



UARB APPROVAL SHEET

Project Title: **Canaan Rd Circuit Breaker Additions**

CI Number: 11004

☒ Capital Project Authorization

Head Office Use:

☐ ATO

Project Number:

☐ Final Cost

Date: June 30, 2010

Location:

Division:

Expenditure Profile

Schedule

YEAR	Budget Estimate	Project Estimate		
2010	1,705,311	1,835,191	Estimated Start Date	2010-08
2011	0	155,441	Estimated In-Service Date	2010-12
			Estimated Close Date	2011-03
Total	\$1,705,311	\$1,990,631		

COMMENTS

Submitted on behalf of NOVA SCOTIA POWER INCORPORATED

Approved on behalf of NOVA SCOTIA UTILITY AND REVIEW BOARD

June 30/2010

Authorized Signatory

DATE

Mark Savory

VP Technical and Construction

DATE

Project Number

- Canaan Rd Circuit Breaker Additions

CI Number : 11004

Parent CI Number :

Budget Version - 2010 06/06 Forecast

Cost Centre : 800 - 800-Services - Admin.

	Forecast
Start :	08/01/2010
Operational :	12/31/2010
Final Cost :	03/31/2011
2010	\$1,835,190.50
2011	\$155,440.64
Total :	\$1,990,631.14
Original Cost :	\$0.00

This project provides for the costs to add a new 138kV line terminal as well as the associated protection and bus modifications at 43V-Canaan Road.

Summary of Related CI's +/- 2 years
 2010 - 33525 Canaan Rd 43V to Tremont 51V Line \$9,148,573
 2010 - 38819 51V Tremont Circuit Breaker & Bus \$7,452,511

CI Number : 11004

- Canaan Rd Circuit Breaker Additions

Project Number

Parent CI Number :

Approved Date

Cost Centre : 800

- 800-Services - Admin.

Budget Version 2010 06/06 Forecast

Capital Item Accounts

Acct	Actv	Account	Activity	Forecast Amount	Amount	Variance
092		092-Vehicle T&D Reg. Labour AO		16,054	0	16,054
092		092-Vehicle T&D OT Labour AO		11	0	11
094		094 - Interest Capitalized		25,367	0	25,367
095		095-COPS Regular Labour AO		55,451	0	55,451
095		095-COPS Contracts AO		101,718	0	101,718
095		095-COPS Overtime Labour AO		37	0	37
001	003	001 - T&D Regular Labour	003 - TP - Bldg., Struct. Grnd.	6,097	0	6,097
012	003	012 - Materials	003 - TP - Bldg., Struct. Grnd.			
013	003	013 - COPS Contracts	003 - TP - Bldg., Struct. Grnd.			
066	003	066 - Other Goods & Services	003 - TP - Bldg., Struct. Grnd.	20,229	0	20,229
001	022	001 - T&D Regular Labour	022 - TP - Elec Contr. Equip.	0	0	0
002	022	002 - T&D Overtime Labour	022 - TP - Elec Contr. Equip.	0	0	0
012	022	012 - Materials	022 - TP - Elec Contr. Equip.			
013	022	013 - COPS Contracts	022 - TP - Elec Contr. Equip.			
014	022	014 - Overtime Meals	022 - TP - Elec Contr. Equip.	3,095	0	3,095
041	022	041 - Meals & Entertainment	022 - TP - Elec Contr. Equip.	1,855	0	1,855
066	022	066 - Other Goods & Services	022 - TP - Elec Contr. Equip.	44,000	0	44,000
012	023	012 - Materials	023 - TP - Power Equip., Station S			
001	043	001 - T&D Regular Labour	043 - DP - Substn Dev.	0	0	0
001	043	001 - T&D Regular Labour	043 - TP - Substn Dev.	14,540	0	14,540
002	043	002 - T&D Overtime Labour	043 - TP - Substn Dev.	0	0	0
012	043	012 - Materials	043 - TP - Substn Dev.			
013	043	013 - COPS Contracts	043 - TP - Substn Dev.			
014	043	014 - Overtime Meals	043 - TP - Substn Dev.	0	0	0
012	061	012 - Materials	061 - TP - Switched Telecomm. Sys			
001	085	001 - Regular Labour (No AO)	085 Design	27,438	0	27,438
001	085	001 - T&D Regular Labour	085 Design	24,969	0	24,969
002	085	002 - Overtime Labour (No AO)	085 Design	51	0	51
002	085	002 - T&D Overtime Labour	085 Design	93	0	93
011	085	011 - Travel Expense	085 Design	83	0	83
028	085	028 - Consulting	085 Design	99,601	0	99,601
001	086	001 - T&D Regular Labour	086 Commissioning	24,470	0	24,470
013	087	013 - COPS Contracts	087 Field Super. & Ops.			

