



**UARB APPROVAL SHEET**

Project Title: **Canaan Rd 43V to Tremont 51V Line**

CI Number: 33525

- Capital Project Authorization
- ATO
- Final Cost

Head Office Use:

Project Number:

Date: July 26, 2010

Location:			Division:	
<b>Expenditure Profile</b>			<b>Schedule</b>	
YEAR	Budget Estimate	Project Estimate		
2010	14,058,941	7,394,316	Estimated Start Date	2010-08
2011	929,824	622,119	Estimated In-Service Date	2011-06
			Estimated Close Date	2011-07
<b>Total</b>	<b>\$14,988,765</b>	<b>\$8,016,435</b>		

**COMMENTS**

Submitted on behalf of NOVA SCOTIA POWER INCORPORATED

Approved on behalf of NOVA SCOTIA UTILITY AND REVIEW BOARD

Authorized Signatory  
Rick Janega  
EVP Operations & COO

DATE

*26-7-10*

DATE

CI Number : 33525 - Canaan Rd 43V to Tremont 51V Line

Project Number

Parent CI Number :

Cost Centre : 800 - 800-Services - Admin.

Budget Version - 2010 07/05 Forecast

---

	<u>Forecast</u>
Start :	08/01/2010
Operational :	06/30/2011
Final Cost :	07/31/2011
2010	\$7,394,316.46
2011	\$622,118.61
Total :	\$8,016,435.07
Original Cost :	\$0.00

This project provides for costs associated with the construction of a new 138kV transmission line approximately 43 kms in length between the Canaan Road and Tremont Substations.

**Summary of Related CI's +/- 2 years**

2010 - 38819 51V Tremont Circuit Breaker & Bus \$7,452,511  
2010 - 11004 Canaan Rd Circuit Breaker Additions \$1,990,631

CI Number : 33525

- Canaan Rd 43V to Tremont 51V Line

Project Number

Parent CI Number :

Approved Date

Cost Centre : 800

- 800-Services - Admin.

Budget Version 2010 07/05 Forecast

Capital Item Accounts

Acct	Actv	Account	Activity	Forecast Amount	Amount	Variance
092		092-Vehicle T&D OT Labour AO		3,158	0	3,158
092		092-Vehicle T&D Reg. Labour AO		18,333	0	18,333
094		094 - Interest Capitalized		414,753	0	414,753
095		095-COPS Contracts AO		915,374	0	915,374
095		095-COPS Overtime Labour AO		10,903	0	10,903
095		095-COPS Regular Labour AO		63,320	0	63,320
013	002	013 - COPS Contracts	002 - TP - Land Rights	0	0	0
020	002	020 - Royalties, Easements, App	002 - TP - Land Rights	20,000	0	20,000
028	002	028 - Consulting	002 - TP - Land Rights	5,000	0	5,000
001	035	001 - T&D Regular Labour	035 - TP - Wood Poles	11,020	0	11,020
002	035	002 - T&D Overtime Labour	035 - TP - Wood Poles	7,558	0	7,558
011	035	011 - Travel Expense	035 - TP - Wood Poles	4,600	0	4,600
012	035	012 - Materials	035 - TP - Wood Poles			
013	035	013 - COPS Contracts	035 - TP - Wood Poles			
041	035	041 - Meals & Entertainment	035 - TP - Wood Poles	2,875	0	2,875
066	035	066 - Other Goods & Services	035 - TP - Wood Poles	0	0	0
012	038	012 - Materials	038 - TP - Insulators	0	0	0
012	039	012 - Materials	039 - TP - O/H Cond.			
013	039	013 - COPS Contracts	039 - TP - O/H Cond.			
001	085	001 - Regular Labour (No AO)	085 Design	117,300	0	117,300
002	085	002 - Overtime Labour (No AO)	085 Design	0	0	0
004	085	004 - Term Labour (NO AO)	085 Design	25,000	0	25,000
011	085	011 - Travel Expense	085 Design	2,714	0	2,714
013	085	013 - COPS Contracts	085 Design			
015	085	015 - Frt, Post & Delivery	085 Design	500	0	500
028	085	028 - Consulting	085 Design	100,000	0	100,000
041	085	041 - Meals & Entertainment	085 Design	2,875	0	2,875
066	085	066 - Other Goods & Services	085 Design	60,000	0	60,000
001	087	001 - T&D Regular Labour	087 Field Super.& Ops.	69,000	0	69,000
002	087	002 - T&D Overtime Labour	087 Field Super.& Ops.	20,000	0	20,000
011	087	011 - Travel Expense	087 Field Super.& Ops.	19,320	0	19,320
041	087	041 - Meals & Entertainment	087 Field Super.& Ops.	5,750	0	5,750

REDACTED

CI Number : 33525

- Canaan Rd 43V to Tremont 51V Line

Project Number

Parent CI Number :

-

Approved Date

Cost Centre : 800

- 800-Services - Admin.

Budget Version 2010 07/05 Forecast

---

Capital Item Accounts

Acct	Actv	Account	Activity	Forecast Amount	Amount	Variance
066	088	066 - Other Goods & Services	088 Survey/Mapping	0	0	0
			Total Cost:	8,016,435	0	8,016,435
			Original Cost:			

CI Number : 33525

- Canaan Rd 43V to Tremont 51V Line

Project Number

Parent CI Number :

-

Approved Date

Cost Centre : 800

- 800-Services - Admin.

