



Central Maine Power

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December 19, 2008

Karen Geraghty
Administrative Director
Maine Public Utilities Commission
State House Station #18
242 State Street
Augusta, Maine 04333-0018

Re: CENTRAL MAINE POWER COMPANY and PUBLIC SERVICE COMPANY
OF NEW HAMPSHIRE, Request for Certificate of Public Convenience and
Necessity for Maine Power Reliability Program Consisting of Construction of
Approximately 350 miles of 345 kV and 115 kV Transmission Lines,
Docket No. 2008-255

Dear Ms. Geraghty:

Enclosed for filing in the above-captioned proceeding are Central Maine Power
Company's responses to the following data requests:

- **ODR-02-08**

Sincerely,

Ruth Harris
Analyst, Regulatory & Tariffs

cc: All Parties

equal opportunity employer

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 An Energy East Company

**CENTRAL MAINE POWER COMPANY
RESPONSE TO ORAL DATA REQUEST NO. 2
DOCKET No. 2008-255**

December 19, 2008

ODR-02-08

- Q.** Please prepare a cost estimate for undergrounding on the Woodland Hills condo property, as determined by tax maps, and itemize the cost to underground each of the lines.
- A.** For this request, a 1,200 ft length of corridor abutting the Woodland Hills Condo Property was selected for evaluation of the costs to underground existing 115kV Sections 197 and 250 and the proposed 345kV Section 3022. The area studied in this evaluation is shown in Attachment 1.

Attachments 2, 3 and 4 present the detailed breakdown of the estimated costs to underground Sections 3022, 250 and 197, respectively. The estimates are based on each circuit being installed in separate trenches and to follow the same alignment as the proposed overhead lines.

It is important to note that while electric utilities, regulators and interveners often try to use cost per foot estimates from other projects to develop budgetary estimates for other projects, this approach should only be used as the overall basis of an underground cost estimate with caution. No two underground projects are alike and many factors and variables from project to project, state to state and region to region can have an enormous influence on the true cost of an underground cable system. For example, it may not be reasonable to look at the cost of this 1,200 ft underground estimate and apply the same cost per foot for another section of the MPRP, on another circuit, for a different length in a different portion of the CMP system.

Another point to consider is that undergrounding an electric system at voltages above 230kV, or the addition of a significant length of underground to an electric system, can add complexity to the operation and performance of the system. One example of the complexity would be the potential impacts of the addition of capacitive reactance to a system with the addition of significant high voltage underground cable lengths. Many utility systems at the 345kV level cannot absorb a significant amount of capacitive reactance as this capacitive reactance can cause significant over-voltages during certain system operations, such as system switching. To compensate for the added capacitance, shunt reactors are placed on the system to provide the necessary compensation. This reactive

ODR-02-08, continued

compensation can result in a significant extra cost to a project. In developing this cost estimate, the proposed 1,200 ft of underground cable would require adding approximately 6 MVAR of capacitive reactance to the system. At this level of capacitive resistance, it was determined that reactive compensation would not be required. However, a complete system study would need to be performed prior to the completion of detail design to verify this preliminary conclusion. Additional costs would be incurred if reactive compensation is determined to be required.

Response Prepared and Submitted By:

Dennis Johnson, PE
POWER Engineers, Inc.

Attachments:

- Attachment 1: Woodland Hills Vicinity, Plan view sketch
- Attachment 2: Estimated 345kV underground transmission line cost: Section 3022
- Attachment 3: Estimated 115kV underground transmission line cost: Section 250
- Attachment 4: Estimated 115kV underground transmission line cost: Section 197



South Berwick, Maine Section 3022 345kV UG Transmission Line Cost Estimate

Section 3022 345kV - 1200 ft
(Existing Section 250 Structure 394 to Structure 396)

Item #	Description	Comments				
			Qty	Unit	\$/Unit	Total
1	345 kV Cable		1200	FT/CKT	488	1,170,000
2	Spare Cable		1267	FT	135	171,045
3	Cable Terminations		12	EA	38,000	456,000
4	Cable Splices		0	EA	30,000	-
5	Arrestors		12	EA	5,000	60,000
6	Grounding		1	LS/CKT	49,950	49,950
7	Cable Testing		1	LS/CKT	15,000	15,000
8	Fiber Optic Communication		1	LS	39,250	39,250
9	Temperature Monitoring		1	LS	79,850	79,850
10	Duct Bank		1200	FT	188	225,600
11	Manholes		0	EA	50,000	-
12	Dewatering/Sheeting/Shoring		1	LS	33,900	33,900
13	Pavement Repair		48	FT	94	4,500
14	Rock Excavation	No rock assumed. See Note 4.	0	LS	-	-
16	Transition Structures		2	EA	210,000	420,000
17	Wetland Mats		52	EA	250	13,000
18	Erosion Control		1200	FT	1	1,200
19	Restoration & Seeding		1	LS	7,350	7,350
20	Transition Site Work, including Fencing/Grounding		2	LS	69,300	138,600
21	Mobilize/Demobilize		1	LS	92,373	92,373
	Subtotal					2,977,618
22	Permitting (4%)		1	LS	116,000	116,000
23	Engineering (10%)		1	LS	289,000	289,000
24	Construction Management		1	LS	145,000	145,000
	Subtotal					3,527,618
24	Contingency (15% +/-)					529,144
25	CMP - PM, Support, Overhead (1% +/-)					35,276
Total						4,092,038

Notes:

1. Two cables per phase in a eight hole duct bank with six inch conduits.
2. Cable size of 2000 kcmil copper cable based on 1900 summer rating.
3. Roads can be open cut.
4. Cost for rock excavation was not included. If rock exists, an additional cost of up to \$200,000, may be incurred depending on the amount of rock.
5. Estimate is based on recent quotes. Cost of the project may go up or down depending on a number of factors.
 - a. Cost of materials. The cost of copper continues to fluctuate and may result in a significant increase or decrease in the cable cost.
 - b. Contractor/Manufacturer availability. Currently many of the cable manufacturers have their factories full with orders. Many of the installation contractors are also busy.
6. Costs have been added for switches and fenced in transition station.
7. No costs have been added for reactive compensation or special relay and protection.



