salvage proceeds.

Capital Work-in-Progress (CWIP) – an account that includes all costs of capital projects that are incomplete or not yet in service at year-end. AFUDC is included in CWIP. Asset costs are accumulated in CWIP until the asset is put into service. When the asset is put into service its cost is transferred to PPE.

Property Unit Catalogue (PUC) – a list of rate-regulated assets with detailed definitions that have been approved by, or are in the process of being approved by, the regulator.

Useful life - "is:

(a) the period over which an asset is expected to be available for use by an entity; or

(b) the number of production or similar units expected to be obtained from the asset by the entity."[3]

The useful life can be either physical or economic. For example, the end of physical life will generally be reached when the asset is no longer capable of performing its intended function because of physical wear. The end of the economic life of an asset is generally reached when a replacement asset is more economical to use than the current asset in place.

[3] Source: IAS 16.6

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Service Potential - "the output or service capacity of an item of property, plant and equipment and is normally determined by reference to attributes such as physical output capacity, associated operating costs, useful life and quality of output."[4]

3. General Capitalization Criteria

An expenditure should be capitalized if:

(a) It is identified as a rate-regulated asset in the PUC or
(b) It:
  (i.) results in a tangible asset with a useful life in excess of one year; and/or
  (ii.) extends the original life of an existing asset; and/or
  (iii.) enhances the service potential of an existing asset.

4. Capitalized Dollar Threshold

Land – no minimum value

In rate-regulated business units, there is no capitalized dollar threshold since an asset is capitalized if it is included in the PUC or if similar items with similar values have been approved by the regulator in current or prior rate applications.

[4] Source: CICA Handbook, Part II – Accounting Standards for Private Enterprises, Section 3061.03

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5. Cost

The capitalized cost for regulatory purposes includes:

(a) The cash or cash equivalents paid or fair value of the other consideration given to acquire an asset at the time of its acquisition or construction,

(b) Site preparation costs incurred to remove a previous asset when it is located at the site of the replacement asset

(c) Capital overhead

(d) AFUDC

6. Capital Spares

In rate-regulated business units a component is considered to be a capital spare if it is approved by the regulator.

7. Allowance for Funds Used During Construction (AFUDC)

AFUDC reflects the carrying costs attributable to funds expended for capital projects. AFUDC is determined based on a financing rate equivalent to the business unit's weighted average cost of capital rate (as approved by the regulator) applied to the mid year CWIP balance.

AFUDC is added to the cost of the asset and recovered in future periods through the depreciation charge.

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8. Capital Asset Contributions

Capital asset contributions are recorded in the regulatory accounts as a "credit contra account" included in the determination of PPE. The amounts are subsequently amortized by a charge to accumulated depreciation and a credit to depreciation expense, calculated using the same life span as that used for the amortization of the related property, plant and equipment asset.

9. References

IFRS – Framework
IFRS - IAS 16 – Property, Plant and Equipment
CICA Handbook, Part II – Accounting Standards for Private Enterprises, Section 3061

10. Related Policies, Procedures and Guidelines

EPCOR's Amortization and Depreciation Policy RA-007
Property Unit Catalogues (as applicable)
AUC Rule 026

EPCOR Utilities Inc. Finance and Accounting Policy and Procedures			
Topic	**Capital Overhead**	Number	FA-010
Category	**Property, Plant and Equipment**	Revision Number	1
Issued by	Accounting Standards Committee	Issued and Effective	31-Dec-06
Approved by	Corporate Controller	Revised	Oct 9, 2011

1. Purpose and Scope

1.1. The purpose of this policy is to identify the types of overhead costs that can be capitalized in the course of acquiring or constructing an item of property, plant and equipment (PP&E) in accordance with International Financial Reporting Standards (IFRS)

1.2. This policy should be applied consistently by all EPCOR entities.

2. Definitions

2.1. **Cost** - The amount of cash or cash equivalent paid or the fair value of other consideration given to construct or acquire an asset.

2.2. **Overhead costs** – includes costs of support functions such as executive oversight, corporate accounting, legal, human resources, information systems, marketing, purchasing and office management.

2.3. **Directly attributable costs** – those costs that directly relate to the acquisition or construction of PP&E. If the activity to acquire or construct PP&E did not occur, directly attributable costs would not have been incurred.

Examples of directly attributable costs are:

- costs of employee benefits arising directly from the construction or acquisition of the item of property, plant and equipment;
- costs of site preparation;
- initial delivery and handling costs;
- installation and assembly costs;
- costs of testing whether the asset is functioning properly; and
- professional fees.

2.4. **Capital Overhead Allocation Pool (the pool)** – the accumulation of overhead costs that are directly attributable to the acquisition or construction of PP&E.

3. Policy

3.1. Only overhead costs that are directly attributable to the acquisition or construction of PP&E should be capitalized as per FA-004 Capitalization policy and FA-005 Project Development Costs policy. Labour (including incentive pay) and labour-related expenses such as employee benefits and overtime, that are directly attributable to

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the capital expenditures based on either time spent or headcount, are the only overhead costs that may be capitalized.

3.2. Overhead costs identified for capitalization may be pooled prior to being allocated to individual capital projects. Pools of overhead costs may be separately identified for individual business units's or specific major projects, as necessary. An estimate of capital overhead costs to be contributed to the pool may be based on budget at the beginning of each year.

3.3. Each identified overhead cost in the pool should be documented and a justification should be provided as to how it is directly attributable to the capital projects to which it is being allocated. The Business Unit Controller should approve the components of the pool to ensure that each element is directly attributable to the acquisition or construction of PP&E.

3.4. The capital overhead rate (the rate) is calculated by dividing the pool by the total capital expenditures for the year. This rate is then applied to all capital expenditures incurred during the year. A different rate may be calculated for a specific project, if overhead costs can be separately identified for that project. The rationale for having a different rate should be documented and approved by the Business Unit Controller.

3.5. Unless there are significant changes to the amount of overhead costs in the pool or to the level of capital expenditures for the year, the same rate should be applied throughout the year. Any changes to the rate applied must be reviewed and approved by the Business Unit Controller.

3.6. By the end of each fiscal year, the overhead costs that have been allocated to the pool based on budget during the year should be compared to actual overhead costs incurred and any material differences should be booked to the pool. At year-end any balance remaining in the pool should be fully allocated to the actual capital projects completed or in progress during the year. The annual reconciliation of the pool should be reviewed and approved by the Business Unit Controller.

3.7. Certain of the Corporate Shared Services groups may have costs which are directly attributable to capital activities. These costs should be assigned/direct charged to the pools.

4. Documentation

4.1. Each business unit should document the method by which they are allocating their capital overhead, including a justification of how each overhead cost is directly attributable to the capital expenditures. This documentation should be approved by the Business Unit Controller.

4.2. Any changes to the capital overhead rate during the year should be documented and approved by the Business Unit Controller.

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4.3. Documentation of the annual true-up of the capital overhead pool should also be approved by the Business Unit Controller.

4.4. All documentation should be maintained by the business unit and be available for review by Corporate Finance, internal auditors, or external auditors, as required.

5. References

IAS 16 – Property, Plant and Equipment

6. Related Policies, Procedures and Guidelines

FA-004 Capitalization Policy

FA-005 Project Development Costs Policy

EPCOR Utilities Inc. Finance and Accounting Policy and Procedures			
Topic	**Project Development Costs**	Number	FA-005
Category	Property, Plant and Equipment Other Intangible Assets		
Issued by	Accounting Standards Committee	Issued and Effective	Sep 23, 2004
Approved by	Corporate Controller	Revised	Oct 9, 2011

1. Purpose

The accounting objective for project development costs (including preliminary feasibility research, site inspections, permitting, etc.) is to properly classify such costs as either an asset or an expense, given the nature and tenure of the particular project.

IAS 16.7 states that:

> The cost of an item of property, plant and equipment (PP&E) shall be recognised as an asset if, and only if:
>
> (a) it is probable that future economic benefits associated with the item will flow to the entity; and
>
> (b) the cost of the item can be measured reliably.

This policy provides guidance as to how the project development stages meet the recognition criteria.

2. Scope

2.1 This policy applies to costs incurred by EPCOR Utilities Inc. and its subsidiaries (EUI) in connection with developing an asset or the acquisition of an asset (property, plant and equipment and intangible assets such as software). Normally, costs related to the project will occur over a period of time and the project itself may terminate at any time if it is determined that it will not provide sufficient future economic benefits.

2.2 Assets that are capitalized in connection with this policy are subject to the capitalization criteria in the FA-004 Capitalization and Acquisition Costs policy. Similar criteria will apply to intangible assets such as software.

3. Types of projects

EUI undertakes a variety of types of projects. The types that are contemplated in this policy or other policies and the business units that undertake them are as follows:

(a) Customer acquisition projects (Energy Services, Water Services) – refer to separate policy (FA-002 Customer Acquisition Costs policy).

(b) PP&E/plant asset projects (primarily D&T and Water Services).

(c) Information system (IS) projects including the development, betterment or acquisition of software for internal use.

EPCOR Utilities Inc. Finance and Accounting Policy and Procedures			
Topic	**Project Development Costs**	Number	FA-005
Category	Property, Plant and Equipment Other Intangible Assets		
Issued by	Accounting Standards Committee	Issued and Effective	Sep 23, 2004
Approved by	Corporate Controller	Revised	Oct 9, 2011

(d) Business process reengineering projects which could also include an element of development, betterment or acquisition of equipment and/or software for internal use.

4. Definitions

4.1 **Assessment stage** – prior to time when construction, development or acquisition of specific PP&E or software becomes probable.

4.2 **Pre-acquisition stage** – construction, development or acquisition of specific PP&E or software is probable but has not yet occurred.

4.3 **Acquisition or construction or application development stage** – acquisition has occurred or development or construction has commenced but PP&E or software is not yet substantially complete and ready for its intended use.

4.4 **In-service or post-implementation/operation stage** – subsequent to when PP&E or software is substantially complete and ready for its intended use.

4.5 **Probable** – likely to occur, management estimate of greater than 80% for projects where management can make an assessment. For projects requiring regulatory approval, it is not likely that management can make this assessment as they have no control over the outcome.

4.6 **Directly identifiable costs** include only:

(a) incremental direct costs incurred in transactions with independent third parties related to specific assets,

(b) certain costs directly related to specified activities (such as employee payroll and payroll benefit-related costs and inventory used directly in the construction or installation of assets) performed by the entity for the specific asset, and payments to obtain an option to acquire an asset.

5. Policy

5.1 Assessment stage costs, except for payment to obtain an option to acquire an asset, should be charged to expense as incurred.

5.2 Pre-acquisition and acquisition-or-construction stage costs should be charged to expense as incurred unless the costs are directly identifiable with the specific asset.

5.3 Costs related to assets that are incurred during the in-service stage, including costs of normal, recurring, or periodic repairs and maintenance activities, should be charged to

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expense as incurred unless the costs are incurred for (1) the acquisition of additional assets or (2) the replacement of the existing asset.

5.4 Capitalized pre-acquisition costs should be included in the cost of the specific asset upon its acquisition or development. If it becomes no longer probable that the specific asset will be acquired or developed, the pre-acquisition stage costs previously capitalized related to the specific asset should be reduced to the lower of cost or fair value less cost to sell. Normally, the fair value of those pre-acquisition stage costs (excluding option costs) is zero (that is, the costs of the asset would be charged to expense), unless management, having the authority to approve the action, has committed to a plan to sell the asset and the proceeds can be reasonably estimated. This determination would be made at each quarterly and annual reporting period.

5.5 Refer to FA-004 Capitalization policy for capitalization criteria including thresholds.

5.6 Refer to Appendix A – PP&E/Plant Asset Projects Capitalization/Expense Matrix for further guidance in applying these policy statements.

5.7 The cost of business process reengineering activities, whether performed by employees or by third parties, should be expensed as incurred. This also applies when the business process reengineering activities are performed in conjunction with the acquisition, development or implementation of software for internal use.

5.8 Costs of the acquisition, construction or development of property, plant and equipment of a business process reengineering project should be accounted for in accordance with the policy for PP&E/Plant Asset Projects as above and with the capitalization criteria in FA-004 Capitalization policy.

5.9 Costs of activities directly attributable to the development, betterment or acquisition of software for internal use, should be accounted for on a stage or time-line basis as follows:

5.9.1 IS software application development stage costs should be charged to expense as incurred unless the costs are directly identifiable with specific software in which case the costs can be capitalized.

5.9.2 IS software application post-implementation/operation stage costs should be expensed as incurred.

5.10 Refer to Appendix B – IS Projects Capitalization/Expense Matrix for further guidance in applying these policy statements.

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Approved by	Corporate Controller	Revised	Oct 9, 2011

6. References

IAS 16 – Property, Plant and Equipment

IAS 38 – Intangible Assets

7. Attachments

Appendix A – PP&E Project Development Costs Capitalization/Expense Matrix

Appendix B – IS Project Development Costs Capitalization/Expense Matrix

EPCOR Utilities Inc. Finance and Accounting Policy and Procedures			
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Issued by	Accounting Standards Committee	Issued and Effective	Sep 23, 2004
Approved by	Corporate Controller	Revised	Oct 9, 2011

Appendix A – PP&E/Plant Asset Projects

Project Development Costs Capitalization/Expense Matrix

Accounting Treatment	Stages and Characteristics	Plant Asset Projects Phases and Characteristics
Expense as incurred except for payments to obtain an option to acquire PP&E	**Assessment stage** (prior to time when acquisition of specific asset becomes probable). Typically includes costs of consideration of alternatives, feasibility studies costs and costs of other activities occurring prior to decision to select specific asset.	**Phase I** (25 per cent likelihood of succeeding). Includes costs of customer contact, plant configuration, preliminary estimates, engineering and economic modelling with the preparation of a memorandum of understanding and a preliminary business case. **Phase II** (50 per cent likelihood of succeeding). Includes costs of detailed study of proposal including engineering design, permitting, capital cost estimates, fuel management, power sales, market forecasts, financing, etc. with the preparation of a letter of understanding and a detailed business case.
Expense as incurred unless the costs are directly identifiable with the specific asset	**Pre-acquisition stage** (acquisition of specific asset is **probable** but has not yet occurred). Typically includes costs such as surveying, zoning, engineering studies, design layouts, traffic studies, etc. (these costs may also occur in preliminary stages).	**Phase III** (80 per cent likelihood of succeeding). Includes costs of very detailed review such as filing for permits, contractor requests for proposals (RFPs) and requests for qualifications (RFQs) with executed documents and agreements as the final result.
Capitalize costs directly identifiable with specific asset	**Acquisition or construction stage** (acquisition has occurred or construction has commenced but PP&E is not yet substantially complete and ready for its intended use). Costs of acquisition, construction or installation of PP&E, engineering work, design work, etc.	

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Appendix A – PP&E/Plant Asset Projects **Project Development Costs Capitalization/Expense Matrix**		
Accounting Treatment	Stages and Characteristics	Plant Asset Projects Phases and Characteristics
Expense as incurred except for acquisition of additional components or replacements/betterments	**In-service stage** (subsequent to when PP&E is substantially complete and ready for its intended use). Replacements, additions to existing PP&E, repairs and maintenance.	

Appendix B – IS Projects **Project Development Costs Capitalization/Expense Matrix**		
Accounting Treatment	Stages and Characteristics	Stages and Characteristics
Expense as incurred	**Business process reengineering activities** • Preparation of request for proposal • Current state assessment – the process of documenting the current business process, except as it related to current software structure. • Process reengineering – the effort to reengineer business processes to increase efficiency and effectiveness. • Restructuring work force – the effort to determine what employee make-up is necessary to operate the reengineered business processes.	

EPCOR Utilities Inc. Finance and Accounting Policy and Procedures			
Topic	**Project Development Costs**	Number	FA-005
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Approved by	Corporate Controller	Revised	Oct 9, 2011

Appendix B – IS Projects

Project Development Costs Capitalization/Expense Matrix

Accounting Treatment	Stages and Characteristics	Stages and Characteristics
Expense as incurred	**Assessment software project stage activities** (prior to time when development, betterment or acquisition of software becomes probable): • Conceptual formulation of alternatives. • Evaluation of alternatives. • Determination of needed technology. • Final selection of alternatives.	**Assessment/planning stage** • Needs and risk assessment, cost benefit analysis and feasibility study. • Project concept document for management approval – time and cost budgets. • Definition of users's needs, business and performance requirements. • Assessment of needed technology and hardware. • Formulation, benchmarking, evaluation, selection of alternatives. • Business, project, budget and resource planning and strategic decisions.
Expense as incurred unless the costs are directly identifiable with specific software	**Pre-acquisition stage activities** (development or acquisition of software is probable but has not yet occurred): • Project charter for probable specific software.	
Capitalize costs directly identifiable with the specified software	**Application development stage activities** (acquisition has occurred or development has commenced but software is not substantially complete and ready for its intended use): • Design of chosen path, including software configuration and software interface. • Coding. • Installation to hardware. • Testing including parallel processing phase. • Data conversion costs to develop or obtain software that allows for access of old data by new system.	**Application development stage** • Definition of functional and system specifications including current sate assessment relating to the current software structure. • Design of chosen path, including software configuration and software interface. • Construction and coding. • Testing. • Installation to hardware. • Costs to develop or obtain software that allows for access or conversion of old data by the new system – migration of old data to new system.

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Appendix B – IS Projects

Project Development Costs Capitalization/Expense Matrix

Accounting Treatment	Stages and Characteristics	Stages and Characteristics
Expense as incurred	**Post-implementation/operation stage activities** (subsequent to when software is substantially complete and ready for its intended use): • Training of users. • Application maintenance. • Ongoing support.	**Operation stage** • Training and procedure manuals • Application maintenance (that is not a betterment). • User administration activities. • Communication and change management. • Ongoing support/warranty • Process of creating or converting data, i.e. purging, cleansing, mapping, reconciling, balancing.
Capitalize (per PP&E project development costs policy/matrix)	**Acquisition of PP&E** • Purchase of new computer equipment, office furniture or work stations. • Reconfiguration of work area – architect fees and hard construction costs.	

EPCOR Utilities Inc. Finance and Accounting Policy and Procedures			
Topic	**Standard Rates and Burden Rates for Project and Activity Costing**	Number	FA-011
Category	Property Plant & Equipment and Operating Expenses	Revision Number	1
Issued by	Accounting Standards Committee	Issued and Effective	Jan 1, 2008
Approved by	Corporate Controller	Revised	Oct 9, 2011

1. Purpose and Scope

1.1. The Standard Rates and Burden Rates policy provides guidance on how to measure the cost of employee time spent on and transferred to capital projects or operating activities outside the employee's home department for the purpose of preparing general purpose financial statements in accordance with International Financial Reporting Standards (IFRS). Capital projects may relate to items of property, plant & equipment (PP&E) or intangible assets.

1.2. This policy should be applied consistently by all EPCOR entities, with the exception of any entities governed by management agreements (e.g. joint ventures) to the extent they have specific contractual criteria governing standard rates and overheads costing which are not consistent with this policy.

2. Definitions

2.1. **Standard rate** – the hourly salary or wage rate established for a job within EPCOR, based on the criteria described in section 4, for purposes of costing employee time spent on capital or operating projects or activities.

2.2. **Employee benefits** – the cost to EPCOR of employee benefits provided in exchange for services rendered by an employee. Employee benefits include short-term employee benefits and post-employment benefits as defined below.

2.3. **Short-term employee benefits** – employee benefits (other than termination benefits) that are due to be settled within twelve months after the end of the period in which the employees render the related service.

Examples include but are not limited to medical and dental plan benefits, long term disability (LTD), Canada Pension Plan (CPP) and Employment Insurance (EI) benefits, worker's compensation insurance (WCB), short-term compensated absences such as paid annual vacation, bonuses and other profit-sharing such as the EPCOR Savings Plan for non-bargaining unit staff**.**

2.4. **Termination benefits** – employee benefits payable as a result of either

- an entity's decision to terminate an employee's employment before the normal retirement date; or
- an employee's decision to accept voluntary redundancy in exchange for those benefits.

2.5. **Post-employment benefits** – employee benefits (other than termination benefits) which are payable after the completion of employment.

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Examples include defined contribution pension plans and defined benefit pension plans (e.g. Local Authorities Pension Plan or LAPP).

2.6. **Overhead costs** –costs directly attributable to an operating activity or to the acquisition or construction of PP&E to bring an asset to the location and condition necessary for it to be capable of operating in the manner intended by management. If the activity did not occur, directly attributable costs would not have been incurred. An example of a directly attributable overhead cost is the cost of employee benefits arising directly from employee's service in performing the operating activity or in the construction/acquisition of an item of PP&E.

2.7. **Burden rate** – a rate or series of rates representing specific Overhead Costs applicable to measuring the cost of capital or operating activities.

2.8. **In-scope employees** – employees who perform jobs which participate in a union pursuant to a collective bargaining agreement with EPCOR Utilities Inc.

2.9. **Rate-ups** – Incremental increases of in-scope employees' hourly rates based on temporarily performing higher-paying job duties compared with those in which they are currently employed, pursuant to a collective bargaining agreement.

2.10. **Shift differentials** – Incremental rate premiums paid to in-scope employees for hours worked during premium rate shift hours, pursuant to a collective bargain agreement.

3. Policy

3.1. The cost of employees' time is included in the cost of an operating or capital activity based on the actual hours for which each employee's time is directly attributable to the activity, measured by applying the hourly Standard Rate determined in section 4 below. The offsetting recovery or credit of time charged to an activity is reflected in the general ledger in the same Oracle responsibility centre where the original salary and wage cost for the employee was recorded (i.e. the employee's home account).

3.2. Burden Rates established by this policy to measure directly attributable Overhead Costs are reflected in the cost of an operating or capital activity with the credit or recovery reflected in such a manner as to offset the actual related costs. Section 4 of this policy provides specific guidelines on which Overhead Costs may be included in the burden rates.

3.3. The standard rates and burden rates established in accordance with this policy should be updated annually, or more frequently if events occur which

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indicate a revision is required. This update should be performed in accordance with section 5 of this document.

3.4. Standard rates and burden rates should be reviewed for reasonability in comparison to actual pay rates and applicable overhead costs (e.g. fringe benefits) at least annually or more frequently when there are indications that the standard or burden rates are significantly under-recovering or over-recovering the cost of employee time and related benefits and overheads. This review should be performed in accordance with section 7 of this document.

4. Components of Standard Rates and Related Overheads

4.1. Standard Rates for regular time are comprised of a reasonable proxy of the hourly pay rate for in-scope employee positions based on the highest step rate as disclosed in the collective bargaining agreements, and an average of actual hourly compensation for out-of-scope hourly employees. See Appendix A for specific guidelines on Standard Rate calculations.

4.2. Overtime rates are calculated by applying a multiplier (i.e. 2 times) to the standard hourly rate for in-scope employees and specifically exclude management/out-of-scope employees not specifically compensated for overtime hours. See Appendix A for specific guidelines on overtime rate calculations.

4.3. Overheads or burdens applied to standard rates are comprised of:

4.3.1. Employee benefits – a standard percentage rate should be established for organizations within EPCOR that reasonably represents the employer's share of employee benefit costs relating to both short-term benefit costs and post-employment benefit costs.

4.3.2. Paid annual vacation benefits, statutory holidays, management's scheduled days off and personal leave days will be included in Burden Rates for the purpose of project costing. Although most of these paid days off are non-accumulating absences (do not carry forward), they are not coded to the project and therefore must be included in the burden rate to recognize the true project cost. Since these costs all relate to the time spent on the project, they are considered to be a directly attributable cost of the project.

4.3.3. A reasonable estimate of the impacts of rate-ups and shift differentials for certain in-scope positions based on historical information and the current collective bargaining agreement.

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4.3.4. Employee incentive – variable incentive pay meets the definition of an overhead cost or burden under this policy. However, it is EPCOR's practice to include incentive pay allocated to capital work activity through its capital overhead rates - see EPCOR's Capital Overhead Policy (FA-010). As a result, the employee incentive is not included in the burden rate calculations referred to in 4.3.5 below to avoid duplication with capital overhead rates. Operating activity salary transfers between legal entities are not material to warrant a separate burden rate for incentive pay on operating salary transfers.