---

**Capital Item Justification**

Justification Criteria : TRANSMISSION PLANT

Sub-Criteria : VOLTAGE UNBALANCE

Name of Report :

Document Location :

Person Responsible :

---

**Why do this project?**

The load on the 69kV system in the Annapolis Valley has increased to a level where a loss of selected elements (138kV line or 138-69kV transformer) in the area, under peak load conditions, causes the voltage on the 69kV system to drop below acceptable levels. An additional 138kV supply from 43V-Canaan Road to 51V-Tremont is required to maintain reliability on the 69kV system for contingency failures during peak load periods.

This project provides for the interconnection of the new 138kV line at the 51V-Tremont Substation and the addition of a new 138kV-69kV autotransformer.

**Why do this project now?**

The 2010/11 peak load on the 69kV system in the Annapolis Valley is forecasted to reach levels such that failure of selected elements (138kV line or 138-69kV transformer) during peak load conditions causes the voltage on the 69kV system to drop below acceptable levels, which could result in outages.

**Why do this project this way?**

The new line terminal and second transformer addition at 51V-Tremont is required to terminate the new 138kV line and provide the additional source point on the 69kV system.

Transmission line construction labour for this project is being sourced through NSPI's existing Power Line Technician (PLT) Service Agreement with EUS. This is aligned with NSPI's workforce planning model which is designed to optimize the allocation and execution of PLT resources among work requirements.

CI Number : 33525

- Canaan Rd 43V to Tremont 51V Line

Project Number

Parent CI Number :

-

Approved Date

Cost Centre : 800

- 800-Services - Admin.

---

Reason for Variance / Over Expenditure / Final Costing

14171185

The estimate that was included in ACE for the transmission line was indicative of the Canadian market estimate to build a 138 kV circuit which was approximately \$300,000/km plus associated overhead/interest charges. Since this time, NSPI has been able to refine the transmission line design and apply material and contractor estimates to reflect a more accurate cost in the Nova Scotia market. This has resulted in a project decrease of \$6.9 million from ACE.

REDACTED

CI 33525 - Canaan Rd 43V to Tremont 51V Line

The following is a breakdown of costs associated with the Canaan Rd 43V to Tremont 51V Line.

• Administrative Overheads and Interest	\$1,425,841
• Labour	\$ 249,878
• Materials	[REDACTED]
• Contracts	[REDACTED]
• Consulting	\$ 105,000
• Other	\$ 118,634
• Total	\$8,016,435

The major project costs include Materials, estimated at [REDACTED] which consists of poles, insulators and conductor [REDACTED] (see attached). The Contract estimate of [REDACTED] is based on a rate of [REDACTED]/hour.

### 33525 - Canaan Rd 43V to Tremont 51V Line

Account	ACE 2010	Current Submission	Variance
001 - Regular Labour (No AO)	-	117,300	117,300
001 - T&D Regular Labour	110,980	80,020	(30,960)
002 - T&D Overtime Labour	-	27,558	27,558
004 - Term Labour (NO AO)	-	25,000	25,000
011 - Travel Expense	14,216	26,634	12,418
012 - Materials			
013 - COPS Contracts			
015 - Frt, Post & Delivery	-	500	500
020 - Royalties, Easements, App	-	20,000	20,000
028 - Consulting	102,800	105,000	2,200
041 - Meals & Entertainment	8,631	11,500	2,869
066 - Other Goods & Services	-	60,000	60,000
092-Vehicle T&D OT Labour AO	-	3,158	3,158
092-Vehicle T&D Reg. Labour AO	25,426	18,333	(7,093)
094 - Interest Capitalized	539,012	414,753	(124,260)
095-COPS Contracts AO	2,343,428	915,374	(1,428,053)
095-COPS Overtime Labour AO	-	10,903	10,903
095-COPS Regular Labour AO	87,818	63,320	(24,499)
	<b>14,988,764</b>	<b>8,016,435</b>	<b>(6,972,329)</b>

**RFQ# 36917**  
**TRANSMISSION CONDUCTOR 2010**  
**Canaan Road**  
 Revised January 25, 2010

Item	Stock #	Description	Quantity (m)				
2	6512-5550	ACSR Bare 26/7 Str Dove 556.5	146875	3.7000	4.03206	3.4410	3.8600
				\$ 543,437.50	\$ 592,208.81		\$ 566,937.50
		Delivery		10 weeks	12-14 weeks	5 weeks	8-10 weeks

**REDACTED**

---

1 **Transmission Responses**

2  
3 **Request IR-T2:**

4  
5 **With respect to:**

6 **Page 190, CI# 33525 - Canaan Rd 43V to Tremont 51V Line,**

7 **Page 192, CI# 38819 - 51V Tremont Circuit Breaker and Bus, and**

8 **Page 197, CI# 11004 - Cannan Rd Circuit Breaker Additions,**

9  
10 a) **Please provide the planning studies and other relevant documents that justify the**  
11 **construction of these three related projects.**

12  
13 b) **Since these three projects, totaling approximately \$24 million, are not only related but**  
14 **appear to be essential to make a complete infrastructure addition to the system, what is**  
15 **the reason to split the projects into three separate submissions?**

16  
17 c) i) **Are the design and engineering phases of these projects complete? If not, when**  
18 **will these phases be completed?**

19  
20 ii) **Has the work in c-i) above been completed by NSPI staff or has it been**  
21 **contracted out? If contracted out, please clarify the aspects that were contracted,**  
22 **the contractor or consulting firm, and the cost for that service.**

23  
24 iii) **Have tender documents been prepared for construction? Please provide a list of**  
25 **enders that will be issued, the issue and closing date, and estimated cost for that**  
26 **aspect of the works.**

27  
28 d) **Please provide the Gantt charts for the projects.**

**REDACTED**

---

1 **Request IR-T2: (cont'd)**

2  
3 **e) Please provide a cost breakdown for each of the three projects indicating the amount to**  
4 **be spent each year until completion of the works. Provide the breakdown showing at a**  
5 **minimum the amount budgeted for NSPI labour contracted labour consultants,**  
6 **material interest, and overhead charges.**

7  
8 **f) Will NSPI be completing any portion of the works utilizing its own forces? If so, please**  
9 **specify those portions of the works that will be assigned to NSPI staff.**

10  
11 Response IR-T2:

12  
13 a) Please refer to Confidential Attachment 1.