REDACTED

CI Number : 11004

- Canaan Rd Circuit Breaker Additions

Project Number

Parent CI Number :

-

Approved Date

Cost Centre : 800

- 800-Services - Admin.

Budget Version

2010 06/06 Forecast

Capital Item Accounts

Acct	Activ	Account	Activity	Forecast Amount	Amount	Variance
041	087	041 - Meals & Entertainment	087 Field Super. & Ops.	1,650	0	1,650
Total Cost:				1,990,631	0	1,990,631

Original Cost:

CI Number : 11004	- Canaan Rd Circuit Breaker Additions	Project Number
Parent CI Number :	-	Approved Date
Cost Centre : 800	- 800-Services - Admin.	

Capital Item Justification

Justification Criteria : TRANSMISSION PLANT

Sub-Criteria :

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 some source 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 first contingency failures during peak load periods.

This project provides for the interconnection of the new 138kV line from 43V-Canaan Road to 51V-Tremont at the 43V-Canaan Road Substation.

Why do this project now?

The 2010/11 peak load on the 69kV system in the Annapolis Valley is forecasted to meet levels during peak load conditions which cause 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 addition at 43V-Canaan Road is required to terminate the new 138kV line.

This work will be completed by NSPI.

CI Number : 11004

- Canaan Rd Circuit Breaker Additions

Project Number

Parent CI Number :

-

Approved Date

Cost Centre : 800

- 800-Services - Admin.

Reason for Variance / Over Expenditure / Final Costing

13604336

The increased amount of the project from ACE is mostly due to the requirement for a new radio link.

CI 11004 – Canaan Rd Circuit Breaker Additions

The following is a breakdown of costs associated with the Canaan Rd Circuit Breaker Additions.

• Administrative Overheads and Interest	\$ 198,638
• Labour	\$ 97,658
• Materials	[REDACTED]
• Contracts	[REDACTED]
• Consulting	\$ 99,601
• Other	\$ 70,912
• Total	\$1,990,631

Materials – Electrical Control Equipment \$245,485

This estimate includes all control cabling and protection panels

Materials – Substation Development \$436,583

This estimate includes;

■ x 138 kV circuit breakers at ■ each, for a total of \$156,300, (Attachment 1, Note 1)

■ x 138 kV potential transformer at ■, (Attachment 2, Note 1)

■ x 138 kV disconnect switches at ■ (■ plus additional materials not quoted) per switch, for a total for \$34,000. (see Attachment 3, Note 1)

The remaining \$238,083 in this account includes all of the material required to connect this equipment to the substation, connectors, insulation, etc.

Materials – Switched Telecommunications Equipment \$262,500

This material is for a new radio link.

Contracts – Building , Structures, Ground [REDACTED]

This estimate is for the civil work including foundations and 138 kV bus installation. This work will not be completed by an affiliate.

11004 - Canaan Rd Circuit Breaker Additions

Account	ACE 2010	Current Submission	Variance
001 - Regular Labour (No AO)	-	27,438	27,438
001 - T&D Regular Labour	161,831	70,076	(91,755)
002 - Overtime Labour (No AO)	-	51	51
002 - T&D Overtime Labour	7,420	93	(7,327)
011 - Travel Expense	1,173	83	(1,090)
012 - Materials			
013 - COPS Contracts			
014 - Overtime Meals	1,726	3,095	1,369
028 - Consulting	-	99,601	99,601
041 - Meals & Entertainment	1,294	3,505	2,211
066 - Other Goods & Services	20,700	64,229	43,529
092-Vehicle T&D OT Labour AO	1,034	11	(1,024)
092-Vehicle T&D Reg. Labour AO	37,075	16,054	(21,021)
094 - Interest Capitalized	29,521	25,367	(4,154)
095-COPS Contracts AO	100,322	101,718	1,396
095-COPS Overtime Labour AO	2,936	37	(2,899)
095-COPS Regular Labour AO	128,057	55,451	(72,606)
	1,705,311	1,990,631	285,320