4.3.5. Refer to Appendix B for guidelines for calculating burden rates.

4.4. The following are specifically prohibited from inclusion in overheads and burdens applied to standard rates:

4.4.1. Termination benefits paid to former employees.

4.4.2. Costs of opening a new facility.

4.4.3. Costs of introducing a new product or service (including costs of advertising and promotional activities).

4.4.4. Costs of conducting business in a new location or with a new class of customer (including costs of staff training)

4.4.5. Administration and other general overhead costs.

5. Revisions to Standard Rates and Burden Rates

5.1. Standard rates shall be revised by the Human Resources group annually or more often, as follows:

5.1.1. At the beginning of a fiscal year to reflect increments in collective bargaining agreements for in-scope employee positions and to reflect estimated cost of living adjustments for management or out-of-scope employee positions;

5.1.2. At the time of effective approval of a revised collective bargaining agreement for in-scope employee positions, or a change in pay bands for management or out-of-scope employee positions;

5.1.3. At the time of introduction of a new in-scope employee position or management/out-of-scope employee pay band; and/or

5.1.4. When the regular monitoring of reasonability of standard rates (see section 7 below) gives rise to a need for adjustment of the standard rates.

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5.2. Burden Rates shall be reviewed for reasonability in comparison to actual fringe benefit and other applicable overhead costs at least annually, as part of the budgeting process. See paragraph 7.1 below.

5.3. Retroactive adjustments to standard rates and burden rates – standard and burden rates are used to approximate the cost of labour and related overheads using standard (not actual) rates. In general, there should not be retroactive adjustments to the rates applied to previously charged operating and capital activities/projects unless the lack of adjustment results in material misstatement of a legal entity's results.

6. Responsibility for Determination and Approval of Standard and Burden Rates

6.1. Standard rates should be calculated for use across EPCOR rather than being business unit specific. The calculations should be performed centrally by the Human Resources group, with (1) appropriate knowledge of this policy and related accounting standards, and (2) the skills necessary to perform the calculations.

6.2. Generally, burden rates should be calculated for use across EPCOR business units. However, where there are unique business unit-specific burden types or rates which are determined to be necessary to appropriately reflect costs of operating or capital activities in accordance with IFRS, consideration may be given to application of business unit-specific burden types and rates. For example, fringe benefit or vacation costs if they vary significantly by business unit may justify the establishment of unique rates to meet individual legal entity reporting requirements.

6.3. The Standard and Burden Rates should be reviewed and approved by a senior financial manager with the appropriate knowledge and skills to perform the review.

7. Monitoring Reasonability of Standard Rates and Burden Rates

7.1. Since the setting of standard rates and burden rates relies on estimates and averages of actual pay rates and actual related overhead costs such as fringe benefits, there is the possibility of over-recovery or under-recovery of actual costs. The Corporate Accounting Reporting group should coordinate at least an annual review of salary and burden recoveries compared to actual costs at a legal entity level. The recommended time period for the annual review is the second quarter to allow sufficient time for adjustment to rates prior to year-end and budget preparations for the upcoming year.

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7.2. The analysis and conclusion as to the reasonability of the rates will either directly involve a Business Unit Controller or their designate, or there should be communication to each Business Unit Controller on the results for their consideration and agreement. If the rates are determined to result in material error, action should be taken to adjust them pursuant to sections 5 and 6 above.

7.3. The reasonability review should take into consideration the materiality levels of the individual legal entity if they involve external reporting requirements and materiality levels for EPCOR Utilities Inc. on a consolidated basis.

8. References

IAS 16 – Property, Plant and Equipment

IAS 19 – Employee Benefits

IAS 38 - Intangible Assets

9. Related EPCOR Policies, Procedures and Guidelines

FA-004 Capitalization Policy

FA-010 Capital Overhead Policy

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Appendix A: Procedures/Guidelines for Calculation of Standard Rates

The following are guidelines used by Human Resources for calculating standard rates for regular time:

In-scope hourly employees:

For each job (also commonly referred to as "job grade" or "job title") identified in a collective bargaining agreement, use the top tier or highest step hourly pay rate as the standard rate for that job. A 2009 analysis of actual pay rates indicated that the top step rate is not significantly different from the average pay rate for most jobs across EPCOR. For simplicity, rates should be rounded to the nearest dollar.

Out-of-scope hourly employees:

For out-of-scope hourly (OOSH) employees, use the top tier or highest step. OOSH employees are not party to a formal collective bargaining agreement because they relate to employees outside of Edmonton who joined EPCOR through acquisition of an operation. In the absence of this information an average of the previous year's hourly wage indexed to inflation, as per the Bank of Canada, should be substituted as the top tier pay-step. For simplicity, rates should be rounded to the nearest dollar.

Management and other non-hourly out-of-scope employees:

For management and other non-hourly out-of-scope employees, the average hourly pay rate for each pay band is determined as follows:

- Review the annual compensation "target" for each pay band, and the % that actual average compensation is of that target. This information is available across all business units and also on an individual BU basis.
- If All business units' % of target is consistent or representative of that individual business unit's %, for each pay band multiply the "target" by the % of target using the all business units' %. This provides a measure of the average compensation for each pay band Divide the product of this calculation by standard annual paid hours worked – which for 261 standard work days at 8.0 hours of work per day = 2,088 hours. For simplicity, rates should be rounded to the nearest dollar.

  For example, if the average compensation for M1 level managers is 92% of target and target compensation is say $75,000 the hourly rate would be set as (92% * $75,000 / 2,088) = $33.05, rounded to $33.00.

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Appendix A: Procedures/Guidelines for Calculation of Standard Rates (continued)

The following procedures shall be applied for calculating Standard Rates for overtime:

- Overtime rates are calculated by applying a multiplier of 2 (i.e. 2 times) to the standard hourly rate for ***in-scope employees and out-of-scope hourly*** employees to reflect “double-time” rates pursuant to a collective bargaining or other agreement..
- A multiplier of 0 is applied to overtime hours reported by ***management/out-of-scope non-hourly*** employees. This is to reflect the fact that management staff are not specifically compensated for overtime (paid on annual salary basis).

The above procedures/guidelines may be amended as long as they conform to the general policy requirements outlined in section 4 of this policy document.

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Appendix B: Procedures/Guidelines for Calculation of Burden Rates

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The following suggested procedures and guidelines may be applied for calculating Burden Rates applied to salary and labour transfers in the general ledger.

Employee benefits:
A rate may be calculated for EPCOR based on forecasted or actual total costs of the following examples of employee benefits as a proportion of total forecasted or actual salary and wage costs:

- Medical and dental plans,
- CPP and EI benefits
- Pension benefits (LAPP and other pensions)
- Health care including long-term disability
- Worker's compensation
- EPCOR Savings Plan for non-bargaining unit staff
- Shepell costs related to the Employee Assistance Program
- Sunlife administrative fees
- Wellness plan.

Information related to the costs of these benefits will be available from Human Resources and/or related payroll systems.

Vacation benefits:
Vacation benefits rates may be calculated by obtaining information from Human Resourceson average vacation entitlements across EPCOR as a proportion of total working days. For example, if the average vacation entitlement was approximately 19 days and total working days were 261 for a vacation benefit rate of approximately 7%.

Statutory Holidays, Management Scheduled Days Off and Personal Leave Entitlement :
Statutory holidays, management scheduled days off and personal leave benefit rates may be calculated by obtaining workforce information from Human Resources and calculating average entitlements across EPCOR as a proportion of total working days. Since entitlement varies based on employee status, a weighted average entitlement is calculated to reflect average days off for the entire EPCOR workforce for each type of paid day off. The weighted average number of days off is then calculated as a percentage of total working days in the year.

Rate-ups/Shift-differentials:
A rate may be calculated with respect to rate-ups and shift differentials by obtaining historical information on the cost of these pay adjustments as a proportion of total base salary & labour costs.

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The above procedures/guidelines may be amended as long as they conform to the general policy requirements outlined in section 4 of this policy document.

1.0 Overview

1.5 Utility System Plan Overview

The Utility System Plan (USP) is a consolidated, standalone document outlining the utility's asset management approach and capital expenditure plan. The USP provides interested stakeholders with the information required to determine if a utility is meeting the objectives outlined under the Ontario Energy Board's (OEB) Renewed Regulatory Framework (RRF). These objectives, as described by the OEB in the Handbook for Utility Rate Applications (2016), are:

i. Customer Focus: Utilities are expected to demonstrate value for money by delivering genuine benefits to customers and by providing services in a manner which is responsive to customer preferences.
ii. Operational Effectiveness: Utilities are expected to demonstrate ongoing continuous improvement in their productivity and cost performance while delivering on system reliability and quality objectives.
iii. Public Policy Responsiveness: Utilities are expected to consider public policy objectives in their business planning and to deliver on the obligations required of regulated utilities.
iv. Financial Performance: Utilities are expected to demonstrate sustainable improvements in their efficiency and in doing so will have the opportunity to earn a fair return.

The USP typically summarizes capital expenditures for a 10-year period, five historical years including the bridge year and a five year forecast including the test year.

EPCOR Natural Gas Limited Partnership (ENGLP) has prepared this initial USP approximately one year after acquiring the Aylmer natural gas distribution assets from Natural Resources Gas Limited (NRG). Given this relatively short time period, the historical information, metrics, and analysis that would typically form a material segment of a USP, and serve as the basis for forward looking asset management decisions, continue to evolve.

1.6 Key Elements of the USP

In the first year of ownership, ENGLP's asset management activities have focused on better understanding the current system constraints and seeking solutions to address these. In May 2018, ENGLP contracted Cornerstone Energy Services (Cornerstone) to complete an engineering study to:

i. Review the Aylmer distribution system and, given current peak system demands, identify system constraints that are likely to lead to unacceptable low pressure conditions.
ii. Given forecasted growth, identify system constraints that are likely to lead to unacceptable low pressure conditions through 2024.
iii. Identify and evaluate options to address the system constraints and resolve the unacceptable low pressure conditions identified.

The work completed by Cornerstone has been summarized in the 2018 System Integrity Study report attached in Appendix A. The study identified low pressure issues in and around Belmont and generally in the southern extents of the system, confirming recent observations by ENGLP operating staff. The situation will only worsen given anticipated growth.

The study identified and evaluated a number of options to address the system constraints. ENGLP considers it prudent to proceed with the resulting Belmont and Lakeview reinforcement projects in 2019 to ensure that current customers in these areas continue to receive reliable service. These project costs are reflected in the plan.

In addition to the above, the Ontario Ministry of Transportation (MTO) has indicated that it intends to start construction on improvements to the interchange of Westchester Bourne and Highway 401 in 2019, requiring ENGLP to relocate pipelines that will be in conflict. The costs to be borne by ENGLP are also reflected in the plan.

Given that ENGLP has not previously filed a full cost-of-service application and the nature of the capital expenditures planned for 2019, more information has been provided for the Bridge Year capital expenditures than might normally be included in the USP.

The budgeted capital spending for the 2020 Test Year and through the end of 2024 period is primarily related to annual programs and is more reflective of the norm.

1.6.1 Period Covered by the USP

This USP covers the period January 1, 2018, the first full year after ENGLP acquired the Aylmer distribution system assets, through December 31, 2024. This represent one historical year (2018), the 2019 Bridge Year and a five year forecast including the Test Year (2020 to 2024).

1.7 Customer Engagement

ENGLP is committed to providing customers with a safe and reliable supply of natural gas and excellent customer service. ENGLP will continue to measure and monitor customer expectations to ensure that ENGLP's operations are aligned with community interests and priorities.

In November 2018, ENGLP undertook a customer engagement survey to gather feedback from customers regarding investment in the distribution system and services. The survey was administered directly by ENGLP to customers and open to all customer rate classes.

The survey received 439 responses with 80% of respondents "satisfied" or "very satisfied" with the level of service they receive. When asked about the most important aspect of their natural gas service, 64% of respondents stated it was keeping their rates/bills low while the second highest group of respondents (25%) stated service reliability was most important. As a result, ENGLP's 2019 communication plan will incorporate various channels to continue educating customers on service reliability and conservation measures that will help them increase their energy efficiency.

When ENGLP executes its capital plan to improve the infrastructure and enhance service reliability, certain customers will be temporarily affected by construction and/or service disruptions. This activity is comparable to planned outages thus similar communication tactics will be used to notify customers, including phone calls and in-person visits to customers' homes, as well as customer letters in advance of construction. Should planned disruptions affect a large segment of ENGLP's service territory, ENGLP will also use banners on the website and notices at the administration office.

Should improvement activity result in unplanned outages, ENGLP Field Technicians will speak with customers in person or leave a notice at the customers' premises should they not make contact with them. As mentioned above, customers will have received a letter notifying them in

advance of construction activity so should an outage occur they have contact information and know the steps to take to remain safe while ENGLP restores service.

While just 26% of respondents provided their contact information to receive more information on EPCOR's upcoming cost of service application, ENGLP has developed a stakeholder engagement plan to ensure all customers are aware of planned improvements. As part of this engagement plan, ENGLP will host an open house in Aylmer, Ontario. The details of the USP and the communications activity surrounding it will be discussed at the open house. This will provide an opportunity for personal contact with interested stakeholders, allowing them to provide feedback and have their questions about the USP answered. Customers will be invited to attend the open house through bill notices, postings at the administration office and on the EPCOR website, as well as through a print advertisement in the Aylmer Express.

Details of the USP will also be posted on the EPCOR website and on display boards at the administration office. This will be included with information and updates related to the status of the cost of service application.

2.0 Asset Management Process

2.1 Asset Management Process Overview

The asset management process is the systematic approach a utility uses to inventory and monitor the condition of its physical assets, set target levels of service, evaluate risks, and use this information to make informed asset investment decisions.

In the first year of ownership, ENGLP's asset management activities have focused on better understanding the current system constraints and seeking solutions to address these. The 2018 System Integrity Study confirmed two key areas of weakness within the natural gas distribution system and identified prudent solutions now planned to be implemented in the 2019. With these immediate issues addressed, the utility can begin to focus on the next steps.

ENGLP will implement an asset management framework consistent with *ISO 55000 Standards for Asset Management* and the more specific requirements of *CSA Z662 Standard for Oil and Gas Pipeline Systems*. The framework and asset management plans, founded on the principles of

continuous improvement, will continue to evolve over time based on requirements and priorities and will drive capital investment, maintenance and retirement planning.

ENGLP will continue to update its asset inventory and associated data, assess the infrastructure and refine its asset management plan. These activities will feed into the capital planning process and will likely result in further refinement of the USP and associated projects, programs and priorities.

2.1.1 Asset Management Policy, Strategy and Objectives

ENGLP recognizes that asset management is critical to achieving its business objectives and moving toward its vision of being a premier essential services company, trusted by our customers and valued by our shareholder. ENGLP is committed to managing assets in an optimal, sustainable, efficient, safe and environmentally responsible manner, meeting all applicable laws, regulations, standards and codes.

The utility will achieve this by focusing and continually improving upon the following principles:

i. Considering the entire lifecycle of the asset, seeking to minimize the total cost of acquiring, constructing, operating, maintaining, and disposing of assets while recovering that cost and earning a return on our investment.
ii. Assessing and managing risks in accordance with EPCOR's risk management framework to minimize the adverse impacts to public and worker safety, environment, regulatory compliance, reputation, and finances.
iii. Developing maintenance, operation, and reliability strategies as well as capital programs to ensure safe and reliable delivery of natural gas to our ratepayers.
iv. Developing and continuously improving upon a framework to ensure that asset management within ENGLP is integrated, sustainable, systematic, measured, and assessed.
v. Making asset management decisions based on complete, timely, and accurate asset data, using a holistic evaluation of alternatives that balance asset lifecycle cost, risk, and benefit while maintaining customer satisfaction.

vi. Building and maintaining asset management capabilities through the development and retention of the right mix of talented, competent, and motivated team members.
vii. Identifying and engaging public, industry, and government stakeholders in the management of our assets.

2.1.2 Components of the Asset Management Process

Through the asset management process, ENGLP endeavors to answer the following questions:

i. What is the current inventory of asset managed, what is the age and condition, and how much life remains?
ii. What are ratepayer's needs and expectations for natural gas service?
iii. Which assets are most critical to meeting the customer service goals and objectives?
iv. What are the linkages and trade-offs between capital and ongoing operations and maintenance spending?
v. What is the most prudent investment strategy?

As it better understands its assets, ENGLP will begin implementing a more formalized asset management framework, and specific asset management strategies and plans, which optimize lifecycle cost and value to the ratepayer. In its asset management plan, ENGLP will draw on the expertise and experience developed from its affiliate companies that own regulated electrical, water and wastewater assets.

A complete and accurate asset registry, or inventory, is key to the process. As the utility continues to build upon the recently implemented UMS and workflow management software and GIS capabilities, it will better positioned for the future.

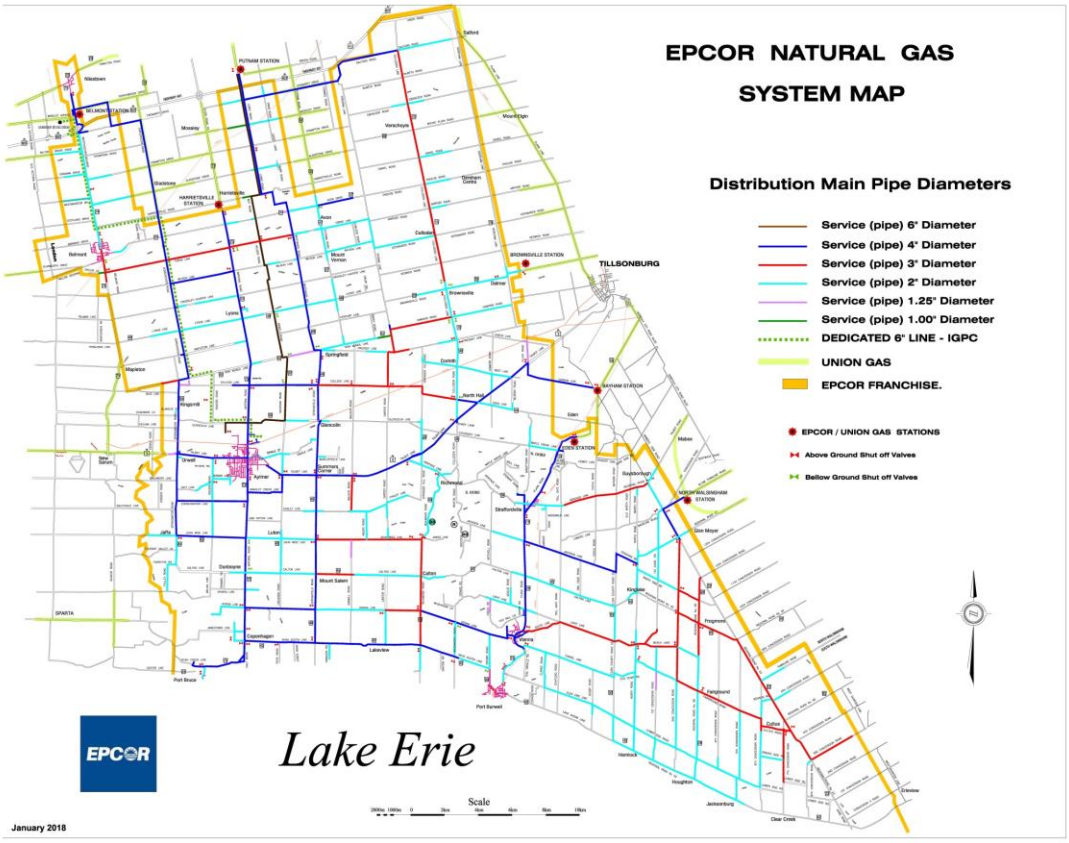
At its foundation, the asset management process is risk-based. ENGLP will proactively evaluate risk and criticality of the natural gas distribution assets and use this information in crafting maintenance and monitoring strategies. The utility will continue to assess and manage risks in accordance with EPCOR's risk management framework and in keeping with the more specific requirements of a System Integrity Management Program under CSA Z662.

Ongoing condition monitoring of assets allows the utility to measure and track the effectiveness of the asset management strategies implemented and is an important component of the System Integrity Management Program. ENGLP will continue and improve upon current condition monitoring practices and programs based on risk and consistent with industry accepted practices.

2.2 Overview of Assets Managed

A map of the ENGLP Aylmer natural gas distribution system is shown in Figure 2.2-1.

Figure 2.2-1
ENGLP Aylmer Natural Gas Distribution System Map



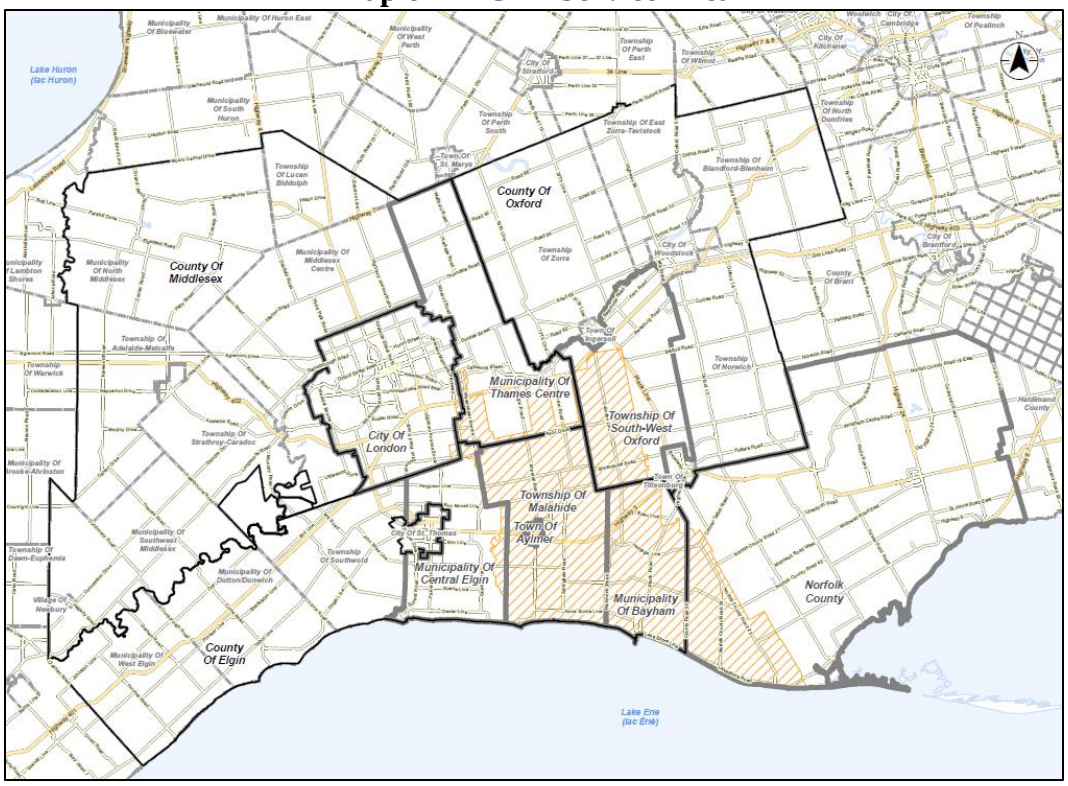
2.2.1 Service Area Description

ENGLP distributes natural gas to customers in and around Aylmer, Ontario, with its service area stretching from south of Highway 401 to the shores of Lake Erie, from Port Bruce in the west to Clear Creek in the east. It provides natural gas service to customers in Townships of Malahide

and South-West Oxford; Municipalities of Bayham, Thames Centre and Central Elgin; and Norfolk County. The system serves the individual communities of Aylmer, Belmont, Brownsville, Port Burwell, Springfield, Straffordville, and Vienna. A map of the service area is shown in Figure 2.2.1-1.

ENGLP serves approximately 9,000 customers under six established rates classes and four categories (Residential, Commercial, Seasonal and Industrial). The annual average consumption of its customers is approximately 63,500,000 m^3. The largest customer, the Integrated Grain Processors Co-operative Aylmer Ethanol Production Facility (IGPC) consumes approximately 34,000,000 m^3 annually and growing due to a recently completed expansion.

Figure 2.2.1-1
Map of ENGLP Service Area



2.2.2 System Description

The system is comprised of approximately 800 km of distribution mains, constructed of 6 inch diameter and smaller polyethylene (PE) pipe, being fed by seven custody transfer points with Union Gas and 38 gas wells in the southeast. The wells are owned and operated by a third-party,

On-Energy Corp. There is are seven main metering and regulating stations throughout the system, one at each of the Union Gas custody transfer points: Belmont Station, Harrietsville Station, Putnam Station, Brownsville Station, Bayham Station, Eden Station, and North Walsingham Station. Additional smaller regulating and control stations are distributed throughout the system.

Additionally, a 30 km dedicated 6 inch steel pipeline operating at a higher pressure feeds the largest industrial customer, IGPC. A pressure regulating and metering station is located on the downstream end of this pipeline.