14  
15 b) The three projects are directly related. The reason for separating these projects is to facilitate  
16 project cost management.

17  
18 c) i) The preliminary design and engineering for this project has been completed. Early  
19 phases of the line and substation design have begun. Please refer to Attachment 2 for  
20 a detailed schedule.

21  
22 ii) The work referenced in response to IR- c-i) has been predominantly completed by  
23 NSPI. To assist with this project, two consultants have been hired on a per hour  
24 basis. These two consultants are retired NSPI employees.

25  
26 iii) Tender documents have been issued as outlined in the table below. Construction has  
27 not begun on the three major components of this project, with the exception of the  
28 right-of-way clearing.

**REDACTED**

1 Response IR-T2: (cont'd)

2

3 **Table 1 – Time Table Outlining Tender Documents for the Canaan Road to Tremont Project**

4

<b>Tender Document</b>	<b>Tender Amount</b>	<b>Issue Date</b>	<b>Close Date</b>	<b>Comments</b>
Right-of-Way Clearing	\$500 K	March 2010	March 2010	Tender awarded
Site Development and Foundations – Canaan Rd.	\$350 K	May 2010	July 2010	This tender has been issued, but not awarded. The close date and dollar value are estimated.
Site Development and Foundations – Tremont	\$800 K - \$1.0 M	May 2010	July 2010	This tender has been issued, but not awarded. The close date and dollar values are estimated.
Electrical Construction - Tremont	\$750 K	July 2010	July 2010	This tender has not been issued. The dollar value and dates are estimated.

5

6 Transmission line construction labour for CI# 33525 is being sourced through NSPI's  
 7 existing Power Line Technician (PLT) Service Agreement with Emera Utility Services  
 8 (EUS). This is aligned with NSPI's workforce planning model, which is designed to  
 9 optimize the allocation and execution of PLT resources among work requirements.

10

11 d) Please refer to Attachment 2.

12

13 e) Please refer to the tables below, which show the ACE 2010 version totals of each capital  
 14 item.

**REDACTED**

1 Response IR-T2: (cont'd)

2

3 **Table 1 Cost Breakdown of CI#33525 Canaan Rd. 43kV to Tremont 51V Line**

Account	2010 Total	2011 Total	Project Total
Labour	105,431	5,549	110,980
Materials			
Contracts			
Other	20,561	2286	22,847
Interest	347,681	191,332	539,012
AO	2,333,838	122,833	2,456,672
<b>Total</b>	<b>14,058,941</b>	<b>929,823</b>	<b>14,988,764</b>

4

5 **Table 2 Cost Breakdown of CI#38819 51V Tremont Circuit Breaker & Bus**

Account	2010 Total	2011 Total	Project Total
Labour	178,274	178,274	356,548
Overtime Labour	9,738	9,738	19,476
Materials			
Contracts			
Consulting	16,000	24,000	40,000
Other	82,218	82,218	164,436
Interest	104,597	278,825	383,422
AO	352,483	356,401	708,884
<b>Total</b>	<b>3,919,209</b>	<b>3,289,605</b>	<b>7,208,814</b>

6

7 **Table 3 Breakdown of CI#11004 Canaan Rd. Circuit Breaker Additions**

Account	2010 Total	2011 Total	Project Total
Labour	161,831	0	161,831
Overtime Labour	7,420	0	7,420
Materials			
Contracts			
Other	24,893	0	24,893
Interest	29,521	0	29,521
AO	269,425	0	269,425
<b>Total</b>	<b>1,705,311</b>	<b>0</b>	<b>1,705,311</b>

8

**REDACTED**

---

1 Response IR-T2: (cont'd)

2  
3 f) NSPI plans to complete the majority of the design and electrical work at both the Canaan  
4 Road and Tremont Substations. NSPI will also be completing all of the commissioning and  
5 switching functions associated with all three projects. EUS will be completing the  
6 transmission line construction work with NSPI providing field supervision.

7  
8 The study for the reinforcement of the Canaan Road to Tremont electrical system is  
9 confidential due to system security concerns. Protection of the power system preserves  
10 reliability and reduces the risks associated with external threats.

11  
12 The material and contract information presented in the tables above is considered  
13 confidential.

14  
15 NSPI strives to keep the terms and conditions of suppliers' pricing proposals and  
16 arrangements confidential from their other customers or potential competitors. This prevents  
17 competitors from using their information to gain a competitive advantage. This is equally  
18 true for NSPI, which desires to protect its ability to acquire capital services and equipment on  
19 the most competitive terms. Those "best" terms may not be available if there is a risk that  
20 they will be disclosed to the customers or competitors of the supplier.

21  
22 Since NSPI customer rates are cost-based, the maintenance of confidentiality for this item is  
23 to the direct benefit of customers.