Circuit Breakers - 69 kV & Above

Schedule of Prices & Delivery									
Inquiry Item no.	QTY	Pricing per Each Unit							
1									
	Delivery	18-22 wks + 1-2 wks transit	24-28 wks ARO	18-22 wks ARO	10-12 wks ARO	10-12 wks ARO		18-21 wks ARO	July 9, 2010
2A									
	Delivery	18-22 wks + 1-2 wks transit	24-28 wks ARO	18-22 wks ARO	10-12 wks ARO	10-12 wks ARO		18-21 wks ARO	July 9, 2010
2B									
	Delivery	18-22 wks + 1-2 wks transit	24-28 wks ARO	18-22 wks ARO	10-12 wks ARO	10-12 wks ARO		18-21 wks ARO	July 9, 2010
3A									
	Delivery	18-22 wks + 1-2 wks transit	24-28 wks ARO	18-22 wks ARO	10-12 wks ARO	10-12 wks ARO		18-21 wks ARO	July 9, 2010
3B									
	Delivery	17-18 wks + 4 wks transit	No Bid	16-20 wks ARO	No Bid	No Bid		18-21 wks ARO	July 9, 2010
4									
	Delivery	17-18 wks + 4 wks transit	No Bid	16-20 wks ARO	No Bid	No Bid		18-21 wks ARO	July 9, 2010
5A									
	Delivery		No Bid		No Bid	No Bid		No Bid	July 9, 2010
Alternatives		Pricing per Each Unit							
1									
2A									
2B									
3A									
	Delivery	20-24 wks + 1-2 wks transit							
		Shipping Terms	DDP Site	plus duty estimated at \$2900	DDP Site	not price competitive	not price competitive	not price competitive	DDP Site
		Comments	5A includes gas density monitor @ \$3,226 & s/s housing (no charge)	Gas density monitor for each unit (\$3800) has been added into above prices as it is included in all other bids.	Offers 4% discount for quanties of 4 & 10% for quantities of 14				
		Spare Parts	Spare Parts - \$1317 (spring charge motor & closing coil)	not price competitive				Spare parts interchangeable between all units quoted - \$11,240 (interrupter, trip/close coil, spring charge motor)	
		Warranty	18mos from shipment or 12mos from first use		1 yr limited warranty				18mos from shipment or 12mos from installation
		Payment Terms	85% of supply price of each shipment 30 days after receipt at site; 15% of supply price 60 days after receipt at site		20% net 30 days from acceptance of PO; 10% net 30 days from submission of engineering drawings; 70% net 60 days after delivery to site				80% 30 days receipt at site, 15% 60 days after receipt at site, 5% 12 months after initial energization.
		Quality Assurance	ISO 9001, 14001 and OHSAS 18001 certified		ISO 9001 Registered				PAB utilizes its own Quality Program created and adapted for the size and goals specific to Pennsylvania Breaker.

Schedule of Drawings									
Drawings for Approval	Production Schedule	4-7 wks ARO	2 wks	N/A	1 wk ARO	1 wk ARO		2 wks ARO	In OA
	Outline	4-7 wks ARO	4 wks	6 wks ARO	4 wks ARO	4 wks ARO		2 wks ARO	6-8 wks
	Foundation Plan	4-7 wks ARO	4 wks	6 wks ARO	4 wks ARO	4 wks ARO		2 wks ARO	6-8 wks
	AC, DC Schematics	4-7 wks ARO	8 wks	6 wks ARO	6 wks ARO	6 wks ARO		2 wks ARO	6-8 wks
	Assembly Drawings	4-7 wks ARO	N/A	6 wks ARO	6 wks ARO	6 wks ARO		18 wks ARO	n/a
	Hydraulic/Pneumatic Schematic	4-7 wks ARO	8 wks	N/A	6 wks ARO	6 wks ARO		2 wks ARO	n/a
	SF6 Gas System	4-7 wks ARO	8 wks	N/A	4 wks ARO	4 wks ARO		2 wks ARO	6-8 wks
	Nameplates	4-7 wks ARO	8 wks	6 wks ARO	6 wks ARO	6 wks ARO		2 wks ARO	6-8 wks
	Bushings	4-7 wks ARO	8 wks	6 wks ARO	6 wks ARO	6 wks ARO		2 wks ARO	6-8 wks
	Bill of Material	4-7 wks ARO	N/A	6 wks ARO	10 wks ARO	10 wks ARO		18 wks ARO	not provided
									1 wk prior to
	Instruction Manual		4 wks	with units	14 wks ARO	14 wks ARO		18 wks ARO	shipment if order place by Mar 24, 2010