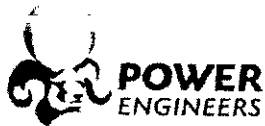
South Berwick, Maine Section 1250 115kV UG Transmission Line Cost Estimate

Section 250 115kV - 1200 ft
(Section 250 Structure 394 to Structure 396)

Item #	Description	Comments	Qty	Unit	\$/Unit	Total
1	115 kV Cable		1200	FT/CKT	230	275,400
2	Spare Cable		1267	FT	60	76,020
3	Cable Terminations		12	EA	22,000	264,000
4	Cable Splices		0	EA	22,000	-
5	Arrestors		12	EA	3,250	39,000
6	Grounding		1	LS/CKT	64,000	64,000
7	Cable Testing		1	LS/CKT	7,500	7,500
8	Fiber Optic Communication		1	LS	39,250	39,250
9	Temperature Monitoring		1	LS	79,850	79,850
10	Duct Bank		1200	FT	138	165,600
11	Manholes		0	EA	50,000	-
12	Dewatering/Sheeting/Shoring		1	LS	33,900	33,900
13	Pavement Repair		48	FT	94	4,500
14	Rock Excavation	No rock assumed. See Note 4.	0	LS	-	-
16	Transition Structures		2	EA	100,000	200,000
17	Wetland Mats		52	EA	250	13,000
18	Erosion Control		1200	FT	1	1,200
19	Restoration & Seeding		1	LS	7,350	7,350
20	Site Work, including Fencing/Grounding		2	LS	54,075	108,150
21	Mobilize/Demobilize		0	LS	44,730	-
	Subtotal					1,378,720
22	Permitting (4%)		1	LS	56,000	56,000
23	Engineering (10%)		1	LS	138,000	138,000
24	Construction Management		1	LS	69,000	69,000
	Subtotal					1,641,720
24	Contingency (15% +/-)					244,569
25	CMP - PM, Support, Overhead (1% +/-)					16,417
	Total					1,902,706

Notes:

- Single circuit in four hole duct bank.
- Cable size of 1750 kcmil copper cable based on 1133A summer rating and maximum trench depth of 10 feet.
- Roads can be open cut.
- Cost for rock excavation was not included. If rock exists, an additional cost of up to \$100,000, may be incurred depending on the amount of rock.
- Estimate is based on recent quotes. Cost of the project may go up or down depending on a number of factors.
 - Cost of materials. The cost of copper continues to fluctuate and may result in a significant increase or decrease in the cable cost.
 - Contractor/Manufacturer availability. Currently many of the cable manufacturers have their factories full with orders. Many of the installation contractors are also busy.
- Costs have been added for switches and fenced in transition station.



South Berwick, Maine Section 197 115kV UG Transmission Line Cost Estimate

Section 197 115kV - 1200 ft
(Existing Section 250 Structure 394 to Structure 396)

Item #	Description	Comments				
			Qty	Unit	\$/Unit	Total
1	115 kV Cable		1200	FT/CKT	230	275,400
2	Spare Cable		1267	FT	60	76,020
3	Cable Terminations		12	EA	22,000	264,000
4	Cable Splices		0	EA	22,000	-
5	Arrestors		12	EA	3,250	39,000
6	Grounding		1	LS/CKT	64,000	64,000
7	Cable Testing		1	LS/CKT	7,500	7,500
8	Fiber Optic Communication		1	LS	39,250	39,250
9	Temperature Monitoring		1	LS	79,850	79,850
10	Duct Bank		1200	FT	138	165,600
11	Manholes		0	EA	50,000	-
12	Dewatering/Sheeting/Shoring		1	LS	33,900	33,900
13	Pavement Repair		48	FT	94	4,500
14	Rock Excavation	No rock assumed. See Note 4.	0	LS	-	-
16	Transition Structures		2	EA	100,000	200,000
17	Wetland Mats		52	EA	250	13,000
18	Erosion Control		1200	FT	1	1,200
19	Restoration & Seeding		1	LS	7,350	7,350
20	Site Work, including Fencing/Grounding		2	LS	54,075	108,150
21	Mobilize/Demobilize		0	LS	44,730	-
	Subtotal					1,378,720
22	Permitting (4%)		1	LS	56,000	56,000
23	Engineering (10%)		1	LS	138,000	138,000
24	Construction Management		1	LS	69,000	69,000
	Subtotal					1,641,720
24	Contingency (15% +/-)					244,569
25	CMP - PM, Support, Overhead (1% +/-)					16,417
	Total					1,902,706

Notes:

- Single circuit in four hole duct bank.
- Cable size of 1750 kcmil copper cable based on 1133A summer rating and maximum trench depth of 10 feet.
- Roads can be open cut.
- Cost for rock excavation was not included. If rock exists, an additional cost of up to \$100,000, may be incurred depending on the amount of rock.
- Estimate is based on recent quotes. Cost of the project may go up or down depending on a number of factors.
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 - Contractor/Manufacturer availability. Currently many of the cable manufacturers have their factories full with orders. Many of the installation contractors are also busy.
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