**Canaan Road - Tremont Transmission Reinforcement  
Summary of Alternatives**

Budget Year :   
 Division :   
 Department :   
 Originator :

Date :   
 CI Number:   
 Project No. :

Alternative	After Tax WACC	PV of EVA / NPV	Rank	IRR	Disc Pay
A Transmission Line on Existing Easement	6.55%	-13,512,462	3	#DIV/0!	0.0 years
B Transmission Line on Alternate Easement	6.55%	-18,004,006	4	#DIV/0!	0.0 years
C Test 3	6.55%	0	1	#NUM!	0.0 years
D Test 4	6.55%	0	1	#NUM!	0.0 years

**Recommendation :**

**Notes/Comments :**

**Transmission Line on Existing Easement**  
 NSPI currently has an easement parall to the existing 138 kV circuit between Canaan Road and Tremont.

**Transmission Line on Alternate Easement**  
 An alternate easement and route would be required between Bridgewater and Tremont.

**Test 3**

**Test 4**

Canaan Road - Tremont Transmission Reinforcement  
Transmission Line on Existing Easement

Year	Total Revenue	Operating Costs	Capital	CCA	UCC	CFBT	Applicable Taxes	CFAT	Discount Factor	PV of CF	CNPV
2010	-	-	-	-	-	-	-	-	1.000	-	-
2011	-	-	(17,459,577.0)	698,383.1	16,761,193.9	(17,459,577.0)	218,489.1	(17,241,087.9)	0.939	(16,181,218.1)	(16,181,218.1)
2012	-	-	-	1,340,895.5	15,420,298.4	-	413,017.6	413,017.6	0.881	363,799.1	(15,817,418.9)
2013	-	-	-	1,233,623.9	14,186,674.5	-	382,423.4	382,423.4	0.827	316,143.4	(15,501,275.6)
2014	-	-	-	1,134,934.0	13,051,740.6	-	349,578.1	349,578.1	0.776	271,225.4	(15,230,050.1)
2015	-	-	-	1,044,139.2	12,007,601.3	-	323,683.2	323,683.2	0.728	235,696.3	(14,994,353.8)
2016	-	-	-	960,608.1	11,046,993.2	-	297,788.5	297,788.5	0.683	203,510.7	(14,790,843.1)
2017	-	-	-	883,759.5	10,163,233.8	-	273,965.4	273,965.4	0.641	175,720.2	(14,615,122.9)
2018	-	-	-	813,058.7	9,350,175.1	-	252,048.2	252,048.2	0.602	151,724.6	(14,463,398.4)
2019	-	-	-	748,014.0	8,602,161.1	-	231,884.3	231,884.3	0.565	131,005.7	(14,332,392.6)
2020	-	-	-	688,172.9	7,913,988.2	-	213,333.6	213,333.6	0.530	113,116.2	(14,219,276.4)
2021	-	-	-	633,119.1	7,280,869.1	-	196,266.9	196,266.9	0.498	97,669.5	(14,121,606.9)
2022	-	-	-	582,469.5	6,698,399.6	-	180,565.6	180,565.6	0.467	84,332.2	(14,037,274.7)
2023	-	-	-	535,872.0	6,162,527.6	-	166,120.3	166,120.3	0.438	72,816.2	(13,964,458.5)
2024	-	-	-	493,002.2	5,669,525.4	-	152,830.7	152,830.7	0.411	62,872.7	(13,901,585.8)
2025	-	-	-	453,562.0	5,215,963.4	-	140,604.2	140,604.2	0.386	54,287.1	(13,847,298.7)
2026	-	-	-	417,277.1	4,798,686.3	-	129,355.9	129,355.9	0.362	46,873.9	(13,800,424.8)
2027	-	-	-	383,894.9	4,414,791.4	-	119,007.4	119,007.4	0.340	40,473.0	(13,759,951.8)
2028	-	-	-	353,183.3	4,061,608.1	-	109,486.8	109,486.8	0.319	34,946.2	(13,725,005.7)
2029	-	-	-	324,928.6	3,736,679.4	-	100,727.9	100,727.9	0.300	30,174.1	(13,694,831.6)
2030	-	-	-	298,934.4	3,437,745.1	-	92,669.7	92,669.7	0.281	26,053.6	(13,668,777.9)
2031	-	-	-	275,019.6	3,162,725.5	-	85,256.1	85,256.1	0.264	22,495.9	(13,646,282.1)
2032	-	-	-	253,018.0	2,909,707.4	-	78,435.6	78,435.6	0.248	19,423.9	(13,626,858.1)
2033	-	-	-	232,776.6	2,676,930.8	-	72,160.7	72,160.7	0.232	16,771.5	(13,610,086.7)
2034	-	-	-	214,154.5	2,462,776.4	-	66,387.9	66,387.9	0.218	14,481.2	(13,595,605.4)
2035	-	-	-	197,022.1	2,265,754.3	-	61,076.9	61,076.9	0.205	12,503.8	(13,583,101.7)
2036	-	-	-	181,260.3	2,084,493.9	-	56,190.7	56,190.7	0.192	10,796.3	(13,572,305.4)
2037	-	-	-	166,759.5	1,917,734.4	-	51,695.4	51,695.4	0.180	9,322.0	(13,562,983.4)
2038	-	-	-	153,418.8	1,764,315.7	-	47,559.8	47,559.8	0.169	8,049.0	(13,554,934.3)
2039	-	-	-	141,145.3	1,623,170.4	-	43,755.0	43,755.0	0.159	6,949.9	(13,547,984.4)
2040	-	-	-	129,853.6	1,493,316.8	-	40,254.6	40,254.6	0.149	6,000.8	(13,541,983.6)
2041	-	-	-	119,465.3	1,373,851.4	-	37,034.3	37,034.3	0.140	5,181.4	(13,536,802.2)
2042	-	-	-	109,908.1	1,263,943.3	-	34,071.5	34,071.5	0.131	4,473.8	(13,532,328.4)
2043	-	-	-	101,115.5	1,162,827.9	-	31,345.8	31,345.8	0.123	3,862.9	(13,528,465.5)
2044	-	-	-	93,026.2	1,069,801.6	-	28,838.1	28,838.1	0.116	3,335.4	(13,525,130.0)
2045	-	-	-	85,584.1	984,217.5	-	26,531.1	26,531.1	0.109	2,879.9	(13,522,250.1)
2046	-	-	-	78,737.4	905,480.1	-	24,408.6	24,408.6	0.102	2,486.7	(13,519,763.4)
2047	-	-	-	72,438.4	833,041.7	-	22,455.9	22,455.9	0.096	2,147.1	(13,517,616.3)
2048	-	-	-	66,643.3	766,398.4	-	20,659.4	20,659.4	0.090	1,853.9	(13,515,762.4)
2049	-	-	-	61,311.9	705,086.5	-	19,006.7	19,006.7	0.084	1,600.7	(13,514,161.7)
2050	-	-	-	56,406.9	648,679.6	-	21,502.3	21,502.3	0.079	1,699.6	(13,512,462.1)
<b>Total</b>	-	-	(17,459,577.0)	16,810,897.4	202,055,109.0	(17,459,577.0)	5,212,473.3	(12,247,103.7)	15.1	(13,512,462.1)	(559,733,433.6)