2.2.3 Asset Years in Service and Condition

The age distributions of active distribution mains, services and meters are shown in Figures 2.2.3-1 through 2.2.3-3, respectively. This information is based on the current available asset records.

Figure 2.2.3-1
Active Distribution Mains by Year of Installation

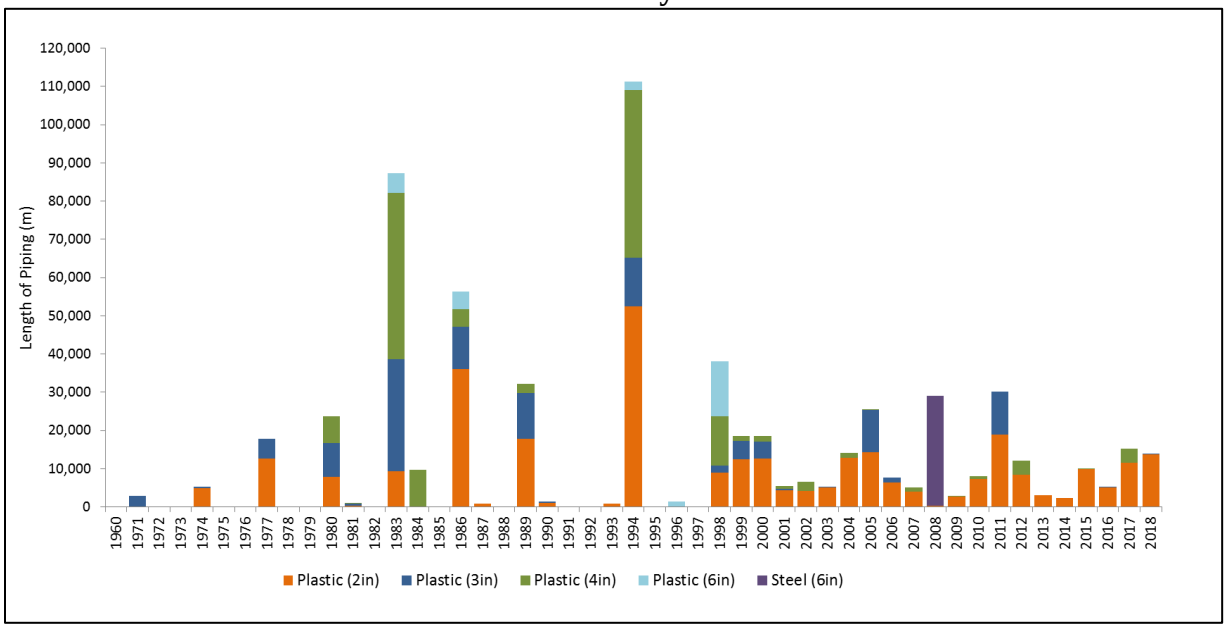


Figure 2.2.3-2
Active Services by Year of Installation

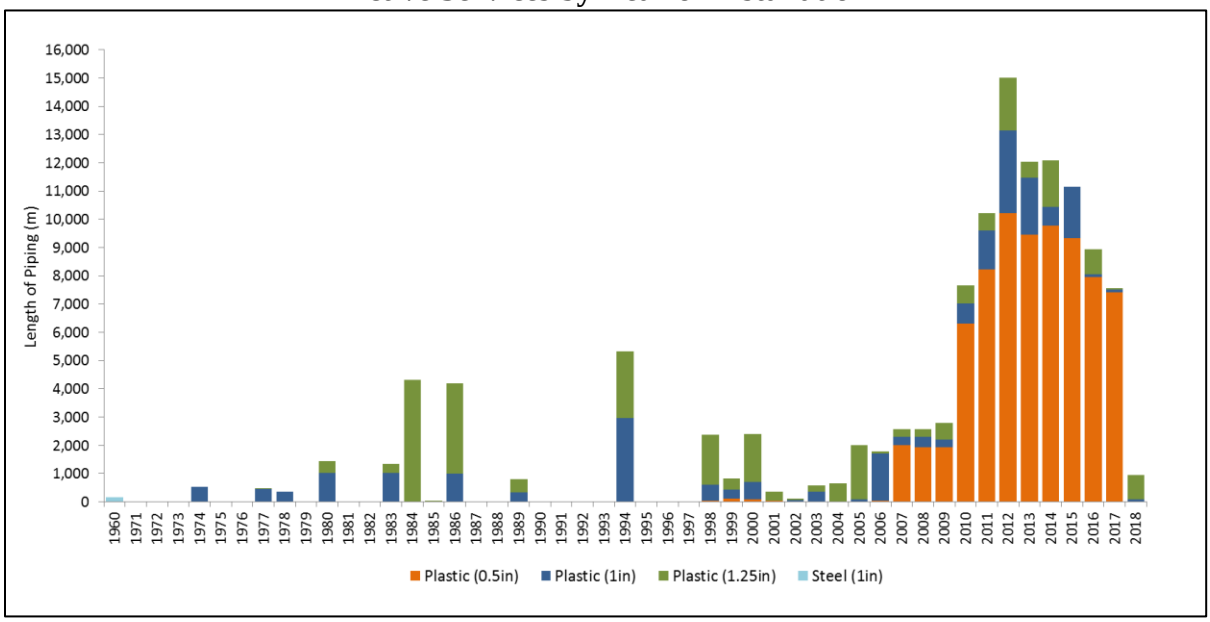
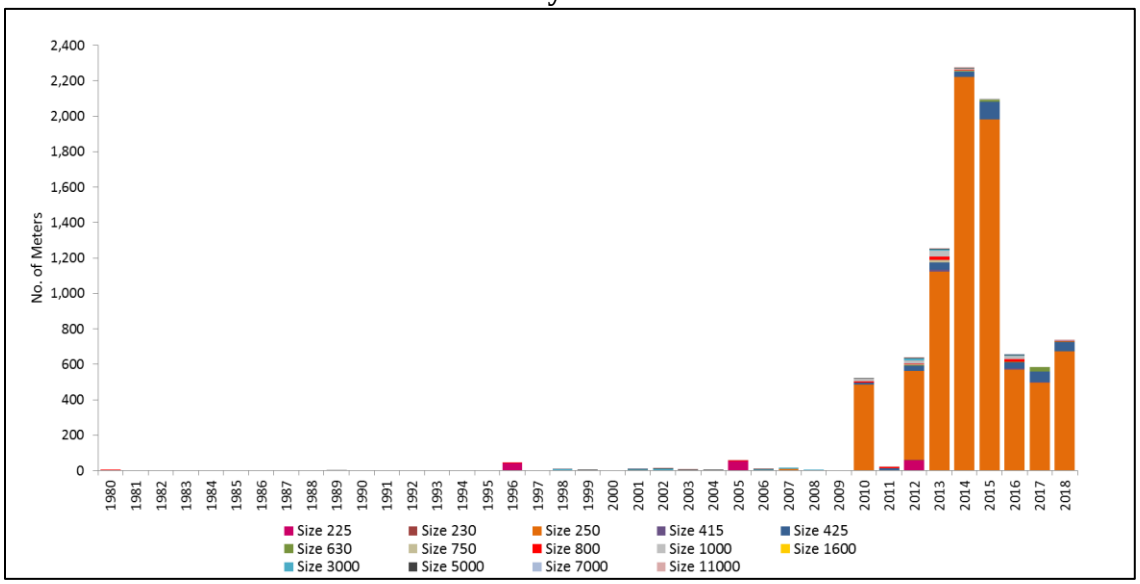


Figure 2.2.3-3
Active Meters by Year of Purchase



3.0 Capital Expenditure Plan

3.1 Capital Expenditure Plan Overview

Table 3.1-1 summarizes the capital budget for the period 2019 through 2024.

Table 3.1-1
Summary of Capital Budget
($)

	Project or Program	A 2019 Bridge Year	B 2020 Test Year	C 2021 2	D 2022 3	E 2023 4	F 2024 5
1	Belmont Reinforcement	439,000					
2	Lakeview Reinforcement	357,000					
3	IGPC Pipeline Realignment at Highway 401 Interchange	699,200					
4	SCADA Upgrade	283,000	128,000	42,000	43,000	44,000	45,000
5	Aylmer Office 2nd Floor Development	31,000	31,000				
6	UMS and Workforce Management Software	110,000	26,000				
7	Telephone System Replacement	129,000					
8	ARC GIS Mapping			106,000			
9	CNG Vehicle Fueling Station Recertification			53,000			
10	Main Additions	555,000	564,000	578,000	589,000	601,000	613,000
11	Service Additions	89,000	100,000	92,000	95,000	95,000	98,000
12	Meters	255,000	260,000	265,000	271,000	276,000	282,000
13	Regulating Stations	73,000	75,000	76,000	78,000	79,000	81,000
14	Regulators	71,000	73,000	74,000	76,000	77,000	79,000
15	Pipeline Markers	10,000	10,000	11,000	11,000	11,000	11,000
16	Fleet	108,000	47,000	133,000	49,000	50,000	51,000
17	Small Tools and Equipment	15,000	16,000	16,000	16,000	17,000	17,000
18	Computers and Office Equipment	10,000	10,000	11,000	11,000	11,000	11,000
19	**Total**	**3,234,200**	**1,340,000**	**1,457,000**	**1,239,000**	**1,261,000**	**1,288,000**
20	Additions from CWIP going into service	175,645	0				
21	**Additions to Gross Plant**	**3,409,845**	**1,340,000**	**1,457,000**	**1,239,000**	**1,261,000**	**1,288,000**

3.1.1 Total Annual Expenditures by Category

Capital investments can be broadly can be broadly grouped into the following categories based on the driver triggering the expenditure:

i. ***System access*** investments are modifications to the distribution system to provide a new customer or group of customers with access to natural gas service. This includes the relocation of distribution assets to accommodate infrastructure

development or modifications by a municipal or provincial authority, or other third-party (e.g. modifications to a highway interchange).

ii. ***System renewal*** investments are the lifecycle replacement distribution assets, or refurbishment to extend the original service life, ensuring system integrity and safe operation.

iii. ***System service*** investments are modifications to the distribution system to improve reliability, mitigate risk or introduce efficiencies and ensure that performance goals and objectives are met.

iv. ***General plant*** investments are additions, modification or replacements of assets used to support business, operations and maintenance activities but not part of the distribution system, such as fleet, tools and equipment, buildings and computers and software.

Planned capital expenditures, by investment category, for the period 2019 through 2024, are summarized in Tables 3.1.1-1 and 3.1.1-2. The forecasted expenditures for 2018 are included for comparison.

Table 3.1.1-1
Planned Capital Expenditures by Category
($ thousands)

		A	B	C	D	E	F	G
	Category	**2018 F -2**	**2019 Bridge Year**	**2020 Test Year**	**2021 F 2**	**2022 F 3**	**2023 F 4**	**2024 F 5**
1	System Access	1,433	1,181	451	451	461	468	479
2	System Renewal	510	502	490	501	512	520	532
3	System Service	149	1,275	269	187	190	194	198
4	General Plant	168	453	130	319	76	78	79
5	**Total**	**2,261**	**3,410**	**1,340**	**1,457**	**1,239**	**1,261**	**1,288**

Table 3.1.1-2
Planned Capital Expenditure by Category
(%)

		A	B	C	D	E	F	G
	Category	**2018 -2**	**2019 Bridge Year**	**2020 Test Year**	**2021 2**	**2022 3**	**2023 4**	**2024 5**
1	System Access	63.4%	34.6%	33.6%	31.0%	37.2%	37.1%	37.2%
2	System Renewal	22.6%	14.7%	36.6%	34.4%	41.3%	41.3%	41.3%
3	System Service	6.6%	37.4%	20.1%	12.8%	15.4%	15.4%	15.4%
4	General Plant	7.5%	13.3%	9.7%	21.9%	6.1%	6.2%	6.1%
5	**Total**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

3.1.2 5-Year Outlook

The key long term economic and planning assumption informing this USP is customer growth. Over the period covered by this plan, customer growth is expected to be consistent with the average growth experienced in the service area in historic years.

The Town of Aylmer is a vibrant community located in Southwestern Ontario close to the city of London. The community is strategically located with ready access to the 400 series highways, Buffalo and Detroit borders, and the major airports in London and Toronto.

The town is home to a busy commercial district and diverse industrial area, serving approximately 7,500 residents and a trade area of approximately 18,000 people.

The Town of Aylmer is home to many different businesses and industries primarily including green technology such as Ethanol production, food processing, composites and advanced manufacturing. The Ontario Police College is also located with the service area. The unemployment rate as of November 2017 was 9.1% which saw an average rate of decline of 3.9% from 2011 to 2016. Declines in unemployment rates reflect positive economic conditions in the community, as more people are finding jobs and businesses are likely thriving.

As ENGLP's historic customer growth has been relatively stable over a number of years, expectations on future natural gas prices do not seem to be a factor for customer growth for this utility and have not influenced the growth assumption of this USP.

ENGLP expects to continue expanding services within its existing franchise areas over the next five-year period of operations. In particular, this expansion is likely to occur south of Aylmer within the north shore Lake Erie region and also in the southwest Oxford area. Further growth in residential customers can also be anticipated in Belmont, which serves as a bedroom community for London, Ontario.

3.2 Capital Expenditure Planning Process Overview

Individual capital investments are selected and prioritized based on asset condition, forecasted growth, risk and benefit to the customer. The planning process takes into consideration trade-offs

between capital and OM&A spending, the gas supply plan and the longer term outlook of the utility.

Capital budgets are prepared and submitted by the ENGLP Aylmer management team in Q1 of the preceding year (e.g. 2019 budget submitted in Q1 2018). They are reviewed and approved by the senior management including the Controller, Vice President Ontario Region and the accountable Senior Vice President – in Q2 and, finally, the Boards of Directors in Q3.

Prior to spending, an updated project scope, cost estimate, options evaluation, and business case are documented in a Project Charter and circulated for approval.

Over the course of the term, ENGLP will continue to look for quantifiable improvements, cost savings and efficiency gains and take advantage of such opportunities, should they arise.

3.3 Historical Comparison

This is the first USP prepared by the utility and supports the first cost-of-service filing by ENGLP as the owner. As such, there are no previous plans to compare with the actual historical spend. The 2018 forecasted actuals are included in Tables 3.1.1-1 and 3.1.1-2 for comparison to the proposed plan.

Note the 2018 forecast total for investments related to system access includes a $600,000 capital expenditure to increase the capacity of the IGPC metering and regulating station. This work was completed in support of a production capacity increase at the IGPC facility.

3.4 Material Investments

Additional information related to the scope, drivers, and estimated investment for each of the planned projects and programs is included below. The estimates provided include contingency appropriate to the current level of scope definition, deemed project risks and the basis for the budget estimate (e.g., historical costs, preliminary engineering estimate).

3.4.1 Belmont Reinforcement Project (2019)

Belmont is currently fed from the north by a 2 inch PE main. The 2018 System Integrity Study (completed by Cornerstone) showed that the pressure drop through this main is now significant during periods of peak demand, leading to unacceptably low system pressures in the Belmont area. This confirms recent observations by operating staff.

Belmont is currently one of the fastest growing centers in the service area and the issue will only get worse as demands increase. To continue to ensure safe and reliable service to existing customers and support ongoing development in Belmont, reinforcement of the system is required.

Approximately 5 km of the Westchester Bourne pipeline between the Belmont Station and the village or Belmont is currently constructed of 2 inch PE pipe and the balance 4 inch. ENGLP plans to replace this 2 inch section with 4 inch PE pipe, reducing the pressure drop and thus addressing the pressure issue at Belmont. Approximately 30 services will need to be reconnected as part of this work. The estimated capital cost to complete this work, based on a preliminary engineering estimate, is $439,000.

ENGLP has deemed this a high priority project and deferring or not proceeding is likely to adversely impact the utility's ability to ensure safe and reliable service to existing customers.

The work is expected to be started and completed in 2019, and the asset in service by December 31, 2019.

3.4.2 Lakeview Reinforcement Project (2019)

The natural gas distribution system is currently fed at distribution pressure (80 psig) from the Enbridge Gas' Union South system at seven regulating and metering stations on the northern and western extents of the service area. Production from the connected well supply in the south has declined with time and now provides a small fraction of the overall gas supply requirement. Given the way the system has developed over time, customer growth and the declining well supply in the south, low system pressures in the south of the system have become a concern. To continue to ensure safe and reliable service to existing customers in the area, and support ongoing development and access to natural gas, reinforcement of the system is required.

System modelling completed by Cornerstone as part of the 2018 System Integrity Study showed materially lower operating pressures in the south of the system during periods of peak demand. This confirms recent observations by operating staff, who have noted pressures less than 40 psig, and approaching the 30 psig minimum design pressure, in the area. The situation will only get worse as demands increase and production from the connected wells continues to decline.

ENGLP has recently opened discussions with a third-party that owns natural gas production in the south of the system. Consistent with the Gas Supply Plan, ENGLP plans to connect to this local production at a point between the communities of Port Bruce and Port Burwell, feeding to the existing 4 inch Nova Scotia line. A pressure regulating and metering station and approximately 1200 meters of 4 inch PE pipe will be required. The estimated capital cost to complete this work, based on a preliminary engineering estimate, is $357,000. A breakdown of the project cost by asset group is shown below in Table 3.4.2-1

Table 3.4.2-1
Lakeview Reinforcement Project Breakdown
($ dollars)

	Description	A USoA Account	B 2019
1	Measuring and Regulating Equipment	477	$138,000
2	Mains - Plastic (Distribution Plant)	475	$168,000
3	Land	480	$51,000
4	**Total**		**$357,000**

ENGLP has deemed this a high priority project and deferring or not proceeding is likely to adversely impact the utility's ability to ensure safe and reliable service to existing customers.

The project is contingent on the successful negotiation of a gas purchase agreement with the third-party. Initial estimates indicate that approximately 20 percent of the current overall peak demand could be reasonably supplied at this location, resolving pressure issues in the south and providing additional volume to support system growth.

The work is expected to be started and completed in 2019, and the asset in service by December 31, 2019.

ENGLP also reviewed the option of the addition of trailered compressed natural gas (CNG) on-system storage in the south of the system, to be used to supplement the existing gas supply during peak demands. The capital cost of this option, based on a preliminary engineering estimate, is in excess of $2,500,000, significantly higher than the proposed solution. This approach would also be expected to have higher ongoing operating and maintenance costs. The reliability of supply would also have to be properly addressed, as peak demands occur in the winter when road conditions can be poor, potentially making it difficult to move CNG trailers when required. As such, this alternative was rejected.

A steel pipeline to move gas at a higher pressure from a transfer point from Enbridge Gas' Union South system was also considered at a conceptual level. Capital costs for this option would be expected to be well above $10,000,000 before considering any Enbridge Gas upstream reinforcement costs. Given the high capital cost for this alternative, this alternative was also rejected.

3.4.3 IGPC Pipeline Realignment at Highway 401 Interchange Project (2019)

The MTO has indicated that it intends to start construction on improvements to the interchange of Westchester Bourne and Highway 401 in 2019, requiring ENGLP to relocate the 6 inch steel IGPC pipeline and a 4 inch PE main that will be in conflict. The estimated capital cost to complete this work is $1,235,200.

The cost estimate is based on an initial understanding of the requirements and historical costs. Once the MTO has finalized their plans, ENGLP will issue a request for proposals. This work is not discretionary and is driven by the MTO's requirements.

ENGLP has been advised that under the *Public Service Works on Highways Act*, construction labor and equipment costs are to be shared equally between the utility and the Province. The utility remains responsible for all engineering and material costs. The Province's share of the costs is estimated at $536,000, resulting in a total capital cost, net of contributions, of $699,200.

The work is expected to be started and completed in 2019, and the asset in service by December 31, 2019. The tie-in of the relocated 6 inch steel pipeline will need to be coordinated with IGPC's annual shutdown.

3.4.4 SCADA Upgrade Project (2019 – 2024)

As part of due diligence reviews leading up to ENGLP's purchase of the natural gas distribution assets in November 2017, ENGLP and its consultants noted that the existing field instrumentation and supervisory control and data acquisition ("SCADA") system required modernization. The current system, used to monitor and control pressures and flows within the distribution system, is rudimentary and not aligned with current industry accepted practice which presents an unacceptable risk to the reliable operation of the utility.

The existing SCADA system requires operating staff to manually poll field instrumentation, (pressures and temperatures) from a cellular phone or a single desktop computer located in the Aylmer office. This relies on the diligence of operating staff to periodically dial-in and check the field devices during times of peak demand and make changes to set-points as required. The number of times an operator can dial-in to the field devices in any given period of time is limited due to power constraints at the remote field locations. Additionally, the current infrastructure does not allow for alarms to be generated and an alert to be sent to operating staff should a measured variable be outside the acceptable range.

Under this project, ENGLP intends to upgrade the field instrumentation and SCADA system to allow field measurements to transfer in real-time to a central SCADA computer, creating a single operator interface to monitor the system locally or remotely, view and change set-points, and track and trend historical data. Most importantly, this will allow pressures and flows to monitored and alarms to be generated and dialed-out to operating staff in the event of a deviation.

The project will be implemented in phases, 2019 through 2024. The estimated annual capital costs, based on preliminary engineering estimates, are as follows:

Table 3.4.4-1
SCADA Upgrade Project 2019-2024
($ dollars)

	A **2019**	B **2020**	C **2021**	D **2022**	E **2023**	F **2024**
1 SCADA Upgrade	$283,000	$128,000	$42,000	$43,000	$44,000	$45,000

A breakdown of the project cost by asset group is shown below in Table 3.4.4-2

Table 3.4.4-2
SCADA Upgrade Project Breakdown
($ dollars)

	Description	A USoA Account	B 2019	C 2020	D 2021	R 2022	F 2023	G 2024
1	Measuring and Regulating Equipment	477	$233,000	-	-	-	-	-
2	Computer Hardware	490	$10,000	-	-	-	-	-
3	Computer Software	491	$40,000	-	-	-	-	-
4	Meters - Commercial	478	-	$128,000	$42,000	$43,000	$44,000	$45,000
5	**Total**		**$283,000**	**$128,000**	**$42,000**	**$43,000**	**$44,000**	**$45,000**

In 2019, ENGLP plans to install the central SCADA server hardware and software, communications equipment and integrate the seven metering and regulating stations at the transfer points with Enbridge Gas. In 2020, additional meters at approximately 10 key locations will be tied to the system. For the years 2021 through 2024, existing and new flow and pressure instrumentation will be tied to the system, a few points each year based on risk and benefit.

ENGLP has deemed this a high priority project and deferring or not proceeding is likely to adversely impact the utility's ability to appropriately manage the risk of a failure or mitigate the impact to customers in the event of a failure.

Each phase is intended to be started and completed in a single year and the assets put in service by December 31 of that year.

3.4.5 Aylmer Office Second Floor Development Project (2019 – 2020)

The second floor of the ENGLP office building in Aylmer is substantially undeveloped. ENGLP intends to develop this space to include a training room and meeting space to accommodate an increased focus on training, and a clean workspace and lunchroom for field staff. The latter has been identified as a potential worker hygiene risk as field staff currently use common space in the shop area as an office and lunchroom, for lack of an alternative.

The project is planned to be completed in phases, with an estimated capital spend of $31,000 in 2019 and $31,000 in 2020. Each phase is intended to be started and completed in a single year and the assets put in service by December 31 of that year.

3.4.6 UMS and Workforce Management Software Project (2019 – 2020)

In 2017, the utility implemented a new utility management system (UMS) and workforce management software. In an effort to manage costs and resourcing requirements, the project was phased over a four-year period. In 2019 and 2020, additional system reports and customizations will be created to address the business and operational needs of the utility, including implementing the customer online access to billing information, e-bills and account management functionality, automating data collection and reporting of customer service performance measures required under the Gas Distribution Access Rule (GDAR), inventory management and improved project cost tracking in support of the asset management process.

The project is planned to be completed in phases, with an estimated capital spend of $110,000 in 2019 and $26,000 in 2020. Each phase is intended to be started and completed in a single year and the assets put in service by December 31 of that year.

3.4.7 Telephone System Replacement Project (2019)

ENGLP's existing telephone system is obsolete and the vendor will no longer provide operational support or security patches for the system. As security patches and software updates are no longer available, the system is vulnerable to more frequent outages and a potential target for cyber-attack. This presents a high risk to maintaining the throughput, consistency, reliability and security of the telephony network.