Instrument Voltage Transformers

Schedule of Prices & Delivery				
Inquiry Item no.	QTY	Pricing		
1A	Duty	Included	\$0.00	
	Freight	Included	Included	
	Total			
	Delivery	Stock - 3-4 wks transit	33 wk EX works +1 wk transit	16-18 wks ARO
1B	Duty	Included	\$0.00	
	Freight	Included	Included	
	Total			
	Delivery	Stock - 3-4 wks transit	33 wk EX works +1 wk transit	16-18 wks ARO
2	Duty	Included	\$0.00	
	Freight	Included	Included	
	Total			
	Delivery	Stock - 3-4 wks transit	33 wk EX works +1 wk transit	16-18 wks ARO
3A	Duty	Included	\$0.00	
	Freight	Included	Included	
	Total			
	Delivery	Stock - 3-4 wks transit	33 wk EX works +1 wk transit	16-18 wks ARO
3B	Duty			
	Freight	Included	Included	
	Total			
	Delivery	16-18 wks ARO + 2 wks transit	7-8 months	16-18 wks ARO
3C	Alternatives			
	Delivery	20-24 wks + 3-4 wks transit		
4	Duty	Included	\$0.00	
	Freight	Included	Included	
	Total			
	Delivery	16-18 wks ARO + 2 wks transit	7-8 months	16-18 wks ARO
Item no longer required as it has already been purchased from ABB in 2009	Alternatives			
	Delivery	20-24 wks + 3-4 wks transit		
Shipping Terms		DDP Site	DDP Site	DDP Site
Comments			Offers 4% discount for quantities of 4 & 10% for quantities of 14	Offers 5% discount if all items are awarded (includes IVT, CVT & CT's)
Spare Parts				
Warranty		18mos from shipment or 12mos from first use	18 mos limited warranty	12 mos in service, maximum 18 mos after delivery.
Payment Terms		85% of supply price of each shipment 30 days after receipt at site; 15% of supply price 60 days after receipt at site	100% - 30 days from delivery	100% net 30 days after delivery
Quality Assurance		ISO 9001, 14001 and OHSAS 18001 certified	ISO 9001 Registered	ISO 9001 Registered

Schedule of Drawings		ABB	Areva	Trench
Drawings for Approval	Outline		2-3 wks	2 wks ARO
	Rating Plate		2-3 wks	2 wks ARO
	Excitation Curves		2-3 wks	After test
	Production Schedule	2 wks or less		2 wks ARO
	Transformer Outline	2 wks or less		2 wks ARO
	Nameplate	2 wks or less		2 wks ARO
	Diagram of Connections	2 wks or less		2 wks ARO
	Schematics	2 wks or less		2 wks ARO
	Shipping Drawing	2 wks or less		2 wks ARO
	Instruction Manuals	with units	2 wks	2 wks ARO