Canaan Road - Tremont Transmission Reinforcement  
Transmission Line on Alternate Easement

Year	Total Revenue	Operating Costs	Capital	CCA	UCC	CFBT	Applicable Taxes	CFAT	Discount Factor	PV of CF	CNPV
2010	-	-	-	-	-	-	-	-	1.000	-	-
2011	-	-	(23,263,142.0)	930,525.7	22,332,616.3	(23,263,142.0)	291,115.0	(22,972,027.0)	0.939	(21,559,856.4)	(21,559,856.4)
2012	-	-	-	1,786,609.3	20,546,007.0	-	550,304.7	550,304.7	0.881	484,726.0	(21,075,130.4)
2013	-	-	-	1,643,680.6	18,902,326.5	-	509,541.0	509,541.0	0.827	421,229.5	(20,653,901.0)
2014	-	-	-	1,512,186.1	17,390,140.3	-	465,777.9	465,777.9	0.776	361,380.8	(20,292,520.2)
2015	-	-	-	1,391,211.2	15,998,929.1	-	431,275.5	431,275.5	0.728	314,041.8	(19,978,478.4)
2016	-	-	-	1,279,914.3	14,719,014.8	-	396,773.4	396,773.4	0.683	271,157.7	(19,707,320.7)
2017	-	-	-	1,177,521.2	13,541,493.6	-	365,031.6	365,031.6	0.641	234,129.6	(19,473,191.1)
2018	-	-	-	1,083,319.5	12,458,174.1	-	335,829.0	335,829.0	0.602	202,157.9	(19,271,033.3)
2019	-	-	-	996,653.9	11,461,520.2	-	308,962.7	308,962.7	0.565	174,552.1	(19,096,481.2)
2020	-	-	-	916,921.6	10,544,598.6	-	284,245.7	284,245.7	0.530	150,716.0	(18,945,765.2)
2021	-	-	-	843,567.9	9,701,030.7	-	261,506.0	261,506.0	0.498	130,134.9	(18,815,630.3)
2022	-	-	-	776,082.5	8,924,948.2	-	240,585.6	240,585.6	0.467	112,364.2	(18,703,266.1)
2023	-	-	-	713,995.9	8,210,952.4	-	221,338.7	221,338.7	0.438	97,020.3	(18,606,245.8)
2024	-	-	-	656,876.2	7,554,076.2	-	203,631.6	203,631.6	0.411	83,771.6	(18,522,474.2)
2025	-	-	-	604,326.1	6,949,750.1	-	187,341.1	187,341.1	0.386	72,332.1	(18,450,142.1)
2026	-	-	-	555,980.0	6,393,770.1	-	172,353.8	172,353.8	0.362	62,454.8	(18,387,687.3)
2027	-	-	-	511,501.6	5,882,268.5	-	158,565.5	158,565.5	0.340	53,926.2	(18,333,761.1)
2028	-	-	-	470,581.5	5,411,687.0	-	145,880.3	145,880.3	0.319	46,562.3	(18,287,198.8)
2029	-	-	-	432,935.0	4,978,752.0	-	134,209.8	134,209.8	0.300	40,203.9	(18,246,994.9)
2030	-	-	-	398,300.2	4,580,451.9	-	123,473.1	123,473.1	0.281	34,713.9	(18,212,281.0)
2031	-	-	-	366,436.1	4,214,015.7	-	113,595.2	113,595.2	0.264	29,973.5	(18,182,307.5)
2032	-	-	-	337,121.3	3,876,894.5	-	104,507.6	104,507.6	0.248	25,880.5	(18,156,427.0)
2033	-	-	-	310,151.6	3,566,742.9	-	96,147.0	96,147.0	0.232	22,346.3	(18,134,080.7)
2034	-	-	-	285,339.4	3,281,403.5	-	88,455.2	88,455.2	0.218	19,294.8	(18,114,785.9)
2035	-	-	-	262,512.3	3,018,891.2	-	81,378.8	81,378.8	0.205	16,660.0	(18,098,125.9)
2036	-	-	-	241,511.3	2,777,379.9	-	74,868.5	74,868.5	0.192	14,385.0	(18,083,740.9)
2037	-	-	-	222,190.4	2,555,189.5	-	68,879.0	68,879.0	0.180	12,420.6	(18,071,320.3)
2038	-	-	-	204,415.2	2,350,774.3	-	63,368.7	63,368.7	0.169	10,724.5	(18,060,595.8)
2039	-	-	-	188,061.9	2,162,712.4	-	58,299.2	58,299.2	0.159	9,260.0	(18,051,335.7)
2040	-	-	-	173,017.0	1,989,695.4	-	53,635.3	53,635.3	0.149	7,995.5	(18,043,340.2)
2041	-	-	-	159,175.6	1,830,519.8	-	49,344.4	49,344.4	0.140	6,903.7	(18,036,436.5)
2042	-	-	-	146,441.6	1,684,078.2	-	45,396.9	45,396.9	0.131	5,961.0	(18,030,475.6)
2043	-	-	-	134,726.3	1,549,351.9	-	41,765.1	41,765.1	0.123	5,147.0	(18,025,328.6)
2044	-	-	-	123,948.2	1,425,403.8	-	38,423.9	38,423.9	0.116	4,444.1	(18,020,884.5)
2045	-	-	-	114,032.3	1,311,371.5	-	35,350.0	35,350.0	0.109	3,837.2	(18,017,047.3)
2046	-	-	-	104,909.7	1,206,461.8	-	32,522.0	32,522.0	0.102	3,313.2	(18,013,734.0)
2047	-	-	-	96,516.9	1,109,944.8	-	29,920.3	29,920.3	0.096	2,860.8	(18,010,873.2)
2048	-	-	-	88,795.6	1,021,149.2	-	27,526.6	27,526.6	0.090	2,470.1	(18,008,403.1)
2049	-	-	-	81,691.9	939,457.3	-	25,324.5	25,324.5	0.084	2,132.8	(18,006,270.3)
2050	-	-	-	75,156.6	864,300.7	-	28,649.7	28,649.7	0.079	2,264.5	(18,004,005.7)
<b>Total</b>	-	-	(23,263,142.0)	<b>22,398,841.3</b>	<b>269,218,245.8</b>	(23,263,142.0)	<b>6,945,100.0</b>	<b>(16,318,042.0)</b>	<b>15.1</b>	<b>(18,004,005.7)</b>	<b>(745,788,878.4)</b>