ENGLP plans to replace the telephone system in 2019 at an estimated capital cost of $129,000. The new system will implement a new call queueing and reporting application to ensure OEB reporting metric requirements continue to be met and will reduce the risk exposure as the IP telephony system patching and upgrades will be included as part of the EPCOR corporate management plan. The work will be started in 2019 and the assets put in service by December 31, 2019.

Table 3.4.7-1
Telephone System Replacement Project Breakdown
($ dollars)

	Description	A USoA Account	B 2019
1	Software	491	$96,600
2	Communication Equipment	488	$32,400
3	**Total**		**$129,000**

3.4.8 ArcGIS Mapping Project (2021)

With the implementation of the new UMS and workforce management software in 2017, the utility also set the goal of documenting the precise physical location of its assets using GIS technology, in keeping with modern industry practices. Among the benefits, this will allow more precise mapping and inventory of buried infrastructure in support of operations and asset management activities, including Ontario One Call requirements

ENGLP plans to populate the database with the *location of existing* assets in 2021. The estimated capital cost to complete the work is $106,000 and is intended to be started and completed during the year and the assets put in service by December 31, 2021.

3.4.9 CNG Vehicle Fueling Station Recertification Project (2021)

ENGLP's fleet is fueled by natural gas supplied from a small CNG fueling station located at the Aylmer office. The 30 CNG storage cylinders associated with the fueling station must be tested and recertified every 5 years, as required by regulation. The estimated capital cost to complete the work is $53,000, based on budgetary pricing received from the vendor. The project is intended to be started and completed during the year and the assets put in service by December 31, 2021.

3.4.10 Main Additions Annual Program (2019 – 2024)

This program accounts for the installation of new pipeline mains or the replacement of existing mains for the purposes of serving new customers, replacement of pipe assessed to be at the end of the useful service life, or reinforcement of the system to improve reliability. The estimated

annual capital spend is estimated based on management judgement and average historical spending.

The following Table provides the forecasted annual spend of Main Additions from 2019 to 2024.

Table 3.4.10-1
Main Additions 2019-2024
($ dollars)

		A **2019**	B **2020**	C **2021**	D **2022**	E **2023**	F **2024**
1	Main Additions	$555,000	$564,000	$578,000	$589,000	$601,000	$613,000

Individual projects under the program are evaluated, planned and prioritized based on customer need and risk. Annual program costs are partially contingent on growth and the number of new customer connections were estimated based on the utility's experience in recent years.

Individual projects to install new mains with the primary purpose of serving new customers (system access) are subject to an economic test as required by the OEB, the calculation of a profitability index (PI) value. If the PI value is less than 1, a contribution in aid of construction is calculated.

Individual projects under the program will typically be completed in a single construction season and the asset put in service by December 31 of the program year.

3.4.11 Service Additions Annual Program (2019 – 2024)

This program accounts for the installation of new services including the service line, punch tee, excess flow valve, riser, and service valve. The estimated annual capital cost is based on estimated new service connections and historic costs. Individual new service installations are subject to customer contributions. The following Table provides the forecasted annual spend net of contributions.

Table 3.4.11-1
Service Additions 2019-2024
($ dollars)

		A **2019**	B **2020**	C **2021**	D **2022**	E **2023**	F **2024**
1	Service Additions	$151,000	$172,000	$157,000	$161,000	$163,000	$167,000
2	Contributions	($62,000)	($72,000)	($65,000)	($66,000)	($68,000)	($69,000)
3	**Service Additions Net of Contributions**	**89,000**	**100,000**	**92,000**	**95,000**	**95,000**	**98,000**

Annual program costs are contingent on growth and the number of new customer connections were estimated based on the utility's experience in recent years.

3.4.12 Meters Annual Program (2019 – 2024)

This program accounts for the purchase and replacement of natural gas meters for new customer connections and the lifecycle replacement of meters on existing services. It also includes the refurbishment and reverification of existing meters to extend the useful service life, when economical. The estimated annual capital spend is estimated based on meter seal expiry dates and historic costs. The following Table provides the forecasted annual spend of Meters from 2019 to 2024

Table 3.4.12-1
Meters Annual Program 2019-2024
($ dollars)

		A **2019**	B **2020**	C **2021**	D **2022**	E **2023**	F **2024**
1	Meters	$255,000	$260,000	$265,000	$271,000	$276,000	$282,000

ENGLP is required to ensure that meters are removed from service or re-verified and sealed upon expiry of the approved verification period, as per the requirements of Measurement Canada, and comply with meter accuracy obligations prescribed under the *Electricity and Gas Inspection Act*.

Annual program costs are partially contingent on growth and the number of new customer connections were estimated based on the utility's experience in recent years.

3.4.13 Regulating Stations Annual Program (2019 – 2024)

This program accounts for the replacement of regulating stations. The forecast annual capital spend is based on management judgement and historical spend based on the replacement of one regulating station per year.

The following Table provides the forecasted annual spend of Regulating Stations from 2019 to 2024.

Table 3.4.13-1
Regulating Stations Annual Program 2019-2024
($ dollars)

	A **2019**	B **2020**	C **2021**	D **2022**	E **2023**	F **2024**
1 Regulating Stations	$73,000	$75,000	$76,000	$78,000	$79,000	$81,000

3.4.14 Regulators Annual Program (2019 – 2024)

This project accounts for the purchase and replacement of natural gas regulators for new customer connections and the lifecycle replacement of regulators on existing services. The estimated annual capital spend is estimated based on management judgement and average historical spending.

The following Table provides the forecasted annual spend on regulators from 2019 to 2024

Table 3.4.14-1
Regulators Annual Program 2019-2024
($ dollars)

	A **2019**	B **2020**	C **2021**	D **2022**	E **2023**	F **2024**
1 Regulators	$71,000	$73,000	$74,000	$76,000	$77,000	$79,000

3.4.15 Pipeline Markers Annual Program (2019 – 2024)

This program accounts for the purchase and replacement of pipeline markers for existing pipelines and new installations. The estimated annual capital spend is estimated based on management judgement and average historical spending.

Table 3.4.15-1
Pipeline Markers Annual Program 2019-2024
($ dollars)

	A **2019**	B **2020**	C **2021**	D **2022**	E **2023**	F **2024**
1 Pipeline Markers	$10,000	$10,000	$11,000	$11,000	$11,000	$11,000

Pipeline markers must be installed and maintained in keeping with the requirements of the *Technical Standards and Safety Act* and *CSA Z662 Standard for Oil and Gas Pipeline Systems*.

3.4.16 Fleet Annual Program (2019 – 2024)

This program accounts for the replacement of fleet, including light trucks and vans, medium-duty trucks and construction equipment. The estimated timing and annual capital spend is based on the age, anticipated odometer readings and historical or pending maintenance costs.

The following Table provides the forecasted annual spend on Fleet from 2019 to 2024

Table 3.4.16-1
Fleet Annual Program 2019-2024
($ dollars)

		A **2019**	B **2020**	C **2021**	D **2022**	E **2023**	F **2024**
1 Vehicles - Transportation Equipment	484	$82,000	$47,000	$85,000	$49,000	$50,000	$51,000
2 Vehicle - Heavy Work Equipment	485	$26,000		$48,000			
3 **Fleet**		**$108,000**	**$47,000**	**$133,000**	**$49,000**	**$50,000**	**$51,000**

ENGLP plans to replace a medium-duty construction truck and fork truck in 2019, and a trailer used for hauling construction equipment in 2021. The remaining planned replacements are light service trucks and vans.

3.4.17 Small Tools and Equipment Annual Program (2019 – 2024)

This program accounts for the purchase and replacement of small tools and equipment, as required, including pipe fusion and pinch off tools, pipeline locate equipment, and gas monitors. The estimated annual capital spend is estimated based on management judgement and average historical spending.

The following Table provides the forecasted annual spend on Small Tools and Equipment from 2019 to 2024.

Table 3.4.17-1
Small Tools and Equipment Annual Program 2019-2024
($ dollars)

		A	B	C	D	E	F
	USoA Account	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
1 Small Tools and Equipment	486	$15,000	$16,000	$16,000	$16,000	$17,000	$17,000

3.4.18 Computers and Office Equipment Annual Program (2019 – 2024)

This program accounts for the purchase and replacement of computers, peripherals and office equipment. The estimated annual capital spend is estimated based on management judgement and average historical spending.

The following Table provides the forecasted annual spend on Computers and Office Equipment from 2019 to 2024.

Table 3.4.18-1
Computers and Office Equipment Annual Program 2019-2024
($ dollars)

		A	B	C	D	E	F
	USoA Account	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
1 Computers and Office Equipment	490	$10,000	$11,000	$11,000	$11,000	$11,000	$11,000

ENGLP AYLMER SYSTEM INTEGRITY STUDY

Rev: 0 Date 12/19/2018

1 CONTENTS

2 EXECUTIVE SUMMARY

EPCOR Natural Gas Limited Partnership (ENGLP) engaged Cornerstone Energy Services (Cornerstone) in May 2018 to complete a system integrity analysis of its Aylmer natural gas distribution utility. Cornerstone created a steady-state hydraulic model of the system and reviewed the predicted system conditions under the current peak gas demand, seen in January 2018, and predicted future peak demands, given predicted growth through 2024. The objectives of the study were to identify constraints within the system that would impact the utility's ability to provide reliable natural gas service to current and future customers, and identify and evaluate possible system reinforcement options to resolve these issues.

The analysis identified two areas of concern: low pressure supply to the northern district regulating stations serving the Belmont and pressure starvation in the southern and southeastern part of the system. This confirms operating data and observations provided by operating staff.

The analysis identified and confirmed that the issue with Belmont can be addressed by increasing undersized pipeline sections along Westchester Bourne that are choking the flow of gas being delivered to the village.

Three projects were identified and confirmed as options to address the low pressure issues in the south and southeastern part of the system: on-system trailered compressed natural gas (CNG) storage at one of two general locations or tying to a new natural gas supply from a third-party producer near Lakeview. Providing additional volumes to the area will boost the pressure which drops significantly during peak demand and provide the capability to serve new customers that the utility has had to decline to service in the past.

Preliminary capital cost estimates were developed for the options identified.

3 BACKGROUND

ENGLP Natural Gas Limited Partnership (ENGLP) owns and operates the Aylmer natural gas utility, a local distribution company (LDC) that distributes natural gas in Southern Ontario to approximately nine thousand customers in the Town of Aylmer and the surrounding region.

The service territory extends south from Highway 401 to the shores of Lake Erie. In addition to the Town of Aylmer, the ENGLP system also serves the towns of Brownsville, Straffordville, Vienna, Port Burwell, Port Bruce, Springfield, Belmont, and Nilestown.

The ENGLP Aylmer system consists of approximately 800 kilometers of distribution mains which are fed by seven ENGLP/Union Gas gate stations (Putnam, Harrietsville, Belmont, Brownsville, Bayham, Eden, and North Walsingham) and 38 natural gas wells, owned by a 3rd party, in the southeastern part of the system.

ENGLP has contracted Cornerstone to perform a system integrity study and to evaluate and develop capital cost estimates (CAPEX) for several capital improvement projects that will enhance performance and capacity of the system to meet the needs of existing customers and future growth.

4 STUDY OBJECTIVES

The system integrity analysis included three tasks. Those tasks and the results are outlined in the sections below.

1.) Model and Calibrate the Distribution System

The first task included developing a hydraulic model of the existing gas distribution system, and calibrating that model to operational pressure and flow records made available by ENGLP operations personnel. This task is discussed in Section 5.

2.) System Constraints Identification, Growth Modeling, and Infrastructure Improvements

The main purpose of this study was to identify keys areas of the system that are weak points in the integrity of the system to support existing customer demands and areas that are hindering the growth and expansion of the system for future planning. After identifying these areas, Cornerstone was tasked with developing a list of projects to address these areas and evaluate the effectiveness each project had at addressing the needs of the system using the GASWorkS model. It is in this section that the existing natural gas well supply is evaluated as a means to maintain system integrity. This task is discussed in Section 6.

3.) Capital Cost Estimate (CAPEX) Development

Upon the evaluation of the effectiveness of each infrastructure improvement project identified in the second task, a project was either escalated to the next phase of developing a capital cost estimate or removed from consideration.

5 SYSTEM MODELING AND CALIBRATION

Cornerstone used the distribution system modeling program GASWorks version 10.0 to develop a steady-state model and analyze system performance.

5.1.1 Gas, Model, and Piping Assumptions

Hydraulic efficiency:	0.95
Elevation:	235 ft
Gas average temperature:	15 °C
Specific Gravity:	0.583
Gas Viscosity:	7.2×10^{-6} lbm/ft-sec
Heating value:	1027 btu/cf
Specific heat ratio:	1.31
Flow Equation:	IGT Improved

5.1.2 Model Development

The model development consisted of 2 major steps. These steps are discussed below.

1.) Creating system infrastructure

ENGLP provided CAD files and a database of attributes for each piping segment in the system, albeit with some information lacking on some of the piping segments. GIS analysts used this information to develop a shapefile which was then imported into GASWorkS. The GASWorkS model was then checked against the CAD records, a system map provided by ENGLP, and field technicians and operations personnel familiar with the system to ensure the information regarding pipe sizes, segment connections at intersections, and valve station locations was accurately depicted in the GASWorkS model. This process determined that there is some conflicting information across system documentation and some misinformation in CAD records. In these cases, the information offered by operations personnel was taken as accurate in finalizing the GASWorkS piping model.

The number of inconsistencies between the various records led to the conclusion that ENGLP would benefit from a Model and Facilities Verification Project, which is further described in Section 6.5.

2.) Applying Load Points

In addition to the distribution piping, town load points and customer load points needed to be placed in the model.

Town load points are load points at which a town's gas load is taken from the distribution system. This allows for simplification the modeling of the performance of the system. Instead of drawing in individual gas lines and services in a town that the ENGLP system feeds, we can apply a load point representative of the gas that entire town is estimated to be using for a certain scenario. In the case of a town like Straffordville which operates at "high pressure" and all the distribution piping sees as much as 80 psig from the two-inch line on Heritage Line, a single point was placed on that line and assigned a load value to draw off of that node point as shown in Figure 1.

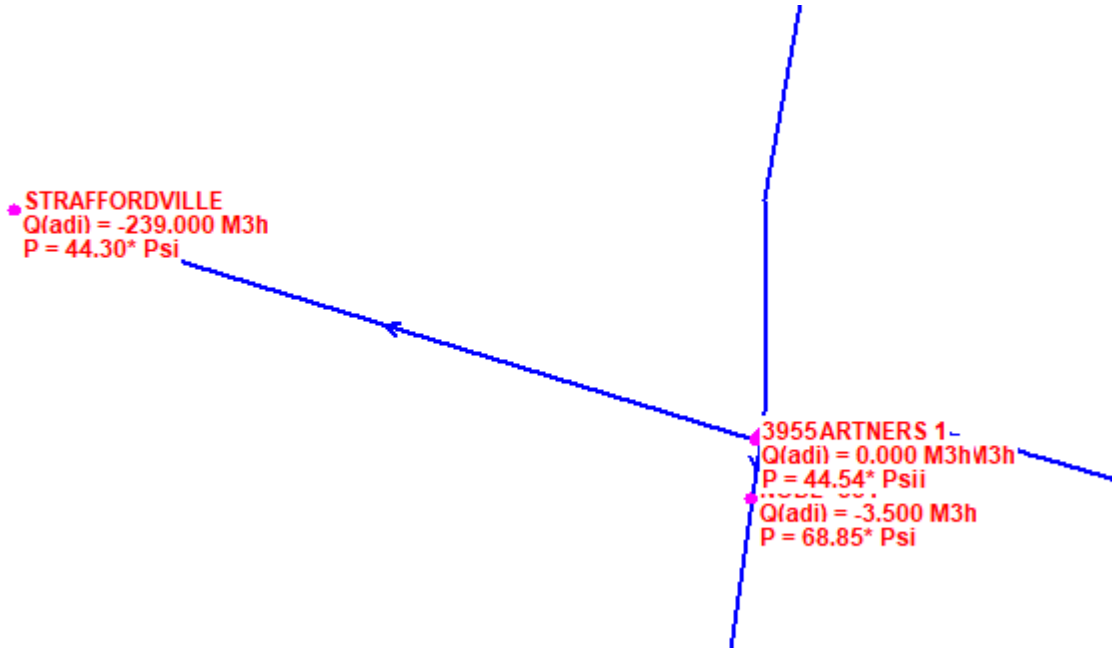


Figure 1: Town Load Point

In the case of a more complex town like Aylmer which operates at as a 30 psig system, there are district regulator stations that feed the town, so regulators had to be inserted into the model at the applicable locations, and the loads taken from the downstream side of those valves. See Figures 2 and 3 below that indicate how this was done in GASWorkS.

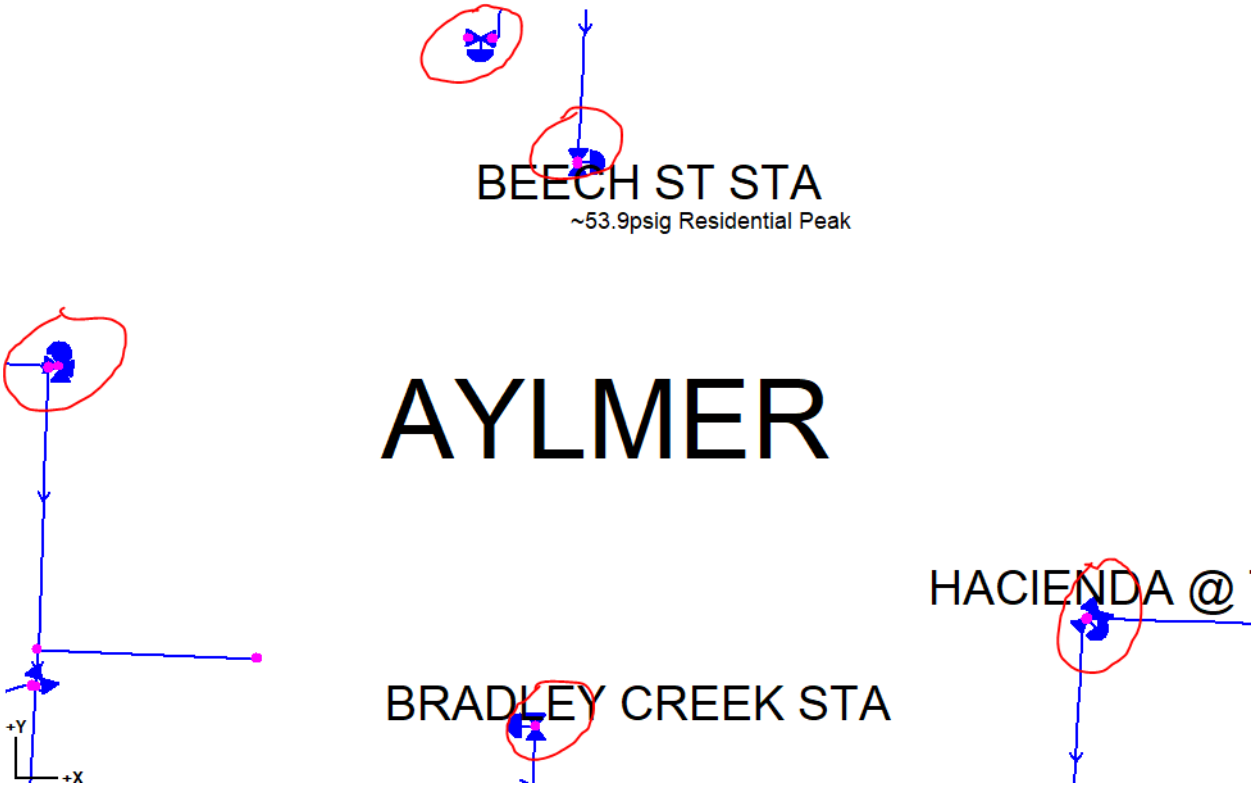


Figure 2: Aylmer regulator stations

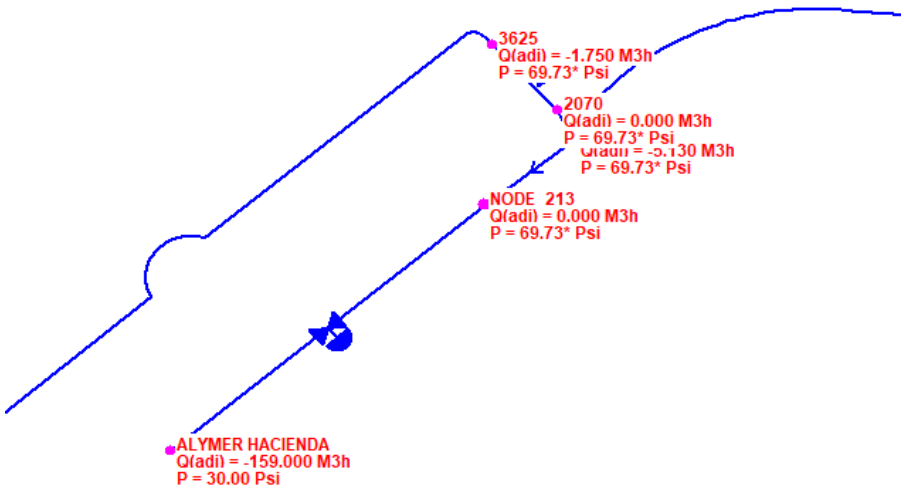


Figure 3: Hacienda station regulator orientation

The towns of Aylmer, Belmont, and Brownsville, and Port Burwell operate as 30 psig systems so all four towns were modeled accordingly.

The loads that the nine major towns draw from the gas system make up the majority of the gas consumed but there are distributed loads to be accounted for. The CAD files provided by ENGLP were used to locate these distributed customers. They were then broken down into two types of customer load points – smaller residential customers and larger, seasonal (interruptible) customers. The figure below shows two different colors of customer points.

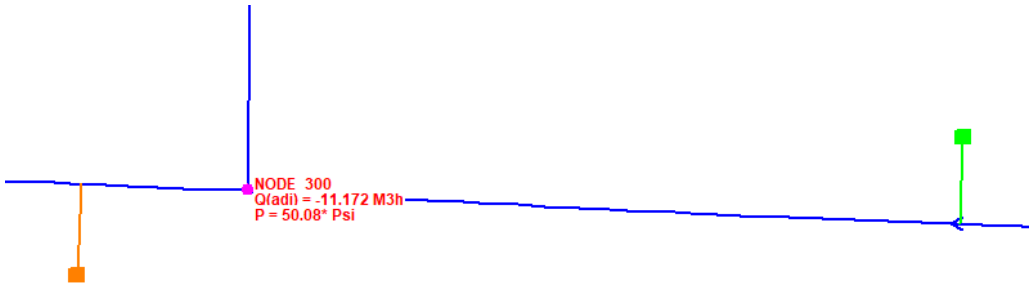


Figure 4: Customer Load Points

An orange square indicates a seasonal customer with a larger load whose energy rates are based on the ability to interrupt their gas service if the system is being overstrained. A typical customer of this type would be a grain dryer who may not need the ability to dry their crops in the middle of January. All of these such customers were identified by ENGLP operations personnel and were input as a different color in the model so as to be able to easily turn their gas loads on and off when modeling the gas consumption of the system at different times of the year. Green squares indicate uninterruptible customers (typically residential or year-round commercial customers). Instead of having hundreds of these points throughout the model, service lines between two node points were counted (minus the identified larger, interruptible customers) and a single green customer load point was placed halfway between the two nodes with a unit count equal to that number of service lines. For example, if nine houses were shown to have service lines to them along Conservation Line between Springwater Rd and Imperial Rd, one green customer load point was placed in the model with a unit count of "9".

5.1.3 Loading Determination

The biggest difficulty in establishing an accurate model for this system was the loading throughout the system. Cornerstone was provided some historic metering data for the ENGLP Aylmer system for the winter of 2017-2018 that the model was calibrated to, as discussed in a later section. However, gas is not metered using district meter stations for each of the towns the system serves, which necessitates that a peak hour consumption estimate be developed for each town center. With the town loads making up a large majority of the consumption, based on the number of customers located in the towns compared to the distributed customers, this introduced a rather large unknown. The method to establishing town loads was a three-step process as outlined below.

1.) Establish a "calibration hour" for the model

This data point was selected as the peak hour within the date of the highest gas consumption for the 2017-2018 heating season. The gas readings from the ENGLP/Union Gas stations would be used to determine hourly readings for each station for calibration purposes, but the date was also needed in order to estimate how much gas each typical customer would be consuming during that day using historical weather data as outlined below.

2.) Establish distributed customer loads

The larger "seasonal" (interruptible) loads had historic billing information provided, so the unknown remaining for this step was how much each of the distributed customers was using. From previous projects in similar climates in Canada, research had been done on determining peak day gas consumption for residential customers.