Primary Equipment RFP Evaluation - Air Switches

Inquiry Item#	LOCATION	Original Quantity	Voltage (kV)	Current (A)	Function												
1 of 12	Tremont		138	1200	L-6015 Isol. + Grd.												
2 of 12	Tremont		138	1200	XFMR Isolation												
3 of 12	Tremont		138	1200	L-6013 Isol. + Grd.												
4 of 12	Tremont		138	2000	Ring Isolation -High												
5 of 12	Tremont		138	2000	Ring Isolation -Low												
6 of 12	Tremont		69	1200	Line Bypass												
7 of 12	Tremont		69	1200	Bkr. Isolation												
8 of 12	Tremont		69	1200	Xfmr. & B52												
9 of 12	Tremont		69	1200	B51												
10 of 12	Canaan Rd.		138	2000	Bus Tie - low												
11 of 12	Canaan Rd.		138	1200	L-6515 Isol. + Grd.												
12 of 12	Canaan Rd.		138	1200	Line (bus side)												
1 of 3	Glen Dhu	138	2000	Line Isol.													
2 of 3	Glen Dhu	138	2000	Isol. + Grd. + Inter													
3 of 3	Glen Dhu	138	2000	Isol. + Inter													
					Shipping Terms				DDP			DDP					
					Comments				Preassembly included, Insulators LAPP or equiv			Includes preassembly @ \$400/switch 145kV only, Insulators SUZHOU, includes 2% discount for complete purchase					
					Spare Parts												
					Warranty				5 Years			7 Years (84 mos from DDP or 78 mos from end of commissioning date)					
					Payment Terms				85% net 30 to site, 15% net 60 to site			85% upon delivery, net 30, 15% 60 days after receipt at site					
					Quality Assurance				ISO 9001 Registered			ISO 9001 Registered					
					Site Supervision				1st day	??	??			??	3 days free		
					Delivery	July 1st	16-18 weeks	10-12 weeks	14-16 weeks	12-14 weeks	12-14 weeks	July, MOU by Mar.10					
					Kirk Keys supplied	YES	YES	YES	provision only	no mention	YES	Yes					

REDACTED

Transmission Responses

Request IR-T2:

With respect to:

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

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

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

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

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

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

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

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

d) Please provide the Gantt charts for the projects.

REDACTED

Request IR-T2: (cont'd)

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

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

Response IR-T2:

a) Please refer to Confidential Attachment 1.

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

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

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

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

REDACTED

Response IR-T2: (cont'd)

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

Tender Document	Tender Amount	Issue Date	Close Date	Comments
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.

Transmission line construction labour for CI# 33525 is being sourced through NSPI's existing Power Line Technician (PLT) Service Agreement with Emera Utility Services (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.

d) Please refer to Attachment 2.

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

REDACTED

Response IR-T2: (cont'd)

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
Total	14,058,941	929,823	14,988,764

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
Total	3,919,209	3,289,605	7,208,814

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
Total	1,705,311	0	1,705,311

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 :	2010	Date :	27-Jul-10
Division :		CI Number:	
Department :		Project No. :	
Originator :			