Canaan Road - Tremont Transmission Reinforcement

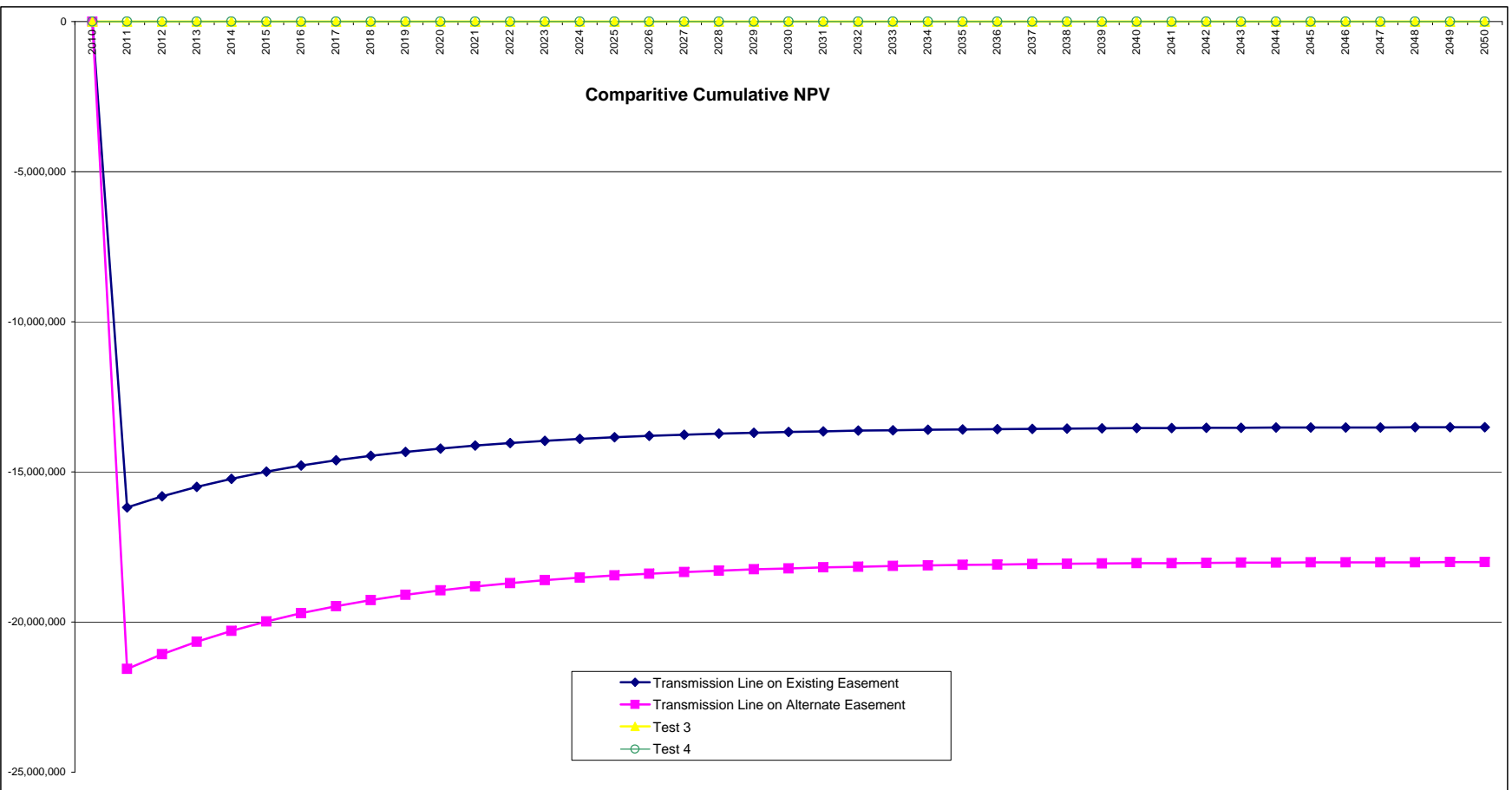
Test 3

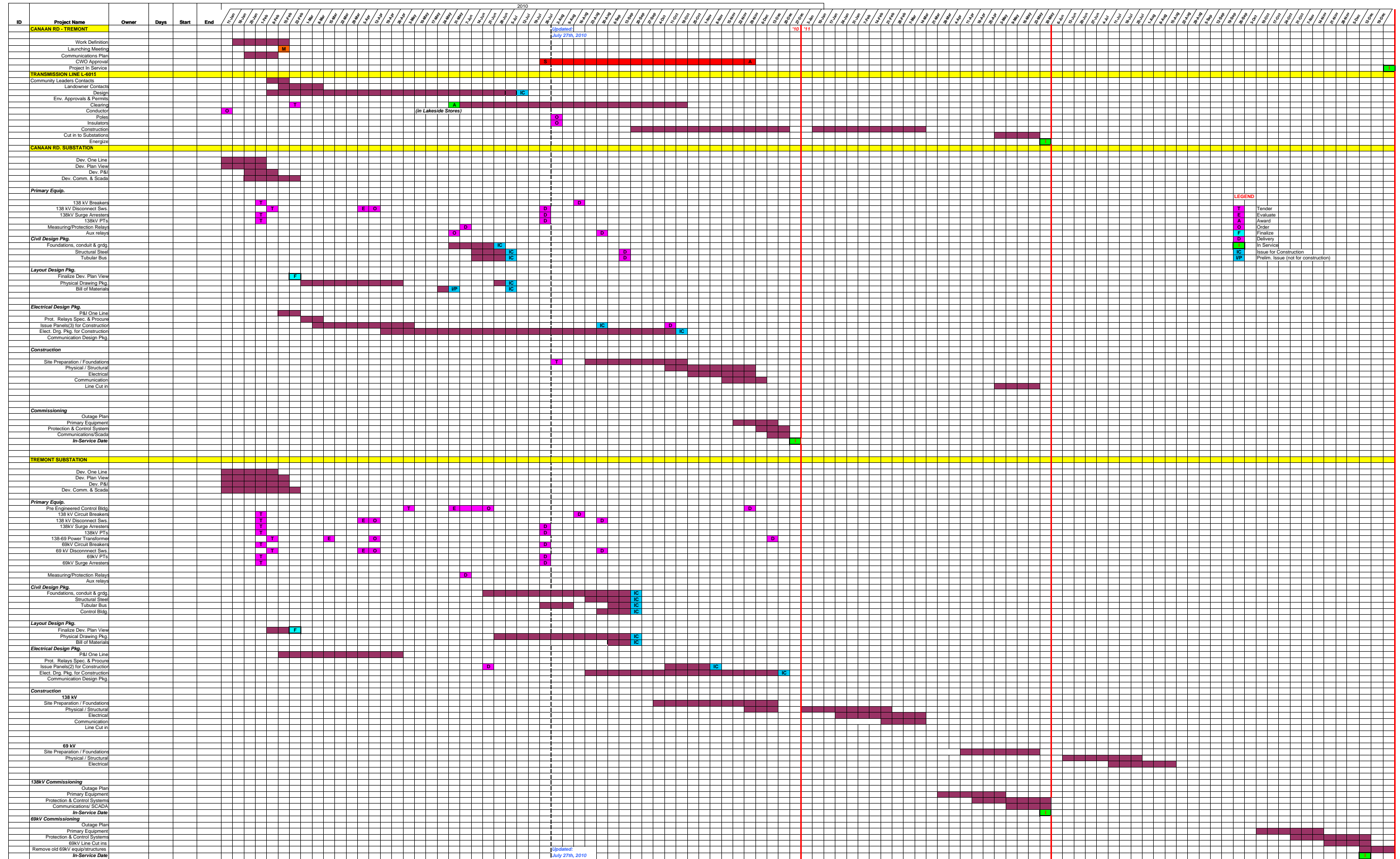
Year	Total Revenue	Operating Costs	Capital	CCA	UCC	CFBT	Applicable Taxes	CFAT	Discount Factor	PV of CF	CNPV
2010	-	-	-	-	-	-	-	-	1.000	-	-
2011	-	-	-	-	-	-	-	-	0.939	-	-
2012	-	-	-	-	-	-	-	-	0.881	-	-
2013	-	-	-	-	-	-	-	-	0.827	-	-
2014	-	-	-	-	-	-	-	-	0.776	-	-
2015	-	-	-	-	-	-	-	-	0.728	-	-
2016	-	-	-	-	-	-	-	-	0.683	-	-
2017	-	-	-	-	-	-	-	-	0.641	-	-
2018	-	-	-	-	-	-	-	-	0.602	-	-
2019	-	-	-	-	-	-	-	-	0.565	-	-
2020	-	-	-	-	-	-	-	-	0.530	-	-
2021	-	-	-	-	-	-	-	-	0.498	-	-
2022	-	-	-	-	-	-	-	-	0.467	-	-
2023	-	-	-	-	-	-	-	-	0.438	-	-
2024	-	-	-	-	-	-	-	-	0.411	-	-
2025	-	-	-	-	-	-	-	-	0.386	-	-
2026	-	-	-	-	-	-	-	-	0.362	-	-