Residential peak consumption was estimated using an approximation method outlined in a 1994 study titled *Gas Peak Day Design Analysis*[1] and inputting historical weather data values for the Aylmer region on January 4th and 5th of 2018. This period of data was selected because it was determined as the peak consumption period for flows into the ENGLP Aylmer system according to data provided. The exception to the method outlined in the study was that the "disposable income" factor was neglected in calculating the peak day values. The method outlined in the study used Equation 1, below, to calculate a firm send out peak in standard cubic feet for a year, which is then translated to cubic feet per day and cubic meters per day and cubic meters per hour.

Equation 1:

*Sendout (ft^3/yr) = (-2840.87*Current Day Wind-Chill) + (-127.59*Previous Day Wind-Chill) + (-8.5946*Current Day Wind-Chill^2)*

Where "Wind-Chill" is a value based on weather records for the design peak day in that

"Wind-Chill" = (.0817(3.71*SQRT(WIND)) + (SQRT(WIND)) + (5.81) – (.25*WIND))*(TEMP – 91.4) + 91.4*

Where "WIND" is in units of mph and "TEMP" is in units of °F.

Weather data for these equations was gathered from the Canadian government weather station[2] for the London Ontario station. Inputs for the referenced equations are outlined in Table 1.

Table 1: Weather Data for Calibration

CURRENT DAY Jan 5th WIND CHILL		
WIND	8.3	MPH
TEMP	-18.6	deg. F
WINDCHILL	-38.2231527	deg. F

PREVIOUS DAY Jan 4th WIND CHILL		
WIND	7.4	MPH
TEMP	-17	deg. F
WINDCHILL	-33.0510248	deg. F

Thus

Daily Send out = (-2840.87*(-38.223)) + (-127.59*(-33.05)) + (-8.5946*(-38.223)) = 161,716.91 ft^3/yr

= 443.06 ft^3/day

= 12.6 m^3/day

=0.53 m3/h

Estimating that each house during this calibration date of January 5, 2018, was consuming roughly 0.5m^3/h of gas, the total distributed loads could then be estimated.

3.) Subtract total distributed gas load from the total consumption, leaving the remainder as the gas consumed by the towns

4.) Estimate the customer count in each town

Having a customer count in each town allows the remaining gas consumption (after distributed loads are accounted for) to be assigned to each town, proportionate to the number of customers a town has compared to the others. Customer counts from a 2014 report prepared by SNC Lavalin[3] indicated the following house counts for each town:

- Aylmer - 2030
- Belmont - 555
- Brownsville - 150
- Nilestown – 100
- Port Burwell – 319
- Port Bruce – 150
- Springfield – 235
- Straffordville – 150
- Vienna – 150

Per ENGLP personnel, growth is typically between 2.5% to 3% throughout the region with the exception of Belmont, which sees 5% growth. Below is a table outlining the growth factor used to estimate a new customer count for the year 2018.

Table 2: Customer Counts

Town	2014 Count	Growth Factor	2018 Count	% of Total Town Customers
Aylmer	2030	2.5%	2241	51.86
Belmont	555	5%	675	15.62
Brownsville	150	2%	162	3.75
Nilestown	100	3%	113	2.62
Port Burwell	319	3%	359	8.31
Port Bruce	150	3%	169	3.91
Springfield	235	3%	264	6.11
Straffordville	150	3%	169	3.91
Vienna	150	3%	169	3.91

Regardless of a scenario being modeled, after the distributed loads were accounted for, gas loads were applied to each town using the proportions listed above.

5.1.4 Model Calibration

As mentioned previously, ENGLP provided Cornerstone some historical flow data for the 2017-2018 heating season. One of the primary goals of the system integrity study was to create and fine tune a

GASWorkS model to reflect pressures seen at the custody transfer stations and at points throughout the system that reflect what is seen in real data points (if available) or looks realistic in terms of what operations personnel see in the field for those points in the system that don't have recorded data (i.e. a regulating station inlet like Bradley Creek Station.)

The general process for calibrating the model is the gate stations flow points are set to known (gas in), and then the model is run and solved, accounting for where gas is consumed at the towns and by the distributed customers (gas out). The resulting pressures at gauged points in the system are then analyzed and compared to what the real data says it should be. This is an acceptable way to analyze the model as we know that flow into the system must equal flow out (gas being consumed). If meter readings are available, and overall consumption breakdown between distributed loads and town loads is known, there should be no error within the flows the model is seeing, other than changes in line pack through the system, which are reasonably ignored in this analysis.

The known points in the system, and the known parameter(s), are listed below.

Table 3: Known Data Points

Point	Parameter
Putnam Station	Pressure, Flow
Harrietsville Station	Pressure, Flow
Bayham Station	Pressure, Flow
Eden Station	Pressure, Flow
North Walsingham Station	Pressure, Flow
Nilestown Station	Pressure, Flow
Bradley Ave Station	Pressure, Flow
Beech St Station (Aylmer)	Pressure
FS Partners	Pressure
2nd Concession Wells	Pressure
Nova Scotia Line Wells	Pressure
Fairground Regional 28 Wells	Pressure
Dorchester Station (Regulator station)	Pressure

In previous analyses of this system's integrity, the month of November had days that were considered the peak scenario of gas consumption. In November, seasonal agricultural loads are still active and drawing gas from the system. These loads, coupled with decreasing temperatures and the resulting increasing heating loads, caused a record consumption on November 12, 2014. The seasonal agricultural loads, however, are largely interruptible. ENGLP chose to focus on the January 2018 peak load, when seasonable customers were not using gas and thus interrupting these customers is not an option to control the peak. The November 2014 peak demand was approximately 10% higher than the January 2018 peak modeled. System constraints identified under the January peak would only be worse under the November peak, and any solutions identified would serve to resolve pressure issues under both scenarios

January 5th had the highest gas consumption on record since the November 2014 event according to the historical data provided by the ENGLP Aylmer operations personnel. Since the gas being consumed

during this time was by uninterruptible customers, the goal was to construct the base case model to reflect the gas meter readings that each Union station was seeing, as well as the pressure recordings at the stations and at the several other points in the system. The model is set up with flows in m^3/h, so a peak hour was chosen for January 5th based on the hour with the largest meter readings. This was 9:00am. The total meter readings for the 8:00-9:00am hour were 9747 m^3/h, thus all loads had to equal that number. Using the estimated residential customer usage found in Section 3.1.2, the distributed loads were estimated at 3649 m^3/h and thus the town loads had to account for 6,098 m^3/h. Using the proportions based on customer count estimations in Table 3, each town was assigned the following loads:

Table 4: Town Flows for Calibration

Town	Load (m^3/h)
Aylmer	3171
Belmont	955
Brownsville	229
Nilestown	159
Port Burwell	508
Port Bruce	239
Springfield	373
Straffordville	239
Vienna	239

It is important to note that for the initial run of the model, for the towns with multiple feeds such as Aylmer or Port Bruce, the load was evenly distributed amongst the feeds. During the calibration of the model, the town feeds were adjusted as a way of helping fine tune the model to get data points to match.

5.1.5 Calibration Results

The initial run of the GASWorkS model showed poor results when compared to historical records and anecdotal testimonies of real-world pressures throughout the system. Some stations were showing pressures well above 90 psig on the outlet side, not possible given that gas cannot physically enter the system greater than 80 psig, and certain areas of the system known to be strained for gas pressure during peak heating were showing more than adequate pressure. The goal was to show less than a 10% error in pressure readings and/or flow readings for our known points compared to the model results. As a result, the following changes were made to the GASWorkS model in order to achieve that 10% error.

1.) For Aylmer Regulator stations, 80% (~2540 m^3/h) of flow directed through Beech St Station and 5% (159 m^3/h) flow directed through the other four stations.
2.) Harrietsville, Eden, Nilestown, and Bradley were all set to know *pressures* even though all the others were set to known *flows.* The flows were then the parameter that was judged against the actual meter readings.
3.) Well flows were set to zero for the calibration of the model to the peak hour. Well head pressure or supply flows for the production from each of the well groups was not provided, reviewed or input into the model. Gas production in the past has been declining from these wells and the last study performed by SNC Lavalin[3] estimated production from all 3 wells groups

(2nd Concession Rd, Fairground Rd, and Nova Scotia Line) to be less than 500m^3/h. Talks with ENGLP Aylmer operations personnel indicated that figure to be much smaller in recent times, closer to 200 m^3/h. During peak heating demand, 200 m^3/h is approximately 2% of total system demand. As explained later, the model had difficulty converging on accurate results in the area these wells are located, even without the well inputs. Having the wells supply of 200 m^3/h turned on in the model created even larger error in the area so it was decided these wells would be turned off for hydraulic modeling.

4.) The 4-inch line along York Line was connected to the 6-inch Line running south along imperial road, just south of the York/Imperial intersection. See figure 5 below.

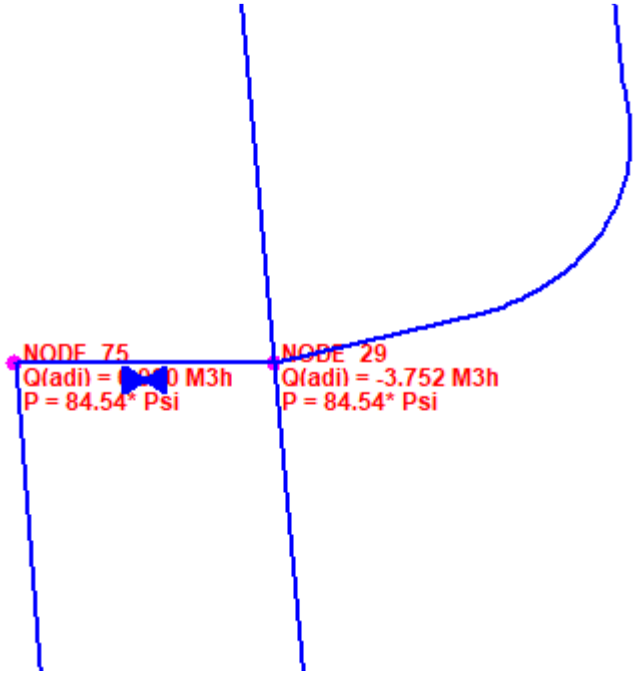


Figure 5: 4-inch York Line and 6-inch Imperial Road lines connected via NODE_29

5.) Section of 4-inchin pipe along Vienna Line between Richmond Rd and Woodworth Rd was turned OFF (no flow allowed through it) See line shown in red in Figure 6.

6.) Section of 4-inch pipe along Nova Scotia Line between Richmond Rd and Woodworth Rd was turned OFF (no flow allowed through it). See line shown in red in Figure 6.

Below is a table outlining the results of the calibrated model versus real data points.

Table 5: Calibrated Model Results vs Real Data

Data Point	Model Pressure (psi)	Base Load (m^3/h)	[1]Total Load (m^3/h)	Calibration Type	Calibration Value (Real Data)
North Walsingham Station	66.76	963.000	963.000	Pressure	80.00
Nova Scotia Line Wells	54.82	0.000	0.000	Pressure	44.00
Eden Station	82.60	1192.283	1188.3	Flow	1076.00
Dorchester Station	134.2	0.000	0.000	Pressure	122.00
FS Partners	68.86	0.000	0.000	Pressure	75.000
2nd Concession Wells	58.16	0.000	0.000	Pressure	63.00
Harrietsville Station	87.00	2710.358	2709.858	Flow	2855.000
Nilestown Station	145.00	616.272	616.272	Flow	645.000
Beech Station	57.19	0.000	-2.000	Pressure	54.00
Putnam Station	89.19	2294.000	2293.000	Pressure	85.00
Bayham Station	85.21	946.000	944.750	Pressure	82.00
Fairground Wells	56.25	0.000	0.000	Pressure	55.00
Bradley Station	147.00	979.000	979.000	Flow	976.000

1.) Total load accounts for errors in the model after the model is run and "solved"

A color-coded graphic of the solved calibrated model can be found in Appendix A. For the most part, calibration results are acceptable within 10% of the desired value. The biggest discrepancy in this model is in the southern part of the gas system, as evident by looking at the pressure results shown at the Nova Scotia Line Wells. ENGLP personnel's testimony and real-life pressure readings indicate that the southern and south eastern part of the system are typically between 40 and 45 psig during peak scenarios. Modeling results show that although this area of the system is indeed the part of the system experiencing the lowest pressures during peak loading scenarios, pressures should not be so low that they are being starved of volumes. The model predicts pressures throughout the south and southeast to be in the 55 psig range.

6 System Constraints Identification, Growth Modeling, and Infrastructure Improvements

6.1 System Constraints Identification

Upon analyzing the modeling results, Cornerstone has identified two main areas of concern for the distribution system integrity:

1.) Southern and southeastern area of the system (Nova Scotia Line, 2nd Concession Rd, Fairground area.)
2.) Westchester Rd pipeline, acting as one of two feeds to the town of Belmont.

Regarding Issue 1, there is a discrepancy between modeling and real-life data in the southern and southeastern territory of the Aylmer system which is briefly discussed in the calibration results above. This discrepancy prompted discussions between Cornerstone and ENGLP regarding the conditions of these pipes in the southern and southeastern end of the system and the accuracy of the piping records ENGLP has on file. In these discussions it was brought up that operations personnel have been slowly addressing choke points discovered in the system over time. These choke points have ranged from incorrectly sized valves (smaller than full line size valves) to undersized branch connections (for example a 1" saddle on a 3" line branching to a 2" line.) Cornerstone believes that these undersized fittings and valves littered throughout the system contribute to the error between the southern pressures in the calibrated model and what the system has been seeing according to recorded data and operations personnel. As such, an operations effort project was suggested to address these choke points. This effort is discussed in Section 6.5. Regardless of whatever discrepancies exist between modeling numbers and real-world pressures, it is universally agreed upon that this area of the system is in need of reinforcement. Operations personnel closely monitor this area during times of high demand, adjusting the system's various supply points and district regulator stations and isolation valves to ensure that this area receives as much gas as possible. Increased operations cost and the risk of current customers having their gas supply interrupted during the heating season make this an area of high concern.

The second area for concern being shown by the modeling is that the northern feed for the town of Belmont (the gas feed from Belmont station) is seeing pressures below 40 psig at the inlet of the regulator station. Given that this town operates at 30 psig, the small differential pressure is concerning for reliable and smooth operation of the town's low-pressure distribution system. As discussed later in the report, the town of Belmont is experiencing a large amount of growth compared to other regions in the utility's territory, so not only is this a current issue, but will only get more concerning when considering new customer connections.

Note that the model was calibrated to match gas consumptions associated with January 5, 2018, data. As outlined in section 5.1.3, residential heating consumption was estimated using weather data from that date. Although cold (-19°F/-28°C), January 5th was not a record cold day for the area. The Aylmer area has seen temperatures colder than -30°C in the winter in recent years according to weather records[1]. If there are back-to-back days of temperatures sub -30°C, the system could very well experience record gas consumption, taxing the integrity even more so than this past year.

6.2 Future Growth Modeling

Once a calibrated model was created, Cornerstone was tasked with evaluating the system's capabilities for growth and expansion through the year 2024. Recall that Table 4 outlined flows that were used for each of the major towns when calibrating the model to what Cornerstone believes is an accurate depiction of flow volume distribution throughout the system. To account for growth, some assumptions had to be made regarding customer growth rates through 2024. The following estimates were discussed with ENGLP and ultimately used in the GASWorkS model.

Table 6: Growth Rates For Future Expansion

Town	2018 Gas Load (m^3/h)	Growth Rate (yearly) %	2024 Gas Load (m^3/h)	Added Volumes (m^3/h)
Aylmer	3171	2	3572	401
[1]Belmont	955	2.5%	1108	153
Brownsville	229	2%	258	29
Nilestown	159	2%	180	21
Port Burwell	508	2%	572	64
Port Bruce	239	2%	269	30
Springfield	373	2%	421	48
Straffordville	239	2%	269	30
Vienna	239	2%	269	30
Distributed Customers	3649	1%	3873	224
			TOTAL ADDED VOLUME	1030

1.) Belmont customer growth regarding the number of added connections has been closer to 5% but is mostly new construction with added efficiencies so gas volumes were modeled as only a 2.5% increase each year.

Cornerstone estimates that by 2024, on a similar peak day to that experienced on January 5, 2018, the gas system could be demanding an additional 1030 m^3/h to meet customer demands. To model this growth, these new volumes needed to be supplied from one or several of the Union gate stations that feed the ENGLP Aylmer system. ENGLP has expressed that Bayham Station, Eden Station, and North Walsingham are already on the verge of being taxed to their limit in terms of what they can supply during a peak demand period. As such, these new volumes were to be supplied on the Northern part of the system. Based on their knowledge of the Union Gas system, ENGLP suggested that 100% of these new volumes be modeled as coming from Bradley Station, so modeling was performed under the assumption that all of the new volumes demanded by the system were to come from Bradley Station in the Northwestern part of the system. Appendix B shows the results of this growth scenario modeling.

As expected, pressures in the southeastern part of the system showed a decrease compared to the 2018 model. Pressures throughout the area have dropped an average of 5 psi. Attention is drawn to this area because as it is an area of concern right now for being thin for volumes during peak situations. Adding more customers throughout the system will only exacerbate the issue. As a result, this area of the system is a primary focus for reinforcement through infrastructure improvement projects.

It is interesting to note that if these extra volumes for growth can be taken from Bradley station, some pressure issues associated with the Belmont North regulator station can be alleviated, by throttling the

feed to Belmont from the south as opposed to the North. However, the issue remains that the southern end of the system needs to be addressed so, ultimately, a two-pronged approach is being considered for these two concern areas.

6.3 INFRASTRUCTURE IMPROVEMENT

Current peak scenarios and the gas demand associated with future growth have prompted ENGLP to undertake this integrity analysis. This study has identified that there are two areas for concern that should be addressed right now, ensuring integrity of the system to meet current needs and allow for additional customer connections in the future. The infrastructure improvement projects discussed below aim to address low pressure concerns in the southern and southeastern part of the gas system, and the issue concerning the town of Belmont and the low pressures that are seen at the regulator station on the northern part of town.

Seven different capital improvement projects were discussed amongst the Cornerstone team and the ENGLP Aylmer team. Those projects are described below.

Please see Appendix C for a visual regarding the location of the projects outlined in the following sections.

Project 1: Make the town of Brownsville high pressure.

The idea behind this project would be to eliminate the three regulator stations that feed the town of Brownsville, eliminating a “dead end” for any gas that reaches Brownsville. This was anticipated to take some demand off of Bayham station that is used to feed Aylmer, by using Brownsville station to feed the Hacienda and Bradley Creek Stations of Aylmer. Brownsville is a smaller station however, and ultimately this project showed negligible benefit to the system.

Project 2: CNG decanting stations – North of Vienna OR located near the intersection of Springfield Rd & Vienna Line

The flexibility of being able to place a CNG source anywhere on the system is very attractive to ENGLP. The idea behind this project would be a spot North of Vienna along the 4 inch line that travels through the town, or somewhere on the 4inch line along Vienna Line near Springfield Road. The site would fit on a small piece of land where CNG trailers could be delivered and hooked up to a let-down skid, introducing 80 psig gas into the system during the winter months when the system is in need of additional volumes and pressure reinforcement. At minimum, ENGLP would have the capital cost associated with the land, civil/site work, minor mechanical and electrical/communications work, and a turn-key, pre-engineered CNG decanting station. The natural gas would be contracted during the heating season. The CNG trailers would be trucked in and swapped out at a rate of approximately 2 trailers per day during peak demand and would provide reinforcement to the southern part of the system when it needs gas the most.

For modeling purposes, 750 m^3/h was used as supply flow when modeling each of these two CNG locations. It proved to be greatly beneficial to the system surrounding where the feed was applied, showing increases of 7 to 10 psi near low pressure areas. 750 m^3/h corresponds to about the volume supplied by two CNG trucks per 24-hour period. Although the 4 inch pipeline can handle more than this volume and the southern and southeastern territory could use more volume, operating at more than

that would involve additional traffic and be more logistically demanding. Modeling results for this scenario can be seen in several visuals provided in Appendix D.

Project 3: Replace all 2 inch piping running North-South along Westchester Road that feeds the Northern regulator station of Belmont.

This project was developed solely to address low pressure concerns that modeling has shown at the Northern regulator station of Belmont. Belmont station is the primary feed to Belmont currently, and the amount of gas flowing is too much for that pipeline in its current state. There is a 1.4 km section of 2 inch pipe between Cromarty Drive and Thompson Drive and another 1.7 km section between Dingman Drive to the regulator station, according to existing piping records. By upsizing those two sections of pipe to 4 inch runs to match the rest of that mainline along Westchester, pressure greatly improves along that section of pipe. The modeling results are shown in several visuals found in Appendix D, along with the Lakeview project ENGLP is considering. These are modeling results showing results for the estimated 2024 gas demand.

Project 4: Connect the 2 inch pipe on Gladstone Drive to the dedicated 144 psig line running along Dorchester Road. Drop Bradley Avenue station to 80 psig feed to accommodate.

This project was developed to address the pressure concerns regarding Belmont. By connecting those two pipes, Belmont station would not be the only source of gas for the Northern feed of Belmont. When modeled, this did show drastic improvements in pressures getting to Belmont. However, a secondary effect of this project was that pressure along Nova Scotia Line and the rest of the southern part of the system saw a decrease in pressure. This was an adverse effect and may address one problem the Aymler system is experiencing but would make the problems in the south worse.

Project 5: Add another 80 psig meter station near North Walsingham from a 3rd party (not Union). Connect station to 4 inch outlet piping of North Walsingham Station.

The idea behind this project was to add another source of gas to the 3 main eastern feeds in hopes of reinforcing the south eastern part of the system. Adding this source proved beneficial to the south eastern part of the system, as expected. Other options provide a greater benefit to the system, however, and ENGLP advises that coming to agreeable contractual terms may be more difficult than other options reviewed. .

Project 6: Indigenous gas supply from existing Lakeview station on Gully Road

ENGLP has been exploring the possibility of taking gas from an existing compressor station on Gully Road off of Nova Scotia Line (between Granger Road and Carter Road) and injecting the gas into the 4 inch pipe along Nova Scotia Line. The compressor station is centrally located along a main backbone to the southern end of the ENGLP Aylmer system which, as mentioned before, is a low-pressure concern during peak conditions. It is also relatively close to the town of Vienna and has several paths to feed that town and the south eastern part of the system near Fairground and Cultus. This project does not have the flexibility that a CNG station offers in terms of only contracting gas when it is needed, but this station offers several benefits that the CNG station does not.

1.) It will be less expensive to install a small metering and regulating station for this supply point. The gas should also be less expensive when compared to the compression and trucking costs associated with the CNG option.
2.) There is no trucking involved, which avoids the logistical/security of supply issues and negative public perception, but it also means ENGLP is not as limited to the amount of gas they can take. CNG trailers are only so big and logistics become more difficult if ENGLP decides to start pushing more than two trucks a day of CNG into the system from a single decanting station.

With this project, the Lakeview feed would be tying into the existing 4 inch line along Nova Scotia, so it is ideal to run at least a 4 inch line up to the interconnect, instead of limiting the supply with a smaller pipe. Using a 4 inch pipe from the Lakeview station to a connection to Nova Scotia line, the Lakeview station could easily supply 1700m^3/h to Nova Scotia line while maintaining reasonable gas velocities in the pipe and an injection pressure of 70 psig. See Appendix F for the calculations.

Recall that the 2024 gas demand is estimated at 1030 m^3/h above current peak demand of this gas system. By adding the new station and a new 4 inch line to feed Nova Scotia line, much needed volumes are added to the system and they are being added in an area of need, providing volumetric and pressure reinforcement to a system that is being taxed during peak hours. Appendix D shows the modeling results of adding this new gas source. These are modeling results showing the estimated 2024 gas demand, applying all 1030 m^3/h of additional gas supply from this Lakeview station instead of the Bradley station as was done in Appendix B.

Project 7: Relocate Port Burwell Regulator stations closer to town.

Port Burwell operates as a 30psig system. There are two 2 inch lines that feed the town. Both regulator stations are located in excess of 1 km away from the town center. This run of relatively small pipe causes a substantial pressure drop and gas reaching the town is approximatley20 psig or less, . a 10 psi drop. If growth is substantial in Port Burwell over the next few years and demand spikes, the pressure Port Burwell sees will drop even lower.