	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

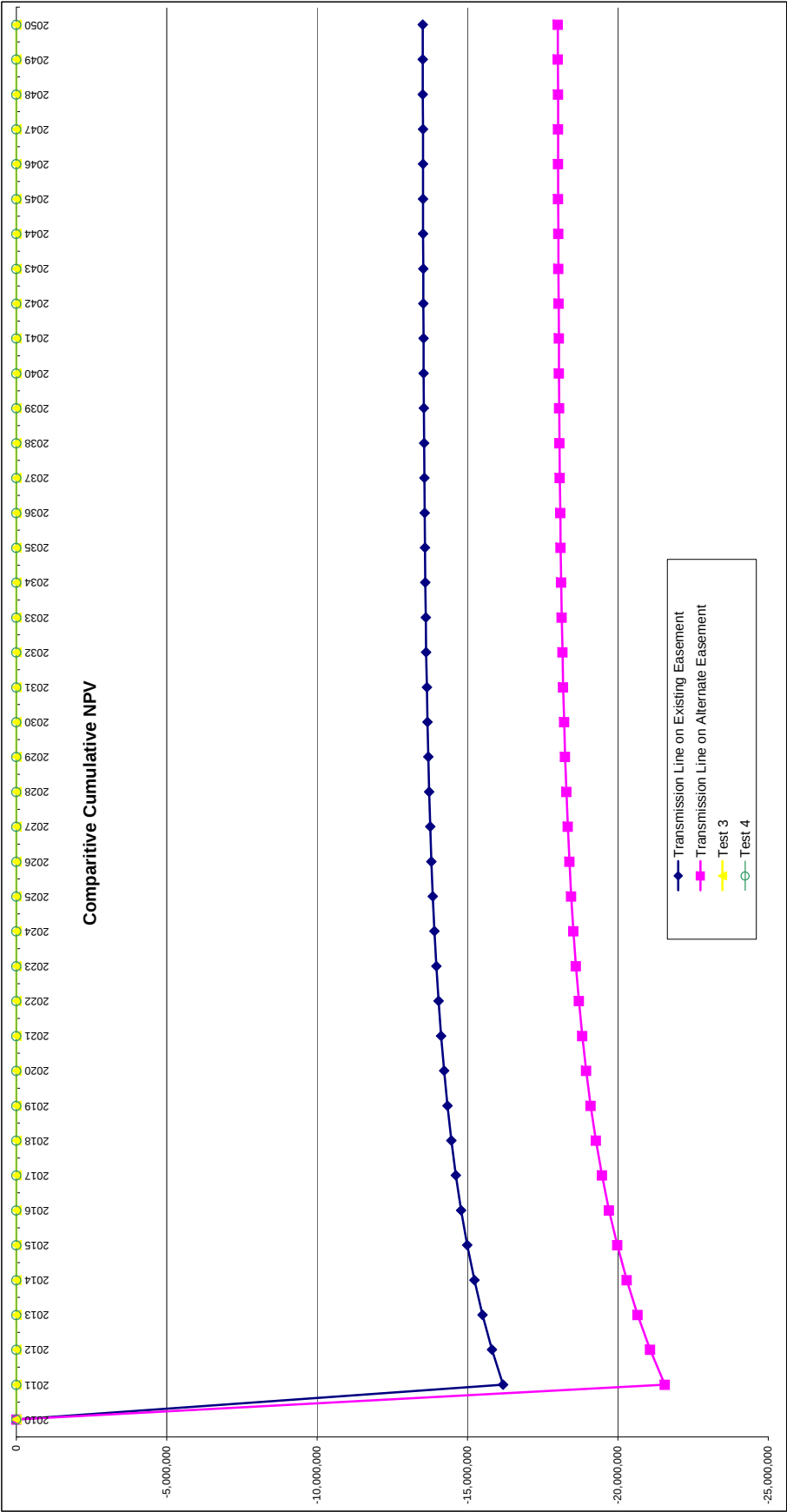
Year	Total Revenue	Operating Costs	Capital	CCA	UCC	CFBT	Applicable Taxes	CFAT	Discount Factor	PV of CF	GNPV
2010	-	-	(17,459,577.0)	-	-	(17,459,577.0)	-	-	1.000	-	-
2011	-	-	-	698,383.1	16,761,193.9	-	218,489.1	(17,241,087.9)	0.939	(16,181,218.1)	(16,181,218.1)
2012	-	-	-	1,340,895.5	15,420,298.4	-	413,017.6	413,017.6	0.881	363,798.1	(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)
Total	-	-	(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)

