CI# 38022

2010 Recloser Additions

REDACTED

June 29, 2010

NOVA SCOTIA POWER
An Emera Company

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UARB APPROVAL SHEET

Project Title: **2010 Recloser Additions**

CI Number: 38022

- [x] Capital Project Authorization
- [ ] ATO
- [ ] Final Cost

Head Office Use:

Project Number:

Date: May 14, 2010

Location:

Division:

Expenditure Profile

YEAR	Budget Estimate	Project Estimate
2010	1,400,271	1,400,271
Total	$1,400,271	$1,400,271

Schedule

Estimated Start Date	2010-06
Estimated In-Service Date	2011-11
Estimated Close Date	2011-12

COMMENTS

Submitted on behalf of NOVA SCOTIA POWER INCORPORATED

June 11/2010

Authorized Signatory — DATE

Mark Savory
VP Technical and Construction

Approved on behalf of NOVA SCOTIA UTILITY AND REVIEW BOARD

DATE

CI Number : 38022 - 2010 Recloser Additions Project Number

Parent CI Number : -

Cost Centre : 800 - 800-Services - Admin. Budget Version - 2010 03/09 Forecast

	Forecast
Start :	09/01/2010
Operational :	11/30/2010
Final Cost :	12/31/2010
2010	$1,400,271.40
Total :	$1,400,271.40
Original Cost :	$0.00

This item provides for the installation of additional reclosers to provide sectionalizing points on specified feeders. In 2010 it is proposed to add or change out reclosers associated with 32 distribution circuits. Feeder selection is based on a Customer Interruptions (CI) x Customer Hours (CH) weighting for full feeder outages that were not caused by a loss of transmission.

Summary of Related CI's +/- 2 years
2009 - 35642 2009 Recloser Additions $1,512,766

CI Number : 38022 - 2010 Recloser Additions **Project Number**

Parent CI Number : - **Approved Date**

Cost Centre : 800 - 800-Services - Admin. **Budget Version** 2010 03/09 Forecast

Capital Item Accounts

Acct	Actv	Account	Activity	Forecast Amount	Amount	Variance
092		092-Vehicle T&D Reg. Labour AO		14,946	0	14,946
094		094 - Interest Capitalized		23,702	0	23,702
095		095-COPS Regular Labour AO		51,624	0	51,624
095		095-COPS Contracts AO		10,576	0	10,576
001	035	001 - T&D Regular Labour	035 - DP - Wood Poles	32,620	0	32,620
012	035	012 - Materials	035 - DP - Wood Poles	382,931	0	382,931
013	035	013 - COPS Contracts	035 - DP - Wood Poles	21,618	0	21,618
066	035	066 - Other Goods & Services	035 - DP - Wood Poles	21,078	0	21,078
001	039	001 - T&D Regular Labour	039 - DP - O/H Cond.	16,310	0	16,310
012	039	012 - Materials	039 - DP - O/H Cond.	382,931	0	382,931
013	039	013 - COPS Contracts	039 - DP - O/H Cond.	10,809	0	10,809
001	040	001 - T&D Regular Labour	040 - DP - O/H Cond.Devices	16,310	0	16,310
012	040	012 - Materials	040 - DP - O/H Cond.Devices	382,931	0	382,931
013	040	013 - COPS Contracts	040 - DP - O/H Cond.Devices	10,809	0	10,809
066	040	066 - Other Goods & Services	040 - DP - O/H Cond.Devices	21,078	0	21,078
			Total Cost:	1,400,271	0	1,400,271
			Original Cost:			

CI Number :	38022	- 2010 Recloser Additions	**Project Number**
Parent CI Number :		-	**Approved Date**
Cost Centre :	800	- 800-Services - Admin.	

Capital Item Justification

Justification Criteria : DISTRIBUTION SYSTEM
Sub-Criteria : REQUIREMENT TO SERVE
Name of Report :
Document Location :
Person Responsible :

Why do this project?

This project is required to improve distribution reliability on feeders. An estimated 24,860 customer interruptions and 37,292 customer hours of interruption will be avoided each year through improved feeder sectionalizing and automatic restoration of unfaulted feeder segments.

Why do this project now?

This project will provide improved reliability through avoided customer interruptions.

Why do this project this way?

Appropriate sectionalizing of a feeder will improve outage statistics. For instance, installing a recloser at 50% of the length of a feeder with 50% of the customer count before and after the recloser will result in a 25% improvement in both the System Average Interruption Frequency Index (SAIFI) and the System Average Interruption Duration Index (SAIDI) statistics. The reduction in customer outages will improve customer service. If the new downline feeder section can be transferred automatically to an alternate feeder when its normal source feeder has tripped, then the improvement in predicted reliability becomes 50%. Given the predicted improvement in CI and CH, the $/ACI (Avoided Customer Interruptions) was evaluated to be $40.22/ACI and the $/ACHI (Avoided Customer Hour Interruptions) was evaluated to be $60.34/ACHI.

This work will be completed by NSPI.