6.4 Capital Cost Estimates

Upon evaluation of the benefits each potential project has on the system, shown through modeling, certain projects were escalated to the capital cost estimate phase. If a project showed little benefit, an estimate was not developed. A total of three capital cost estimates were developed.

1.) CNG Decanting station (Project 2)
2.) Westchester Road pipeline upgrade (Project 3)
3.) Lakeview station gas source (Project 6)

These capital cost estimates and all assumptions made in the development of the estimates can be found in Appendix E.

6.5 Model and Facilities Verification

In the model creation, calibration, and analysis involved in this project, Cornerstone and ENGLP have determined that there may be some inaccurate information regarding piping facilities in the ground when compared to the documentation on file for the system. The measures that have been taken to calibrate the GASWorkS model lead Cornerstone to believe that what is shown in CAD records and in other sources of piping records do not match what is in the ground in certain areas. As such, Cornerstone advises that the ENGLP increase their efforts in investigating and resolving some of the choke points briefly discussed in Section 6.1. Cornerstone suggests developing a project effort aimed to execute the following tasks:

1.) Identify key problem areas according to the GASWorkS model results.
2.) Excavate (Cornerstone suggest vacuum excavation) locations identified in step 1.
3.) Document existing conditions, fittings etc.
4.) If piping or valves are undersized or incorrectly fittings exist, remove and replace accordingly.
5.) Document as-left conditions.
6.) Recalibrate the GASWorkS model to reflect the true piping of the distribution system.

Having accurate records of piping facilities will cut down on operations costs and make system improvements and capital planning easier for years to come.

7 Conclusion & Recommendations

The ENGLP gas distribution system serving Aylmer and the surrounding communities along the shore of Lake Erie is in need of capital investment to reliably meet the current demand of the customers it serves and to support system project growth. In recent winters, the southern and southeastern part of the system has been stressed for pressure, without experiencing the full potential of a large cold snap. The system requires both volumetric and pressure reinforcement from a new source of gas in that area to make up for the gap that increased peak day demand and declining well production rates have created. A new gas source provides much needed volumes for the area and will allow other meter stations the capability to serve the needs of growing customer bases in the surrounding communities, and will allow the flexibility to sign new larger volume customers that have historically been denied service in recent years given the fragile state of the system as it sits now. Both on-system storage (CNG) and a new gas supply from the Lakeview compressor station are viable options for addressing this issue. In the town of Belmont, a simple pipe size upgrade can address low pressure concerns for gas being delivered to the northern part of town, ensuring that Belmont consistently sees 30psig gas as is currently designed.

Modeling efforts have revealed that gaps exist in the physical records of installed facilities throughout the system particularly in the south and southeast regions of the system. Steps should be taken to systematically identify the areas where improvement in material records and mapping are required and to correct those areas.

8 REFERENCES

1. Broehl, Kerry Elaine, *Gas Peak Design Day Analysis*, Dayton, OH: Wright State University, 1994

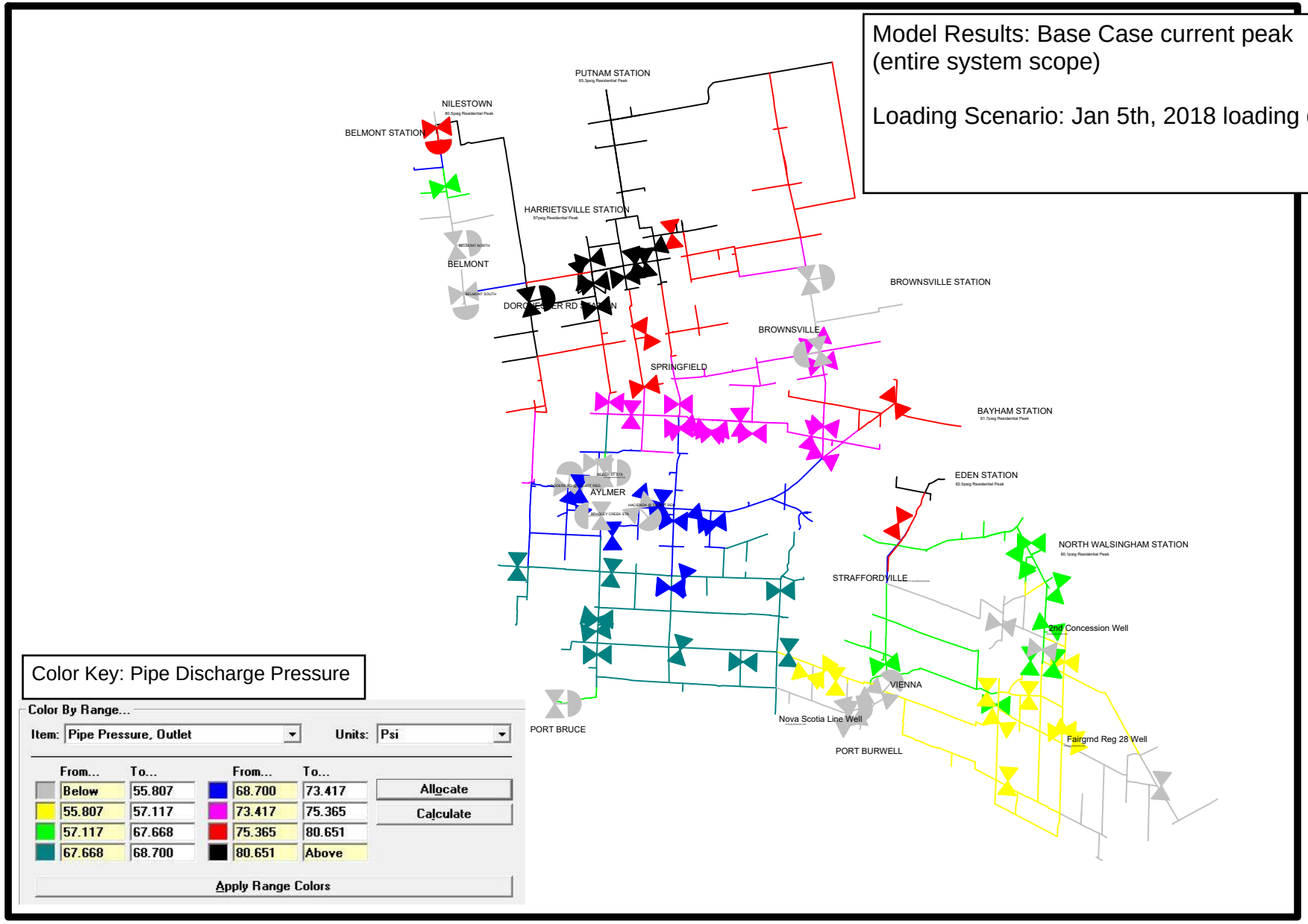
2. Historical Climate Data published by Government of Canada, http://climate.weather.gc.ca/

3. Morr, John, "Transient Simulations of the NRG Distribution Systems Report", SNC Lavalin, Mar. 2016.

9 APPENDICES

APPENDIX A

Calibrated Base Case Model Results



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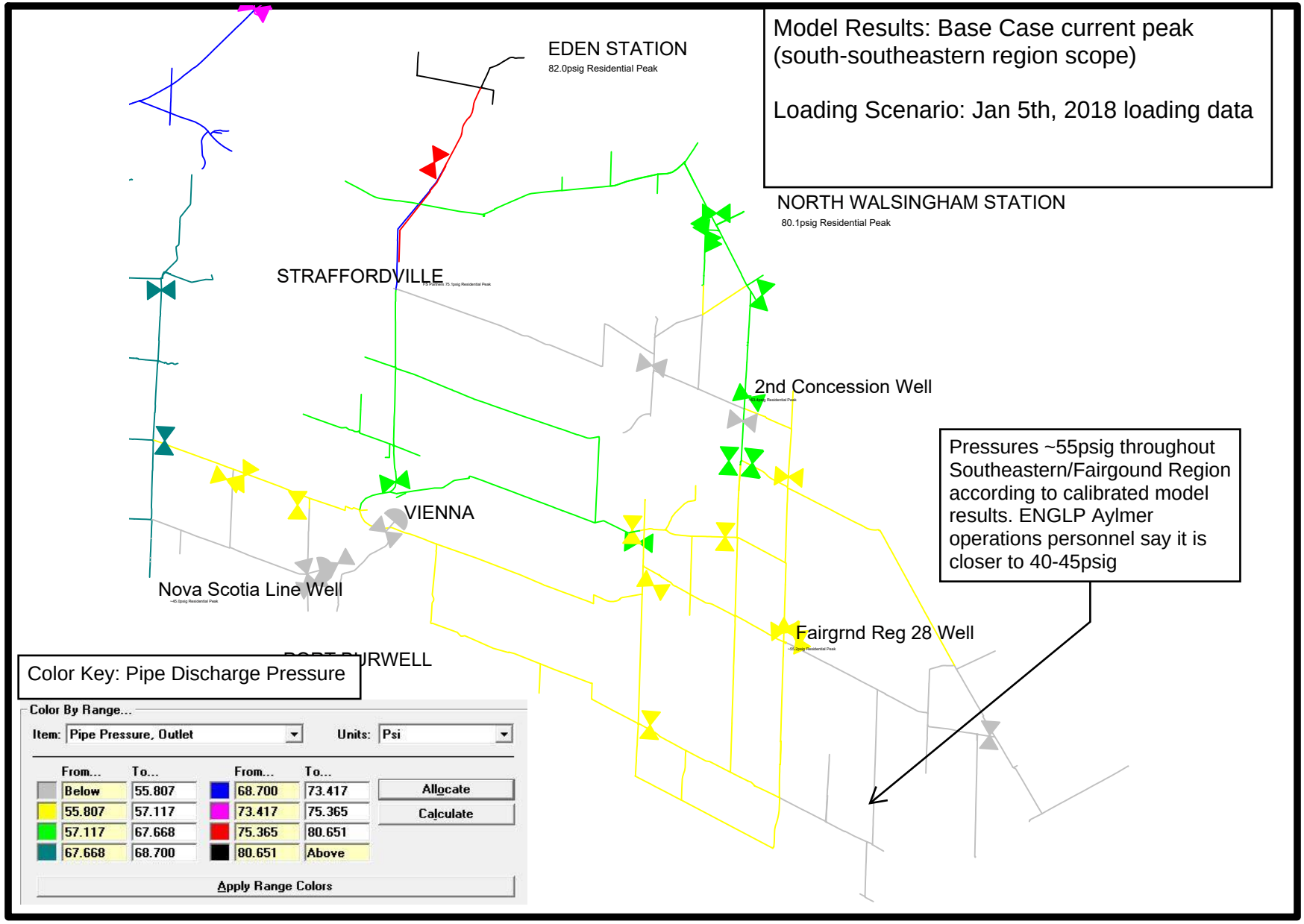

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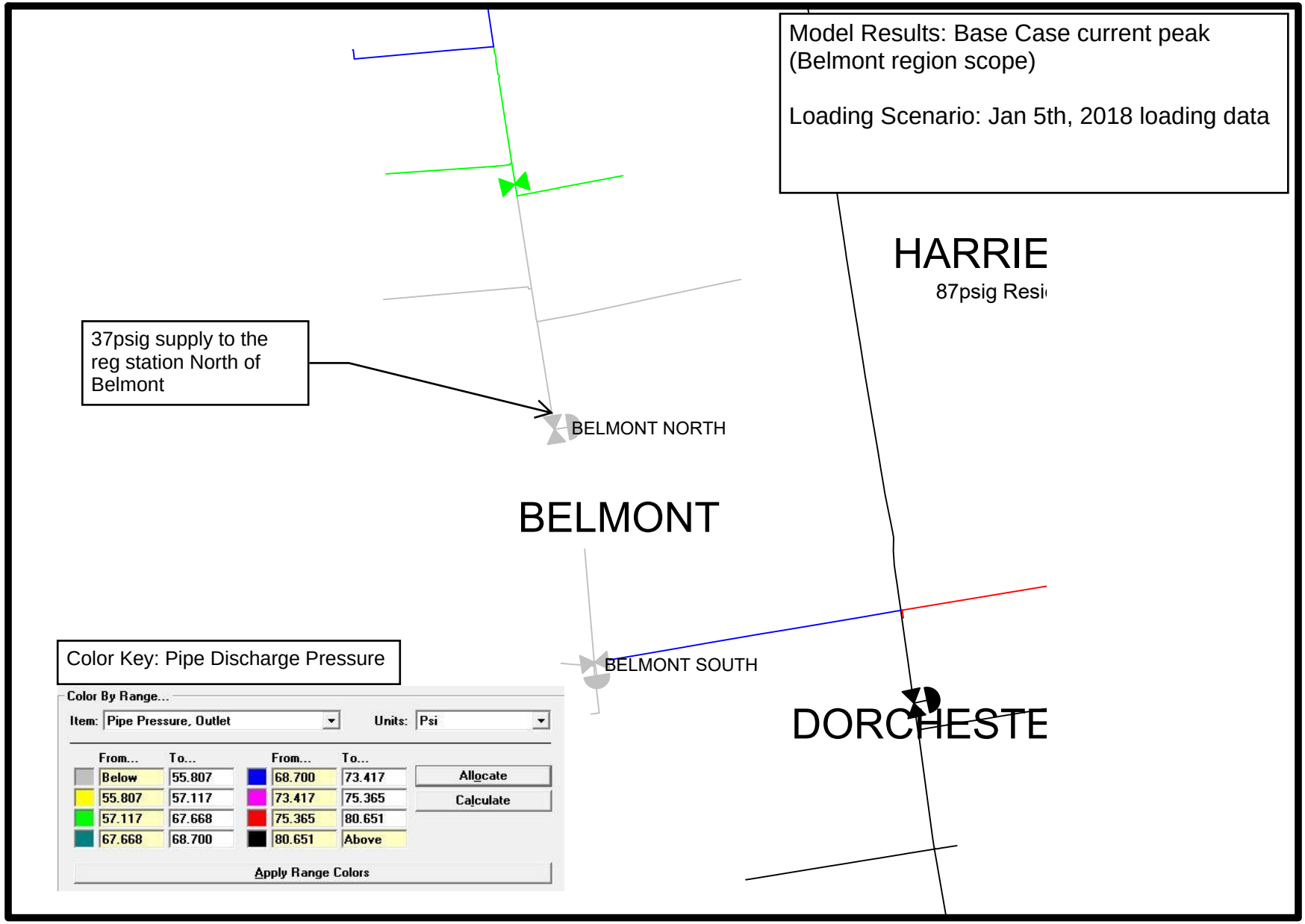

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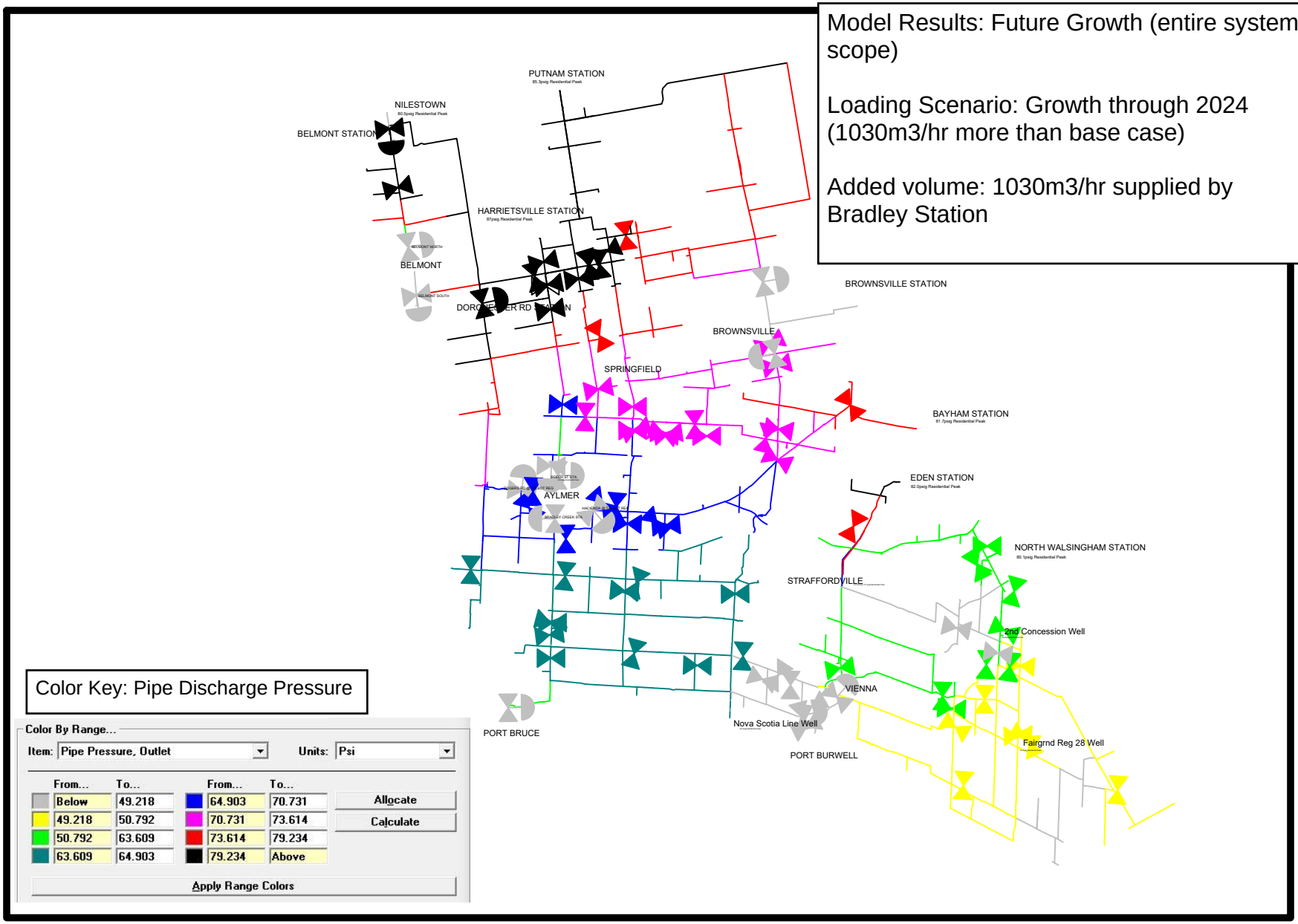
APPENDIX B

Future Growth Model Results

Model Results: Future Growth (entire system scope)

Loading Scenario: Growth through 2024 (1030m3/hr more than base case)

Added volume: 1030m3/hr supplied by Bradley Station



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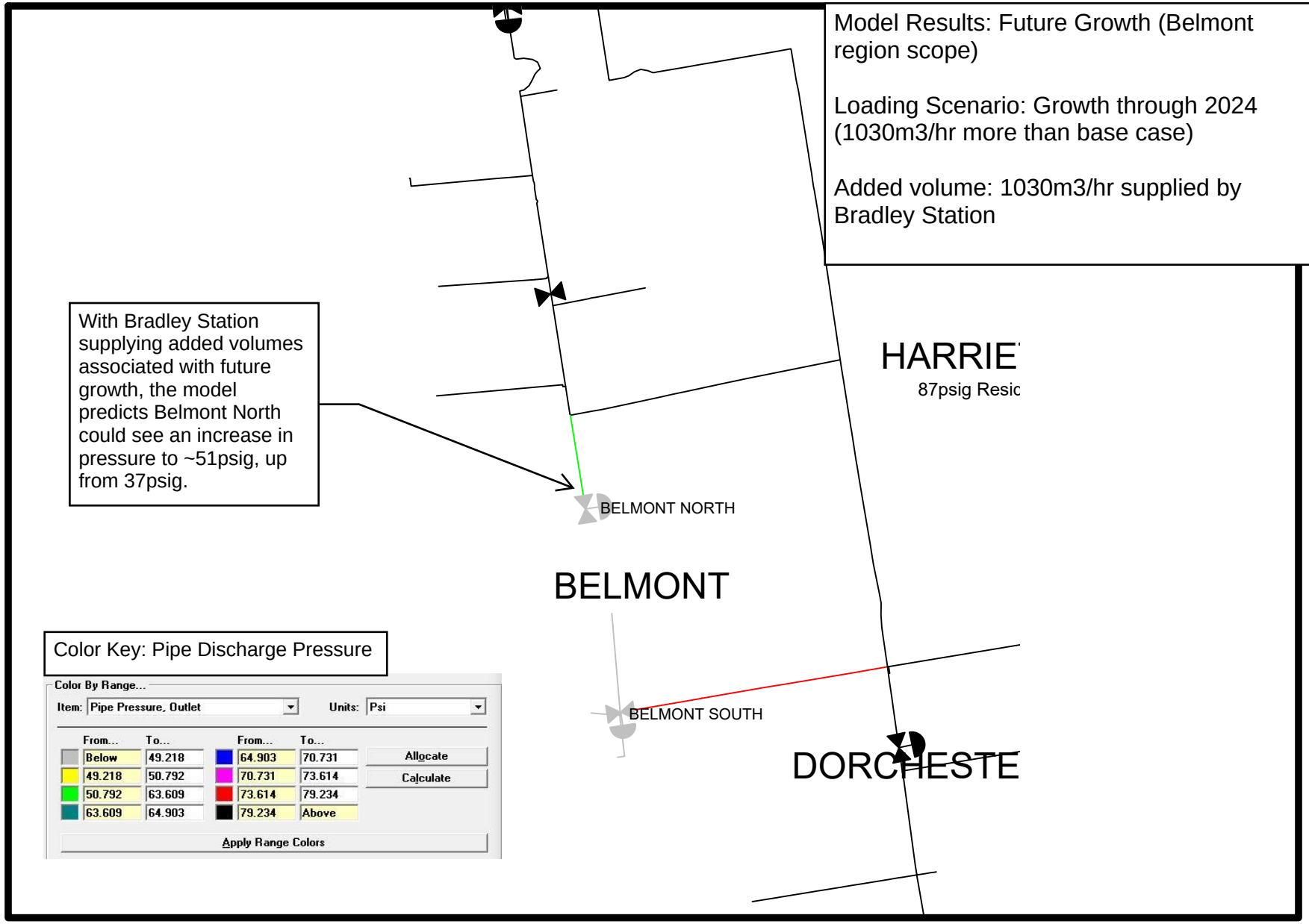

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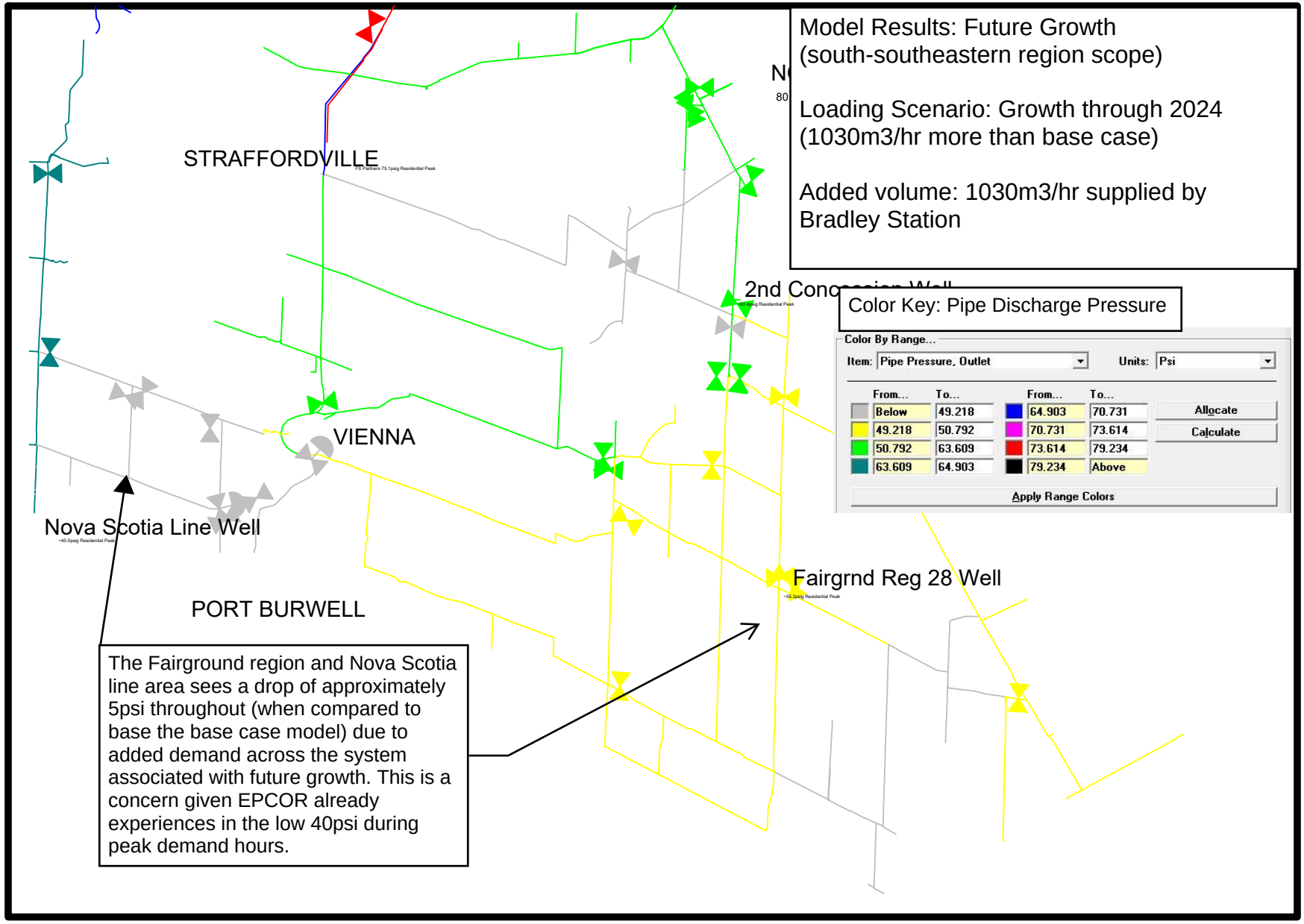

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APPENDIX C

Infrastructure Improvement Project Key

EPCOR NATURAL GAS SYSTEM MAP

Pipe diameters and wells locations

- Service (pipe) 6" Diameter
- Service (pipe) 4" Diameter
- Service (pipe) 3" Diameter
- Service (pipe) 2" Diameter
- Service (pipe) 1.25" Diameter
- Service (pipe) 1.00" Diameter
- DEDICATED 6" LINE - IGPC
- UNION GAS
- EPCOR FRANCHISE.