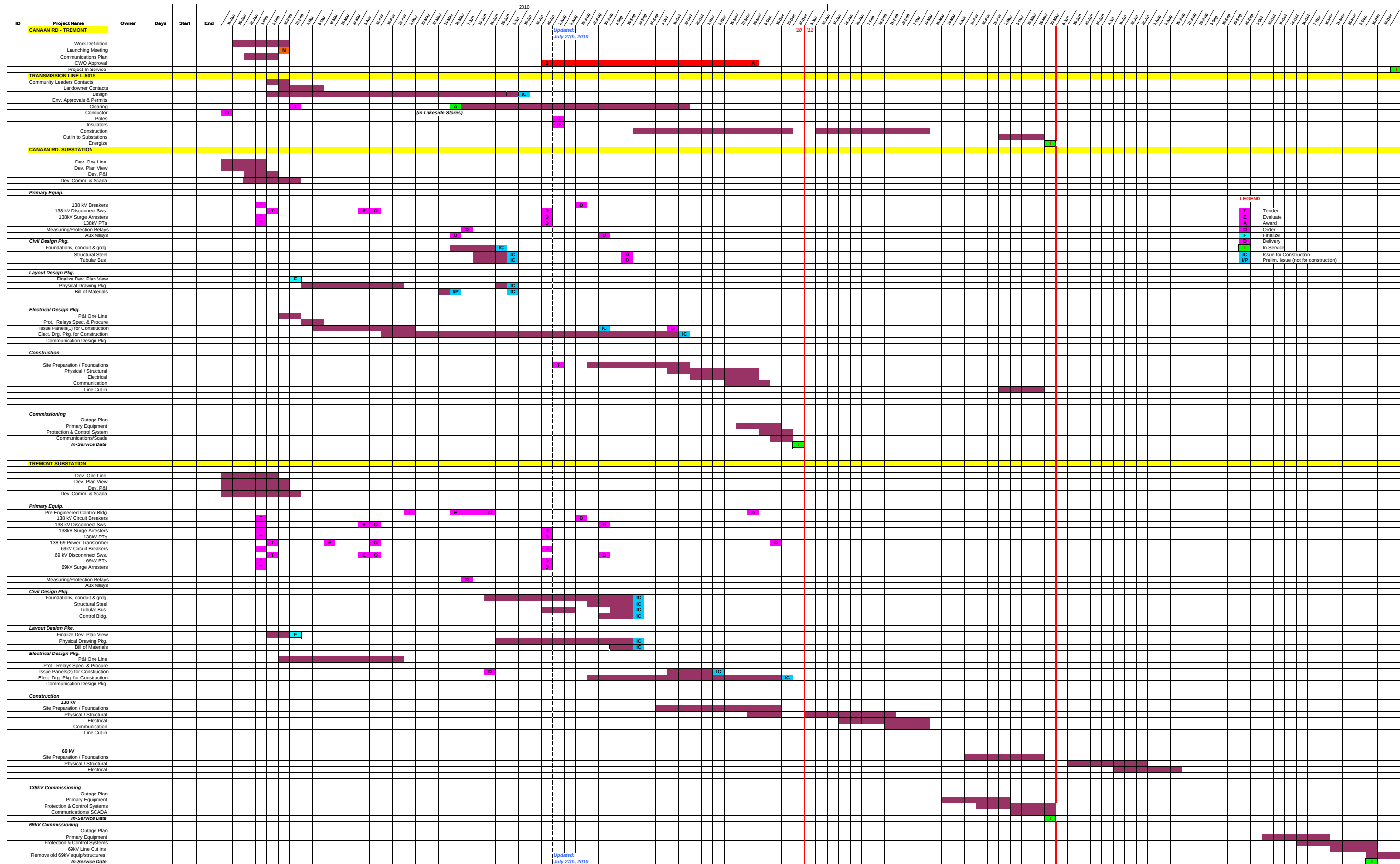
Canaan Road - Tremont Transmission Reinforcement
Transmission Line on Alternate Easement