2027	-	-	-	-	-	-	-	-	0.340	-	-
2028	-	-	-	-	-	-	-	-	0.319	-	-
2029	-	-	-	-	-	-	-	-	0.300	-	-
2030	-	-	-	-	-	-	-	-	0.281	-	-
2031	-	-	-	-	-	-	-	-	0.264	-	-
2032	-	-	-	-	-	-	-	-	0.248	-	-
2033	-	-	-	-	-	-	-	-	0.232	-	-
2034	-	-	-	-	-	-	-	-	0.218	-	-
2035	-	-	-	-	-	-	-	-	0.205	-	-
2036	-	-	-	-	-	-	-	-	0.192	-	-
2037	-	-	-	-	-	-	-	-	0.180	-	-
2038	-	-	-	-	-	-	-	-	0.169	-	-
2039	-	-	-	-	-	-	-	-	0.159	-	-
2040	-	-	-	-	-	-	-	-	0.149	-	-
2041	-	-	-	-	-	-	-	-	0.140	-	-
2042	-	-	-	-	-	-	-	-	0.131	-	-
2043	-	-	-	-	-	-	-	-	0.123	-	-
2044	-	-	-	-	-	-	-	-	0.116	-	-
2045	-	-	-	-	-	-	-	-	0.109	-	-
2046	-	-	-	-	-	-	-	-	0.102	-	-
2047	-	-	-	-	-	-	-	-	0.096	-	-
2048	-	-	-	-	-	-	-	-	0.090	-	-
2049	-	-	-	-	-	-	-	-	0.084	-	-
2050	-	-	-	-	-	-	-	-	0.079	-	-
<b>Total</b>	-	-	-	-	-	-	-	-	15.1	-	-