- EPCOR / UNION GAS STATIONS
- Above Ground Shut off Valves
- Bellow Ground Shut off Valves

Project #1
Project #2
Project #3
Project #4
Project #5
Project #6
Project #7

Lake Erie

Scale
2000m 1000m 0 2km 4km 6km 8km 10km

January 2018

APPENDIX D

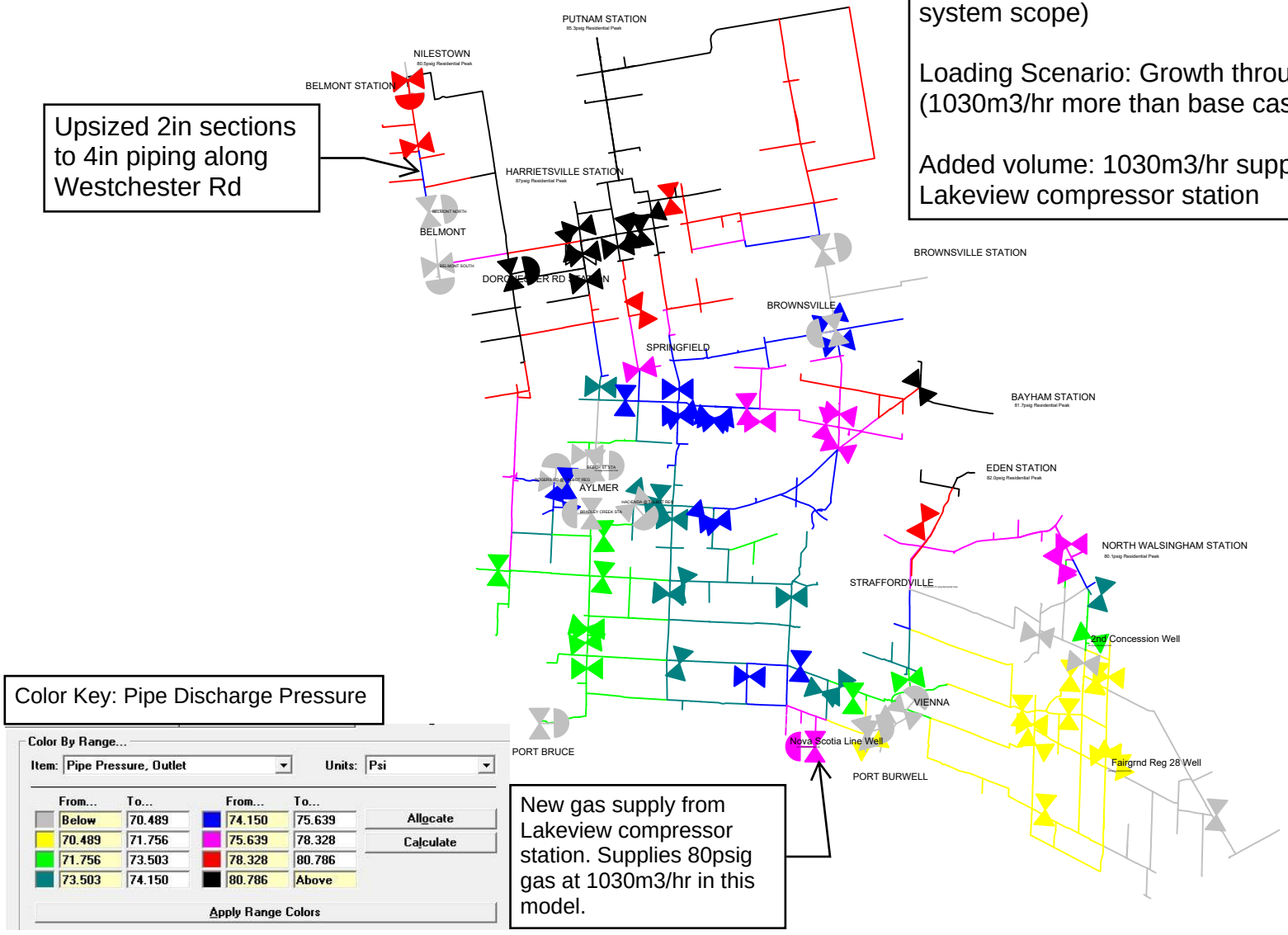
Infrastructure Improvement Projects Model Results

Model Results: Lakeview Station gas supply and Westchester Rd piping upgrade (entire system scope)

Loading Scenario: Growth through 2024 (1030m3/hr more than base case)

Added volume: 1030m3/hr supplied by Lakeview compressor station

Upsized 2in sections to 4in piping along Westchester Rd



Color Key: Pipe Discharge Pressure

New gas supply from Lakeview compressor station. Supplies 80psig gas at 1030m3/hr in this model.

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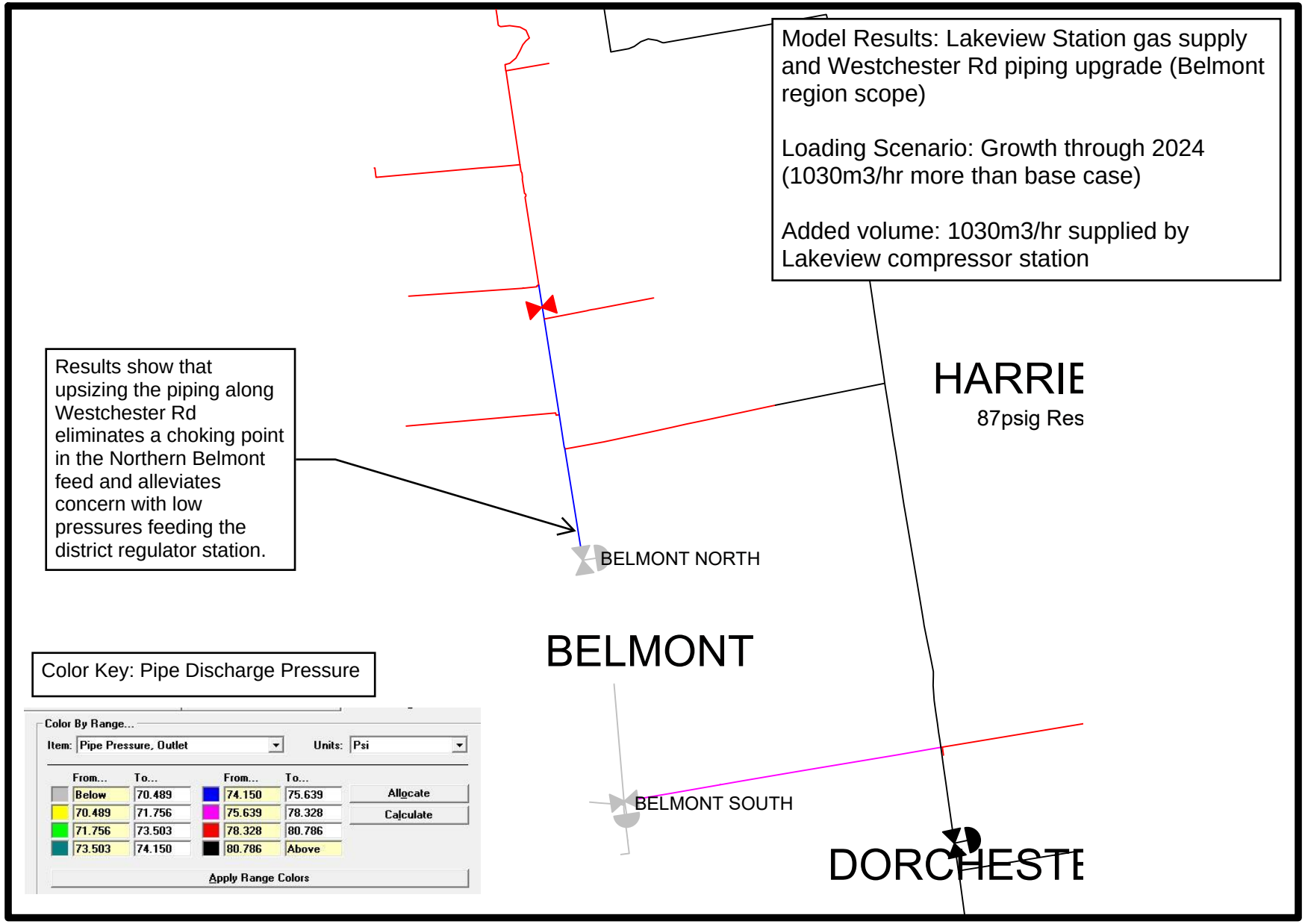

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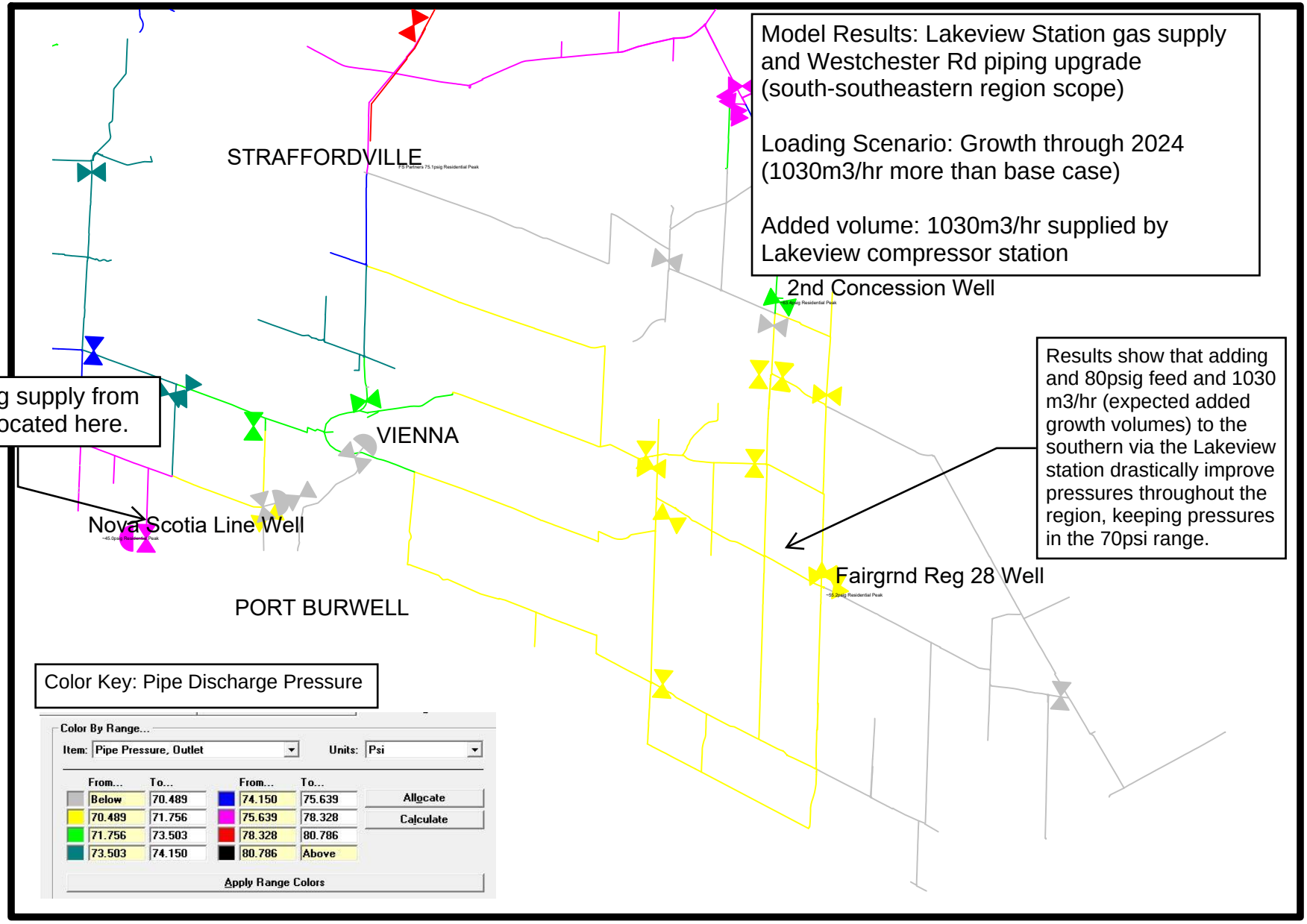

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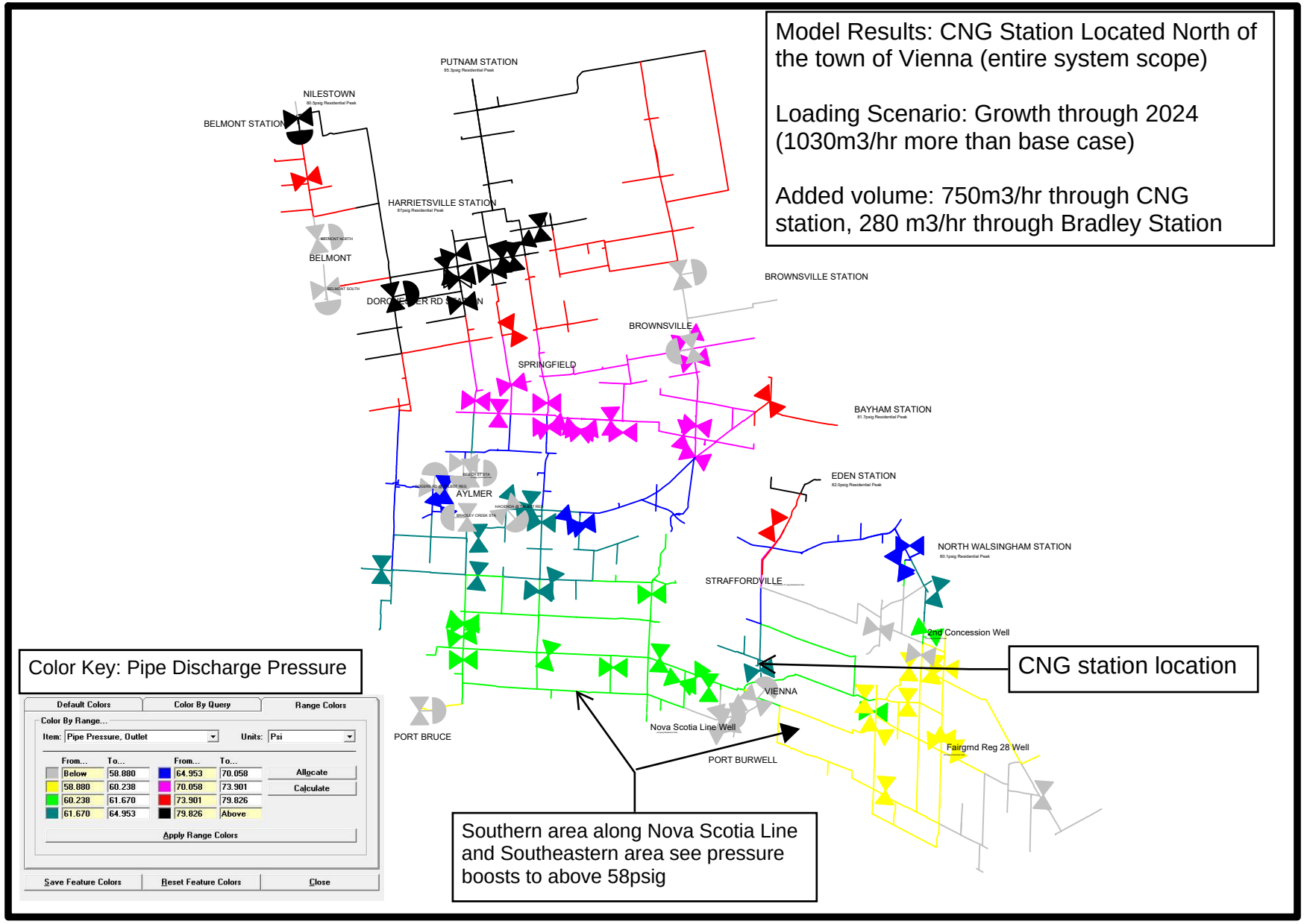

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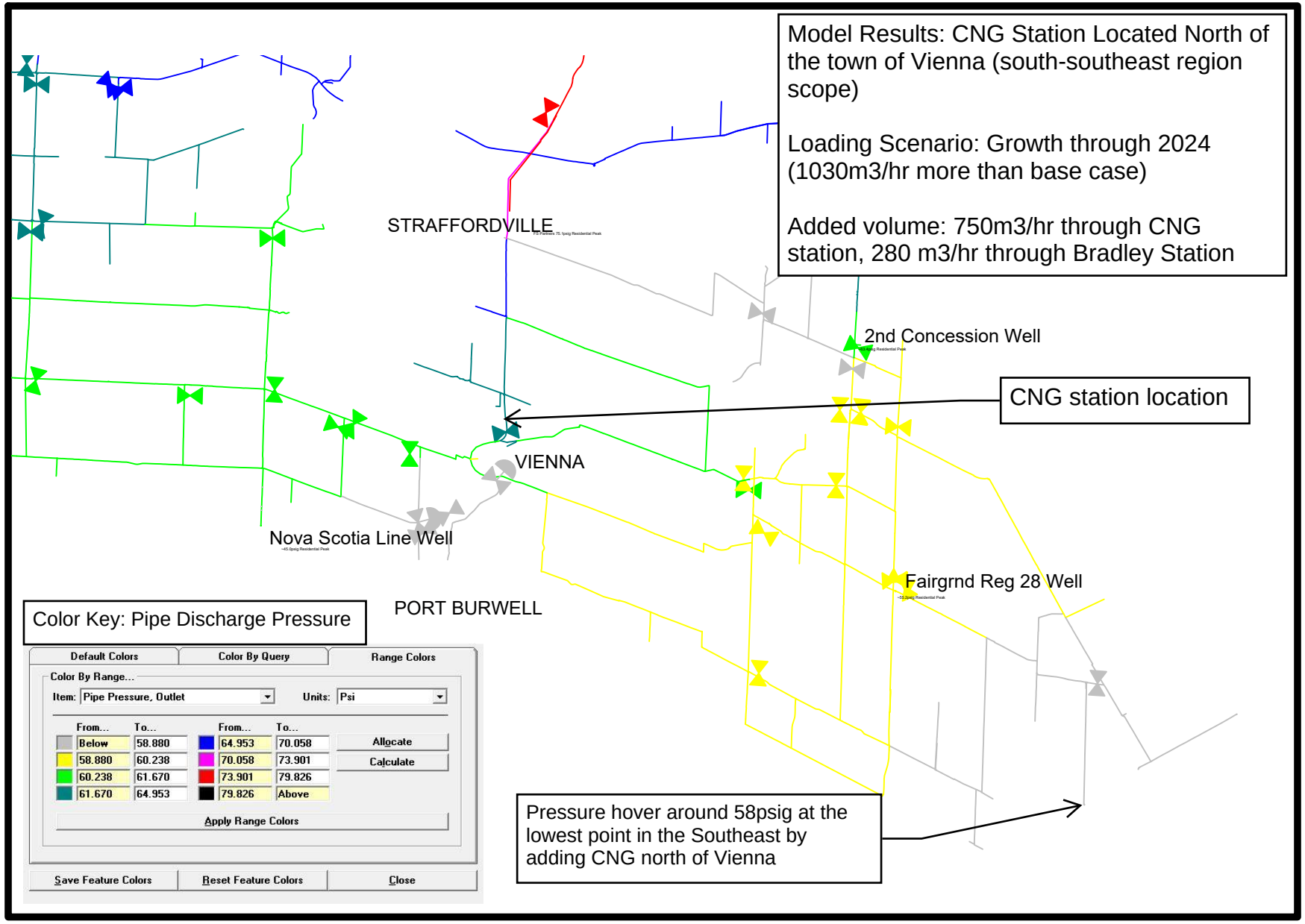

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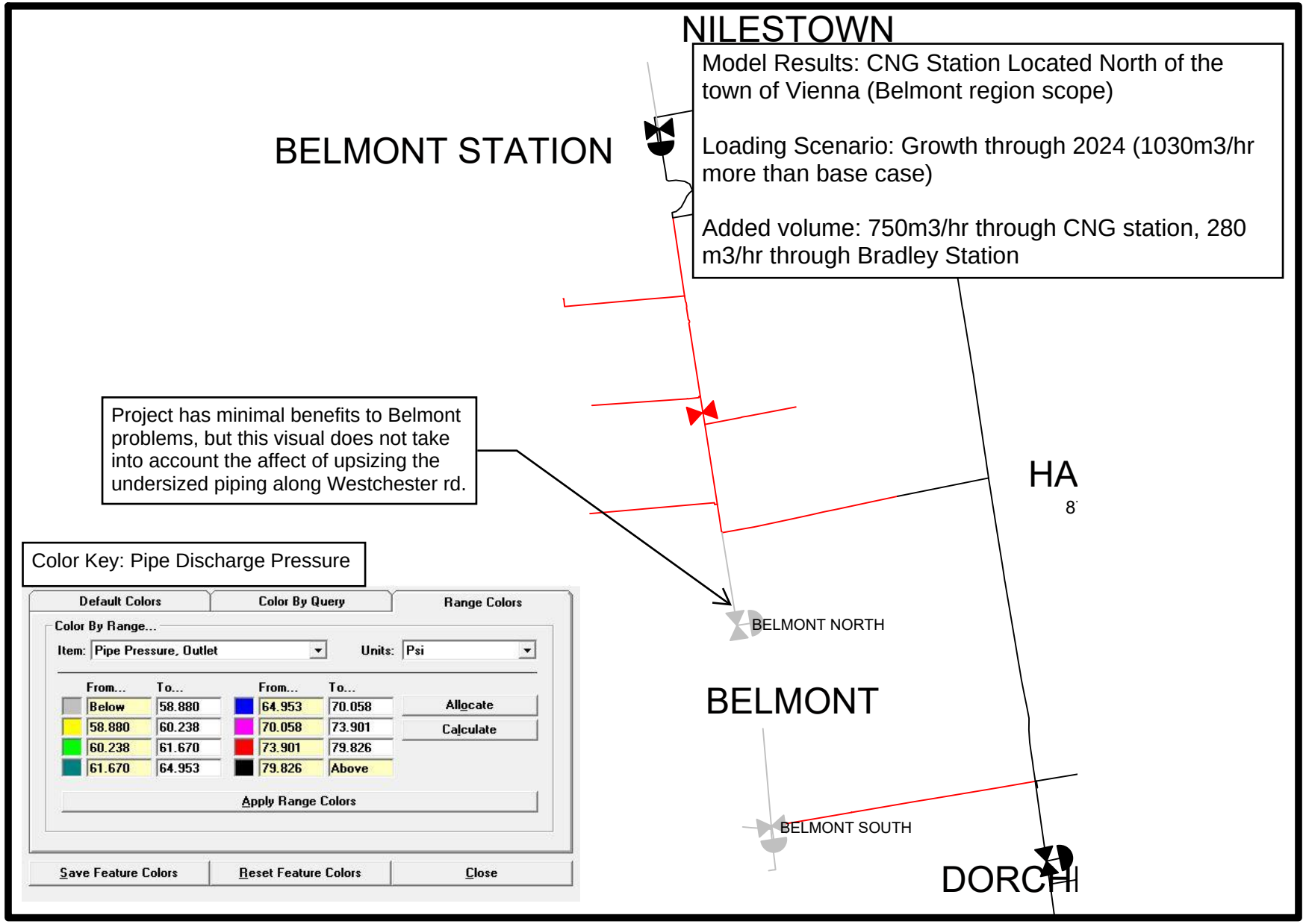