CI 38022 – 2010 Recloser Additions

The following is a breakdown of costs associated with the 2010 Recloser Additions

• Administrative Overheads and Interest	$100,848
• Labour	$65,239
• Materials	$1,148,793
• Contracts	$43,236
• Other	$42,156
• Total	$1,400,272

The major costs for this project includes Materials at an estimate of $1,148,793, based on 34 recloser additions associated with 27 feeders. The Labour estimate of $65,239 is based on a rate of [redacted]/manday. The Contract estimate of $43,236 is for backhoe work and traffic control.

Distribution Reponses

Request IR-D3:

With respect to page 213, CI# 38022,2010 Recloser Additions,

a) **Please provide a copy of the study or report that justifies this multi-year Recloser Additions program. Is this program, and the 2009 program, the end of the recloser additions or is it expected to continue to future years, and if so, outline the future program being contemplated.**

b) **Please provide a list of the feeders that have been selected for this program in 2010. Provide the length of the feeder and number of customers on that feeder. Provide the outage performance statistics for these feeders for the most recent 3 years.**

c) **Other than this targeted Recloser Additions program, what additional amount has NSPI budgeted for the purchase and installation of reclosers, including the number of reclosers, in each of the past 3 years.**

d) **Please provide a cost breakdown of the $1,400,271 project estimate.**

e) **Indicate whether NSPI or contract forces, or both, v/ill be completing the work and which portions of the work will be completed by each.**

Response IR-D3:

a) The recloser addition program focuses on reducing customer interruptions and customer hours of interruption. NSPI does not prepare a formal study for this work. This work is based on the outage performance statistics for each feeder. The recloser addition program is expected to continue into 2011, but on a reduced basis.

Response IR-D3: (cont'd)

b) Please refer to Attachment 1.

c) The actual spending up to December 31, 2009 for CI# 35642 2009 Recloser Additions is $1,468,464. NSPI is unable to provide the number of reclosurers or the cost of recloser installations for years 2008 and 2007. This work was not tracked separately until 2009.

d) Table 1 – Cost breakdown for the project estimate of $1,400,271

Account	Estimate ($)
Labour	65,239
Materials	1,148,793
Contracts	43,236
Other	42,155
Interest	23,702
Overhead	77,146
Total	**1,400,272**

e) This work will be completed by NSPI resources.