Canaan Road - Tremont Transmission Reinforcement

Test 4

Year	Total Revenue	Operating Costs	Capital	CCA	UCC	CFBT	Applicable Taxes	CFAT	Discount Factor	PV of CF	CNPV
2010	-	-	-	-	-	-	-	-	1.000	-	-
2011	-	-	-	-	-	-	-	-	0.939	-	-
2012	-	-	-	-	-	-	-	-	0.881	-	-
2013	-	-	-	-	-	-	-	-	0.827	-	-
2014	-	-	-	-	-	-	-	-	0.776	-	-
2015	-	-	-	-	-	-	-	-	0.728	-	-
2016	-	-	-	-	-	-	-	-	0.683	-	-
2017	-	-	-	-	-	-	-	-	0.641	-	-
2018	-	-	-	-	-	-	-	-	0.602	-	-
2019	-	-	-	-	-	-	-	-	0.565	-	-
2020	-	-	-	-	-	-	-	-	0.530	-	-
2021	-	-	-	-	-	-	-	-	0.498	-	-
2022	-	-	-	-	-	-	-	-	0.467	-	-
2023	-	-	-	-	-	-	-	-	0.438	-	-
2024	-	-	-	-	-	-	-	-	0.411	-	-
2025	-	-	-	-	-	-	-	-	0.386	-	-
2026	-	-	-	-	-	-	-	-	0.362	-	-
2027	-	-	-	-	-	-	-	-	0.340	-	-
2028	-	-	-	-	-	-	-	-	0.319	-	-
2029	-	-	-	-	-	-	-	-	0.300	-	-
2030	-	-	-	-	-	-	-	-	0.281	-	-
2031	-	-	-	-	-	-	-	-	0.264	-	-
2032	-	-	-	-	-	-	-	-	0.248	-	-
2033	-	-	-	-	-	-	-	-	0.232	-	-
2034	-	-	-	-	-	-	-	-	0.218	-	-
2035	-	-	-	-	-	-	-	-	0.205	-	-
2036	-	-	-	-	-	-	-	-	0.192	-	-
2037	-	-	-	-	-	-	-	-	0.180	-	-
2038	-	-	-	-	-	-	-	-	0.169	-	-
2039	-	-	-	-	-	-	-	-	0.159	-	-
2040	-	-	-	-	-	-	-	-	0.149	-	-
2041	-	-	-	-	-	-	-	-	0.140	-	-
2042	-	-	-	-	-	-	-	-	0.131	-	-
2043	-	-	-	-	-	-	-	-	0.123	-	-
2044	-	-	-	-	-	-	-	-	0.116	-	-
2045	-	-	-	-	-	-	-	-	0.109	-	-
2046	-	-	-	-	-	-	-	-	0.102	-	-
2047	-	-	-	-	-	-	-	-	0.096	-	-
2048	-	-	-	-	-	-	-	-	0.090	-	-
2049	-	-	-	-	-	-	-	-	0.084	-	-
2050	-	-	-	-	-	-	-	-	0.079	-	-
<b>Total</b>	-	-	-	-	-	-	-	-	15.1	-	-





43V- Canaan Rd. - 51V- Tremont 138kV System Expansion Project