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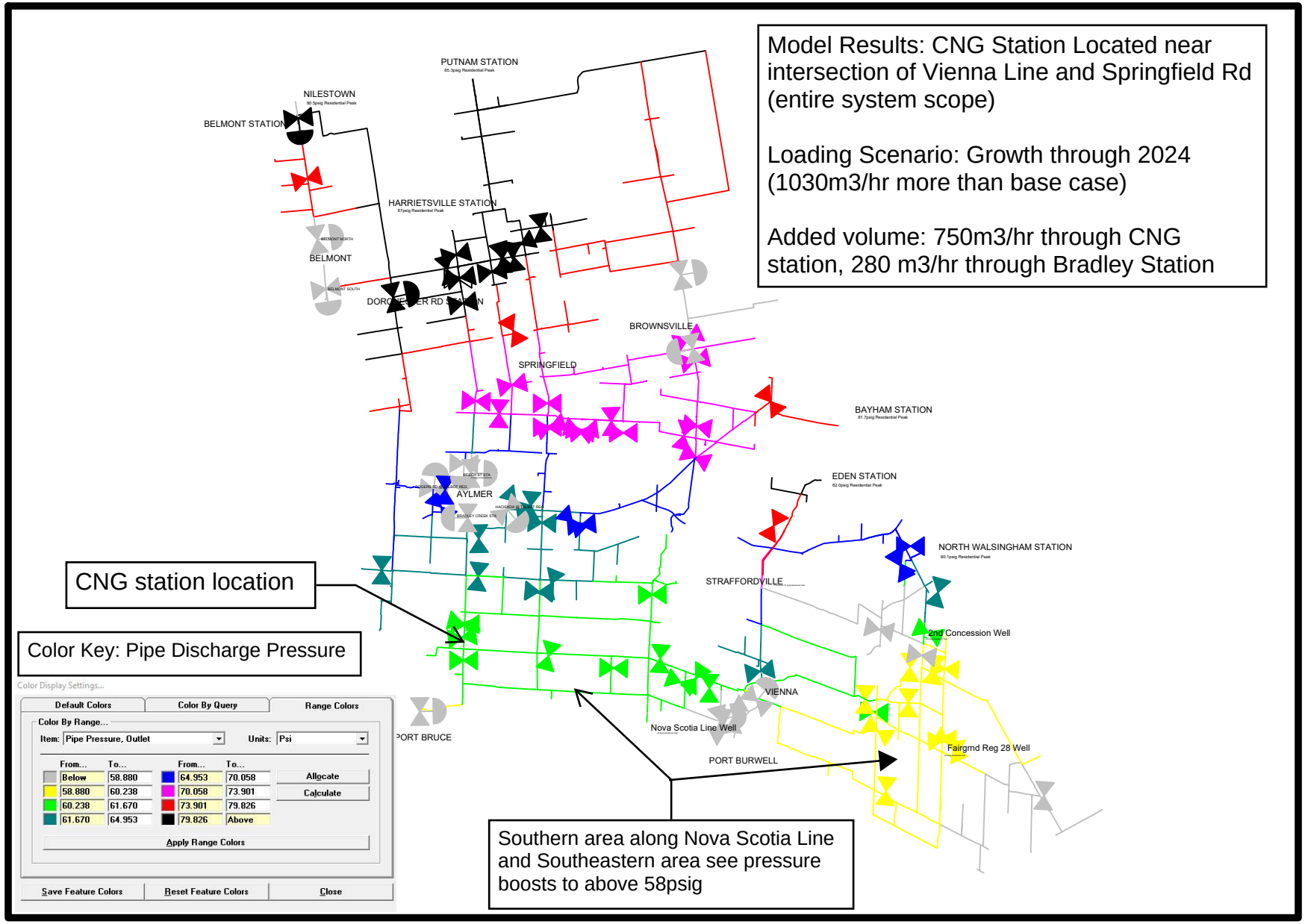

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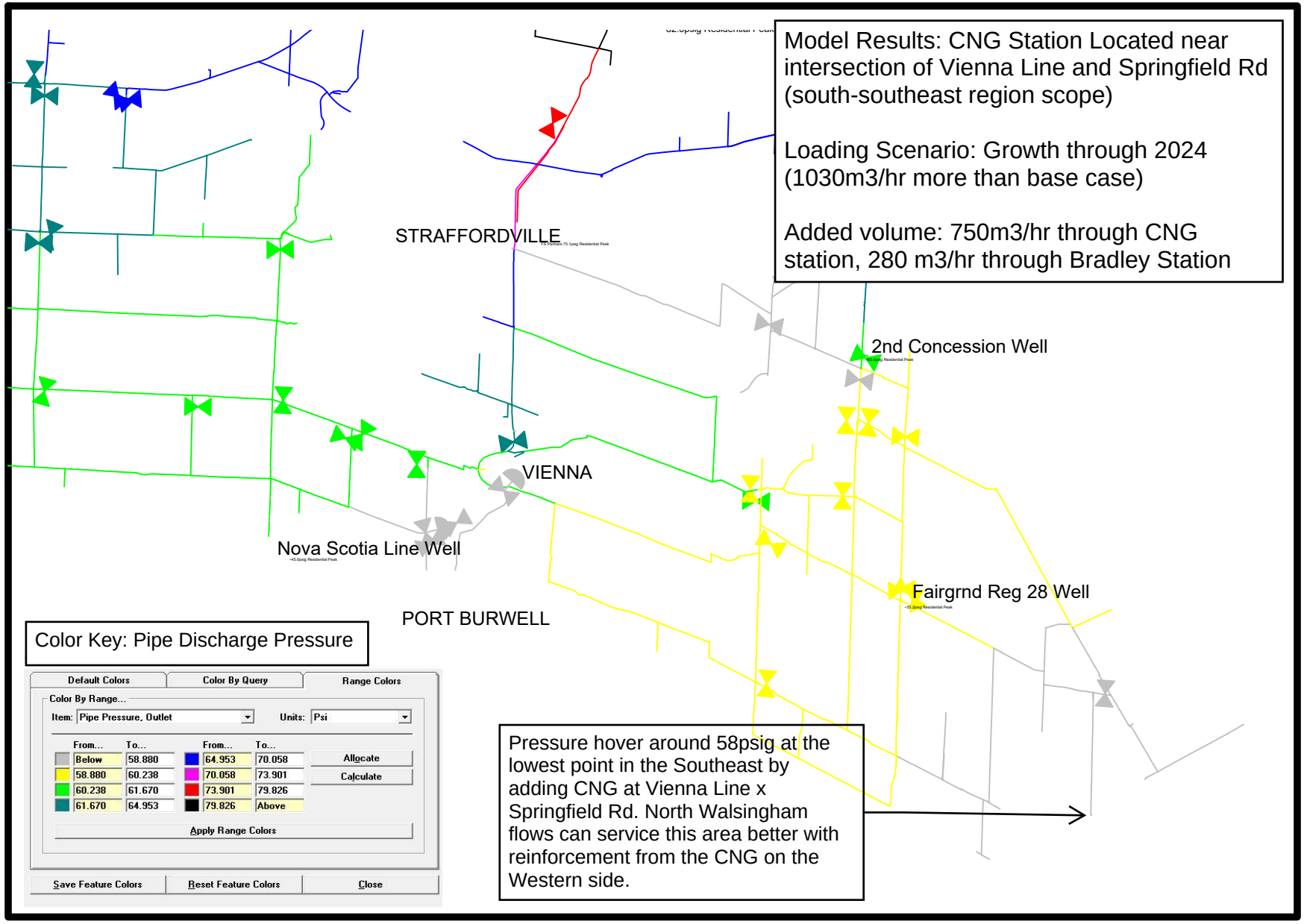

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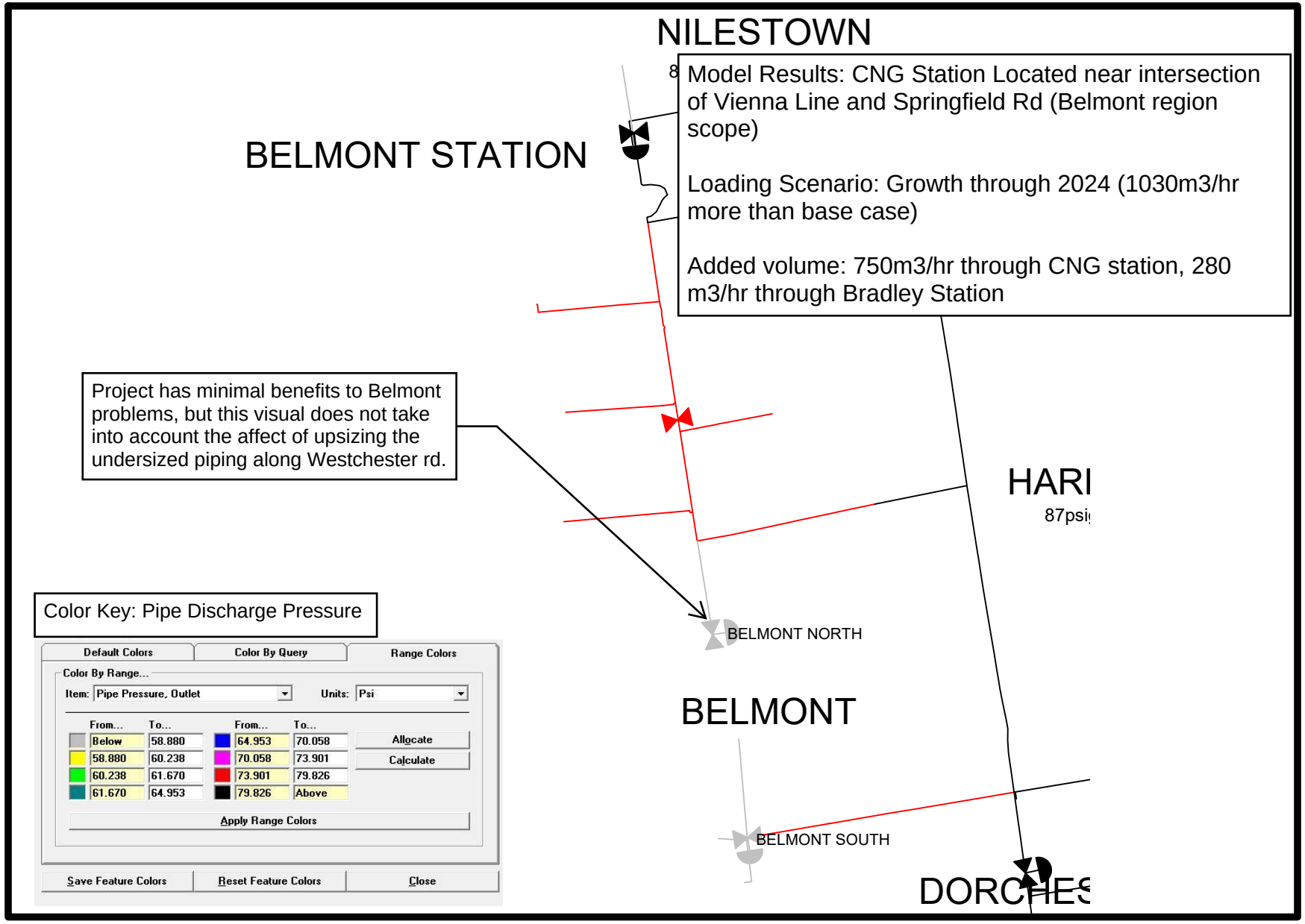

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APPENDIX E

Capital Cost Estimates (CAPEX)

Cornerstone Energy Services

Capital Cost Estimate - CNG Decanting Station				
Prepared by:	Travis Cushman			
Date:	12/13/2018			

Major Equipment Costs	Per unit	Qty	Total	Comments
CNG Let-Down Skid	$ 416,000	1	$ 416,000	Quote from Algas-SDI. Gas-heated unit.
Flame Detector	$ 4,550	1	$ 4,550	Brand - General Monitors
Security Camera(s)	$ 1,300	1	$ 1,300	
Outlet pipe, valves, fittings	$ 13,000	1	$ 13,000	
4" PE 2708 DR 11	$ 17.25	200	$ 3,450	
Tracer Wire	$ 0.35	200	$ 70	
Total Major Equipment Cost	**$**		**438,370**	

Construction Costs	Total			Comments
Site Civil/Structural	$		208,000	1/2 acre Site Development - Tree removal, grading, roadway to site and blacktop in site, fences, concrete.
Concrete	$ 1,040	37	$ 38,480	10ft x 15ft pad for skid. Two 22ft x 8ft pads for truck landing pads. Price per unit is material and install per cubic yard.
Mechanical Contractor	$		40,000	Equipment setting, above ground piping connection to skid.
Piping Contractor	$42.00	200	$ 8,400	Installation of plastic line connecting Algas let-down skid to the injection point. Used per linear meter estimation based on numbers received from EPCOR.
NDE	$		4,550	Estimated $175USD/hr 20 hours NDE.
Electrical and Instrumentation	$		65,000	Wiring for sight lighting, security camera, data monitoring, flame detector, equipment grounding.
Electrical Service	$		10,000	Service required for data monitoring devices and sight lighting. 480V service will be required if unit is to be electrically heated instead of gas-heated.
Inspection	$		31,200	Inspector for duration of construction (4 weeks). $6000USD per week.
Commissioning and Start-up	$		5,200	Two days time of an Algas-SDI technician during start-up is included in the Algas quote. Budget number is for craft support. 4 man-days @ $1000USD/day.
Total Construction Cost	**$**		**370,830**	

Other Costs		Total	Comments
			Based on experience in similar projects
Land	$	150,000	1/2 acre site near Vienna
Engineering	$	39,000	Engineering services for site design, concrete design, and piping installation for the connection to the system, wiring.
Permitting	$	10,000	
Legal Fees	$	15,000	$15,000CAD estimate was provided by EPCOR.
Total Other Costs	**$**	**214,000**	
CNG Station CAPEX		**Total**	**Comments**
Total Equipment Costs	$	438,370	
Total Construction Costs	$	370,830	
Total Other Costs	$	214,000	
ENGLP Project Management (20%)	$	204,640	Assumed ENGLP would take on the project management of this in house so PM is included in this overhead.
Contingency (20%)	$	204,640	
Total Project Cost (+/- 35%)	$	1,432,480	

USD to CAD 1.3

Assumptions:

1.) CNG is contracted out, no CAPEX associated with acquiring the Natural Gas for this facility

2.) Estimate developed using USD estimates and converted to CAD using a factor of 1.3 per currency exchange rate as of 8/27/2018

3.) Commissioning is completed in 2 days and requires no additional support from the skid supplier or tradesmen after that.

4.) System is gas-heated. If an electrically heated unit is desired then a high voltage service is required and CAPEX would change slightly. CNG Skid cost is about the same.

5.) Electrical and Instrumentation number is assuming ENGLP would like remote data monitoring of pressures, temperatures, and flows at the site. Communication via Ethernet.

6.) Linear run of piping from the skid to the ENGLP station is based on a site 200m off of the mainline and traditional construction methods (no jack and bore, drilling, etc.)

Cornerstone Energy Services

Capital Cost Estimate - Lakeview Compressor Station Feed				
Prepared by:	Travis Cushman			
Date:	12/13/2018			

Major Equipment Costs	Per unit	Qty	Total	Comments
Filter Separator	$ 78,000	1	$ 78,000	A filter-sep with a 18" OD vessel was $85k USD for a past project.
Gas-Fired Heaters	$ 65,000	2	$ 130,000	500k BTU/hr rated heater. Need to know inlet pressure at Lakeview feed to get accurate heater sizing, or if heating is required at all.
Rotary Meter	$ 13,000	2	$ 26,000	3in Rotary pricing based on past project.
Regulators	$ 5,200	4	$ 20,800	Grove 900 TE or equivalent
Gas Chromatograph	$ 27,300	1	$ 27,300	ABB Brand GC - quote from past project
Instrument shelter	$ 15,000	1	$ 15,000	Spectra Spec EGM Building quote from past project
Instrumentation			$ 10,400	Mercury mini-max instrumentation for pressure and temperature data info and two Rosemount 3051 PT.
Piping, manual valves, fittings	$ 65,000	1	$ 65,000	Balance of plant piping, isolation valves, fittings
4" PE 2708 DR 11	$ 17.25	1600	$ 27,600	
Tracer Wire	$ 0.35	1600	$ 560	
Total Major Equipment Cost	**$**		**182,260**	

Construction Costs	Total	Comments
Site Civil/Structural	$ 120,000	1/4 acre Site Development - Tree removal, grading, roadway to site and blacktop in site, fences, drainage. Including concrete equipment pads.
Skid fabricator	$ 100,000	Mechanical and instrumentation
NDE	$ 5,000	Two days of fabrication NDE.
Field Electrical	$ 25,000	New service, power hookups to skid, field wiring, junction box installation, lighting, grounding
Site Mechanical Contractor	$ 100,000	Equipment and skid placement and interconnecting piping.
Inspection	$ 7,800	One week total for both fab shop and field inspection.
Commissioning and Start-up	$ 11,700	Tradesmen and technicians.
Pipeline Contractor	$ 42.00 x 1600 = $ 67,200	Priced per linear foot
Total Construction Cost	**$ 436,700**	

Other Costs		Total	Comments
			Based on experience in similar projects
Land	$	100,000	Leasing land from the supplier or parcel close to the supply point on Gully Rd
Engineering	$	100,000	Engineering services from concept to completion of stamped drawings
Permitting	$	10,000	
Legal Fees	$	15,000	$15,000 CAD estimate was provided by EPCOR.
Total Other Costs	**$**	**225,000**	
Meter-Regulator Station CAPEX		**Total**	**Comments**
Total Equipment Costs	$	182,260	
Total Construction Costs	$	436,700	
Total Other Costs	$	225,000	
ENGLP Project Management (20%)	$	168,792	Assumed ENGLP would take on the project management of this in house so PM is included in this overhead.
Contingency (20%)	$	168,792	
Total Project Cost (+/- 35%)	$	1,181,544	

USD to CAD 1.3

$843,960.0

Assumptions:

1.) Numbers reflect cost to input a meter-regulator station either at the lake supply point in Project #7 along Nova Scotia Line or just outside of Glen Meyer at the intersection of Concession 1/Baseline.

2.) Estimate developed using USD estimates and converted to CAD using a factor of 1.3 per currency exchange rate as of 8/27/2018

3.) Equipment estimates taken from past projects so pressure rating and sizes of referenced items may not match needs for this particular station.

4.) Filtration and/or heat may not be required depending on quality and Lakeview supply pressure but it is included in this estimate.

5.) Estimate assumes ENGLP is responsible for the cost of installing metering equipment.

6.) Skidding piping for the meter-regulator process.

Cornerstone Energy Services	Capital Cost Estimate - Westchester Rd Piping Upsize			
	Prepared by:	Travis Cushman		
	Date:	12/13/2018		
Major Equipment Costs	**Per unit**	**Qty**	**Total**	**Comments**
4" PE 2708 DR 11	$17.25	5,000	$ 86,250	Needed 4720m, ordering 5000m Piping estimated from budgetary quote from C.R. Wall & Co.
Tracer Wire	$ 0.35	5000	$ 1,750	
Total Major Equipment Cost	**$**		**88,000**	
Construction Costs	**Total**			**Comments**
Mechanical and Piping	$42.00	4,720	$ 198,240	Installation of plastic line section along Westchester Bourne. Per meter INSTALLATION estimation from EPCOR as $42 given the difficulty of installation expected and having to cross existing services.
Service re-locations	$1,000.00	31	$ 31,000	Re-locate services on existing 2in line to the new 4in line after it has been pressure tested and brought online.
Total Construction Cost	**$**		**229,240**	
Other Costs	**Total**			**Comments**
				Based on experience in similar projects
Land	$		-	No land purchase required.
Survey	$		6,500	Minimal survey effort required as it is assumed this pipeline would go in an existing trench.
Engineering	$		13,000	GIS mapping edits & tie-in details.
Permitting	$		5,000	
Legal Fees	$		-	No legal fees assumed with this project.

Total Other Costs	**$**	**24,500**	
Pipeline Replacement CAPEX	**Total**		**Comments**
Total Equipment Costs	$	88,000	
Total Construction Costs	$	229,240	
Total Other Costs	$	24,500	
ENGLP Project Management (20%)	$	68,348	Assumed ENGLP would take on the project management of this in house so PM is included in this overhead.
Contingency (20%)	$	68,348	Contingency estimate may be a bit high for this type of estimation as it is a pretty straight forward project.
Total Project Cost (+/- 35%)	$	478,436	

USD to CAD 1.3

Assumptions:

1.) Estimate developed using USD estimates and converted to CAD using a factor of 1.3 per currency exchange rate as of 8/27/2018

2.) Construction is traditional methods (no jack and bore or drilling) in the public right of way, using the existing trench ENGLP occupies.

3.) Per unit cost of piping is a conservative number and may decrease given that this single order is a large amount of pipe.

4.) Service relocations assume less than 2m additional service size piping.

APPENDIX F

Lakeview Compressor Station Pipeline Calculations

Pipe Flow Calculation: Lakeview Compressor Station Feed

Project Identification:
Prepared By: TBC
Reviewed By:

Calculation Data/Results...

Flow Equation: Institute of Gas Technology - Improved

Pipe Size/Type: 4P-S11
Inside Diameter: 3.682 Inches
Inside Wall Roughness: 0.000060 Inches

Length: 1600 Meters
Efficiency: 0.95 Decimal
Flow Rate: 1700 m3/hr

	Inlet (Upstream) Values...	Outlet (Downstream) Values...
Pressure:	80.00 Psi	70.03 Psi
Elevation:	0 Feet	0 Feet
Temperature:	5.0 C	4.6 C

Heat Loss Or Gain Calculation Method: None

Joules-Thomson Cooling Was Included

Linear Pressure Drop: 9.97 Psi
Minimum/Maximum Velocity: 33.3 / 37.1 Feet/sec
Line Volume At Average Pressure: 70.750 M3
Average Pressure: 75.11 Psi
Velocity Limit: 200.0 Feet/sec

Compressibility Factor (Base): 0.985
Average Compressibility: 0.985
Calculation Method: AGA8-92-Detailed

Gas Properties...

Base Pressure: 14.730 Psi (Abs)
Base Temperature: 60.000 Fahrenheit

Specific Gravity: 0.58
Viscosity: 0.000007 Lbm/Ft-sec

Assigned Gas Properties File: aga8_92_gcoast.prp

Atmospheric Pressure: 14.732 Psi (Abs)
Atmospheric Pressure Method: American Gas Association (AGA)

Compressibility Factor: 1
Compressibility Factor Method: AGA8-92-Detailed

Calculation Notes...

The Outlet (Downstream) Pressure value was calculated.
The Outlet (Downstream) Temperature was calculated.

Report: Continued...

Comments:

These calculations are only valid within the applicabile range of the selected flow equation.

Temperature calculations are only valid within the applicabile range of the selected method.

Temperature calculations based on Joule-Thomson Cooling are approximate and only valid for high methane content natural gas.

The Minimum Velocity value is based on the larger of the inside diameter value of the specified pipe Size/Type and any attached components, and the Inlet Pressure and AverageTemperature values.
The Maximum Velocity value is based on the smaller of the inside diameter value of the specified pipe Size/Type and any attached components, and the Outlet Pressure and Average Temperature values.

References:

Flow Equation - Gas Age Magazine, May 1967, Gas Behavior In Distribution Systems.
Compressibility - American Gas Association, Report No.8, 1992.
Atmospheric Pressure - American Gas Association, GEOP Series, Measurement, Book M-1, 1993.
Temperature Calculation - Derived. See Calculation Reference For Documentation.

Notes:

80# MAOP system, New 4in plastic line.