Line km - Reclosers

						2007						2008						2009					
						All Data			2.5 Beta Data			All Data			2.5 Beta Data			All Data			2.5 Beta Data		
Source_Feeder	Description	OH(km)	UG(km)	Total	# Customers: 2009	SAIFI	SAIDI	CAIDI	SAIFI	SAIDI	CAIDI	SAIFI	SAIDI	CAIDI	SAIFI	SAIDI	CAIDI	SAIFI	SAIDI	CAIDI	SAIFI	SAIDI	CAIDI
129H-412	Bedford/Hammonds Plains	30	4.3	34.3	3,633	3.22	16.23	5.04	2.20	4.53	2.06	2.11	6.96	3.30	1.08	3.39	3.12	3.59	4.59	1.28	2.43	2.55	1.05
108H-413	Highfield/Green Road	23.7	4.7	28.4	2,730	1.68	5.50	3.27	1.66	4.71	2.83	5.13	15.98	3.11	4.11	15.06	3.67	1.00	2.21	2.21	0.00	0.02	3.85
108H-413	Highfield/Green Road	23.7	4.7	28.4	2,730	1.68	5.50	3.27	1.66	4.71	2.83	5.13	15.98	3.11	4.11	15.06	3.67	1.00	2.21	2.21	0.00	0.02	3.85
37N-411	Little Bass River	42.7	0	42.7	771	6.68	31.77	4.76	6.15	15.02	2.44	10.82	55.00	5.08	9.17	35.23	3.84	8.12	25.87	3.19	4.06	10.09	2.49
129H-411	Knightsridge	12.7	0.9	13.6	4,347	3.08	2.98	0.97	2.07	2.65	1.28	0.09	0.27	2.99	0.08	0.14	1.77	1.14	1.89	1.66	0.01	0.01	1.84
3S-303	Upper North Sydney	25.2	0.9	26.1	1,765	2.76	5.92	2.14	1.76	2.40	1.36	4.25	1.98	0.47	3.26	1.75	0.54	1.04	0.96	0.92	1.02	0.86	0.85
101H-413	Sackville Drive	36.9	1.1	38	2,949	2.22	3.38	1.52	2.20	3.02	1.38	0.41	1.72	4.19	0.27	0.73	2.67	2.10	2.62	1.25	1.05	1.01	0.96
77V-401	Digby Neck	61.8	0	61.8	1,335	5.20	13.04	2.51	5.20	13.04	2.51	8.34	35.62	4.27	5.47	20.92	3.83	6.14	9.15	1.49	2.63	7.35	2.80
70V-311	Hampton/Port Lorne	26.9	0.1	27	1,940	9.38	14.01	1.49	7.35	8.52	1.16	7.44	15.47	2.08	6.90	10.79	1.56	5.63	9.78	1.74	4.56	8.36	1.84
104H-413	Oxford/Bayers/Yale	11.6	1	12.6	4,068	3.65	8.06	2.21	2.62	1.69	0.64	2.62	2.26	0.86	2.61	2.14	0.82	2.30	4.98	2.16	2.27	4.94	2.17
50N-412	Trenton East	9.2	0.1	9.3	2,876	1.72	2.93	1.70	1.50	0.63	0.42	5.67	4.22	0.75	5.66	4.22	0.74	2.61	2.91	1.12	2.60	2.90	1.12
50N-412	Trenton East			0	2,876	1.72	2.93	1.70	1.50	0.63	0.42	5.67	4.22	0.75	5.66	4.22	0.74	2.61	2.91	1.12	2.60	2.90	1.12
103H-431	Lakeside/Timberlea	4.7	0.3	5	3,172	2.50	15.32	6.13	1.45	2.51	1.73	5.51	14.26	2.59	0.12	0.37	3.10	2.39	2.08	0.87	1.37	1.39	1.01
104H-431	Agricola/Lord Nelson	10	1.9	11.9	2,148	2.52	4.46	1.77	2.52	4.46	1.77	1.01	2.86	2.82	0.01	0.02	2.50	1.08	1.66	1.53	1.08	1.66	1.53
50W-412	Brooklyn	26.4	0.06	26.46	3,274	3.51	24.76	7.06	2.88	9.24	3.21	5.02	11.06	2.20	3.52	6.03	1.71	4.95	7.73	1.56	3.57	4.65	1.30
11S-301	Christmas Island/Frenchvale	33.5	0.1	33.6	1,513	6.64	16.55	2.49	5.31	10.14	1.91	6.81	16.52	2.43	6.62	14.72	2.23	3.63	4.93	1.36	3.58	4.81	1.34
24C-442	Half Island Cove	14.7	0	14.7	1,199	11.82	60.65	5.13	10.81	32.74	3.03	12.67	49.48	3.91	9.64	16.63	1.72	8.17	54.68	6.69	5.86	30.28	5.16
88H-401	Middle Musquodoboit	42.2	0.4	42.6	1,557	11.70	36.10	3.09	10.29	24.08	2.34	8.57	15.48	1.81	7.91	11.48	1.45	1.06	3.12	2.95	1.02	3.07	3.00
40H-302	Main/Caledonia	21.6	1.7	23.3	2,411	2.22	2.48	1.11	2.21	1.59	0.72	3.18	3.17	1.00	3.18	3.10	0.98	1.10	1.76	1.60	1.07	1.68	1.57
81S-305	Main St/South St	25	0.6	25.6	1,688	1.04	0.27	0.26	1.04	0.19	0.19	0.07	0.12	1.77	0.07	0.12	1.77	3.04	6.88	2.27	0.02	0.02	1.28
88H-402	Upper/Stewiacke	58	0.06	58.06	1,469	8.71	48.78	5.60	7.33	16.70	2.28	10.50	20.27	1.93	10.38	20.16	1.94	2.62	4.98	1.90	2.01	3.55	1.76
67C-412	Whycocomagh	75.5	0.1	75.6	1,563	8.47	31.35	3.70	7.19	12.82	1.78	10.85	22.23	2.05	8.41	6.65	0.79	13.18	15.42	1.17	8.56	11.74	1.37
103W-312	Gold River	40.6	0.3	40.9	1,404	8.74	35.93	4.11	4.56	13.47	2.95	4.74	17.41	3.68	4.55	11.34	2.49	1.23	1.29	1.06	0.14	0.72	5.00
50V-402	Kentville	32.1	7.8	39.9	1,959	1.26	10.86	8.63	0.23	0.62	2.70	1.05	1.33	1.27	1.05	1.33	1.27	1.13	0.88	0.78	0.03	0.06	1.95
104H-423	Connoly/Oxford	32.5	1.4	33.9	4,565	3.07	8.61	2.80	2.07	0.60	0.29	0.07	0.36	4.95	0.04	0.13	2.96	2.05	1.31	0.64	1.05	1.26	1.20
101H-411	Glendale/first Lake Drive	30.2	0.8	31	2,436	0.45	7.14	15.71	0.23	0.59	2.54	3.12	5.81	1.86	1.82	2.82	1.56	7.13	9.54	1.34	2.15	3.72	1.73
104H-432	Maynard/Brunswick/Sackville	6.3	0.8	7.1	1,344	3.11	2.63	0.85	3.11	2.63	0.85	2.97	4.08	1.37	2.02	1.46	0.72	8.21	10.90	1.33	3.39	6.13	1.81
103H-434	Fairmont/Chebucto	14.8	1.3	16.1	212	0.02	0.12	7.31	0.02	0.08	5.29	0.02	0.07	4.17	0.02	0.07	4.17	1.37	2.24	1.63	#N/A	#N/A	#N/A
113H-432	Lake Major/Preston	50.6	0.7	51.3	3,154	3.09	2.25	0.73	2.07	0.38	0.18	10.58	27.58	2.61	6.52	10.34	1.59	2.04	1.25	0.61	2.03	1.24	0.61