Year	Total Revenue	Operating Costs	Capital	CCA	UCC	CFBT	Applicable Taxes	CFAT	Discount Factor	PV of CF	GNPV
2010	-	-	(23,263,142.0)	-	-	(23,263,142.0)	291,115.0	(22,972,027.0)	1.000	-	-
2011	-	-	-	930,525.7	22,332,616.3	-	550,304.7	550,304.7	0.939	(21,559,856.4)	(21,559,856.4)
2012	-	-	-	1,786,609.3	20,546,007.0	-	509,541.0	509,541.0	0.881	484,726.0	(21,075,130.4)
2013	-	-	-	1,643,680.6	18,902,326.5	-	465,777.9	509,541.0	0.827	421,229.5	(20,653,901.0)
2014	-	-	-	1,512,186.1	17,390,140.3	-	431,275.5	465,777.9	0.776	361,380.8	(20,292,520.2)
2015	-	-	-	1,391,211.2	15,998,929.1	-	396,773.4	431,275.5	0.728	314,041.8	(19,978,478.4)
2016	-	-	-	1,279,914.3	14,719,014.8	-	365,031.6	396,773.4	0.683	271,157.7	(19,707,320.7)
2017	-	-	-	1,177,521.2	13,541,493.6	-	335,829.0	365,031.6	0.641	234,129.6	(19,473,191.1)
2018	-	-	-	1,083,319.5	12,458,174.1	-	308,962.7	335,829.0	0.602	202,157.9	(19,271,033.3)
2019	-	-	-	996,653.9	11,461,520.2	-	284,245.7	308,962.7	0.565	174,552.1	(19,096,481.2)
2020	-	-	-	916,921.6	10,544,598.6	-	261,506.0	284,245.7	0.530	150,716.0	(18,945,765.2)
2021	-	-	-	843,567.9	9,701,030.7	-	240,585.6	261,506.0	0.498	130,134.9	(18,815,630.3)
2022	-	-	-	776,082.5	8,924,948.2	-	221,338.7	240,585.6	0.467	112,364.2	(18,703,266.1)
2023	-	-	-	713,995.9	8,210,952.4	-	203,631.6	221,338.7	0.438	97,020.3	(18,606,245.8)
2024	-	-	-	656,876.2	7,554,076.2	-	187,341.1	203,631.6	0.411	83,771.6	(18,522,474.2)
2025	-	-	-	604,326.1	6,949,750.1	-	172,353.8	187,341.1	0.386	72,332.1	(18,450,142.1)
2026	-	-	-	555,980.0	6,393,770.1	-	158,565.5	172,353.8	0.362	62,454.8	(18,387,687.3)
2027	-	-	-	511,501.6	5,882,268.5	-	145,880.3	158,565.5	0.340	53,926.2	(18,333,761.1)
2028	-	-	-	470,581.5	5,411,687.0	-	134,209.8	145,880.3	0.319	46,562.3	(18,287,198.8)
2029	-	-	-	432,935.0	4,978,752.0	-	123,473.1	134,209.8	0.300	40,203.9	(18,246,994.9)
2030	-	-	-	398,300.2	4,580,451.9	-	113,595.2	123,473.1	0.281	34,713.9	(18,212,281.0)
2031	-	-	-	366,436.1	4,214,015.7	-	104,507.6	113,595.2	0.264	29,973.5	(18,182,307.5)
2032	-	-	-	337,121.3	3,876,894.5	-	96,147.0	104,507.6	0.248	25,880.5	(18,156,427.0)
2033	-	-	-	310,151.6	3,566,742.9	-	88,455.2	96,147.0	0.232	22,346.3	(18,134,080.7)
2034	-	-	-	285,339.4	3,281,403.5	-	81,378.8	88,455.2	0.218	19,294.8	(18,114,785.9)
2035	-	-	-	262,512.3	3,018,891.2	-	74,868.5	81,378.8	0.205	16,660.0	(18,098,125.9)
2036	-	-	-	241,511.3	2,777,379.9	-	68,879.0	74,868.5	0.192	14,385.0	(18,083,740.9)
2037	-	-	-	222,190.4	2,555,189.5	-	63,368.7	68,879.0	0.180	12,420.6	(18,071,320.3)
2038	-	-	-	204,415.2	2,350,774.3	-	58,299.2	63,368.7	0.169	10,724.5	(18,060,595.8)
2039	-	-	-	188,061.9	2,162,712.4	-	53,635.3	58,299.2	0.159	9,260.0	(18,051,335.7)
2040	-	-	-	173,017.0	1,989,695.4	-	49,344.4	53,635.3	0.149	7,995.5	(18,043,340.2)
2041	-	-	-	159,175.6	1,830,519.8	-	45,396.9	49,344.4	0.140	6,903.7	(18,036,436.5)
2042	-	-	-	146,441.6	1,684,078.2	-	41,765.1	45,396.9	0.131	5,961.0	(18,030,475.6)
2043	-	-	-	134,726.3	1,549,351.9	-	38,423.9	41,765.1	0.123	5,147.0	(18,025,328.6)
2044	-	-	-	123,948.2	1,425,403.8	-	35,350.0	38,423.9	0.116	4,444.1	(18,020,884.5)
2045	-	-	-	114,032.3	1,311,371.5	-	32,522.0	35,350.0	0.109	3,837.2	(18,017,047.3)
2046	-	-	-	104,909.7	1,206,461.8	-	29,920.3	32,522.0	0.102	3,313.2	(18,013,734.0)
2047	-	-	-	96,516.9	1,109,944.8	-	27,526.6	29,920.3	0.096	2,860.8	(18,010,873.2)
2048	-	-	-	88,795.6	1,021,149.2	-	25,324.5	27,526.6	0.090	2,470.1	(18,008,403.1)
2049	-	-	-	81,691.9	939,457.3	-	28,649.7	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)
Total	-	-	(23,263,142.0)	22,398,841.3	289,218,245.8	(23,263,142.0)	6,945,100.0	(16,318,042.0)	15.1	(18,004,005.7)	(745,788,878.4)

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