

MPRP Staff Alternative Summary of Estimated Costs

The following summarizes the methodology, assumptions and results of a cost estimating effort undertaken per the request of the Maine Public Utilities Commission to assess the approximate cost to construct the alternate configuration of the Maine Power Reliability Program (MPRP) proposed by the Commission Staff (the "Staff Alternative"). The Staff Alternative consists of the transmission and substation components identified by the Commission Staff in technical conferences on July 2, 14 and 30, 2009, as summarized in CMP's filing made on August 3, 2009.

Basis of Estimate

The cost estimate developed for this evaluation draws heavily on the estimate developed for the MPRP ISO-NE Transmission Cost Allocation (TCA) application, which was filed in this docket on January 23, 2009. Attachment N to the MPRP TCA application provides a comprehensive overview of the estimating methodology used. However, several unique differences between the estimate presented here and the estimate prepared for the MPRP TCA application deserve special note.

Unlike the estimate prepared as part of the MPRP TCA application, the estimate described herein has not had the benefit of the significant estimating analysis and detailed engineering. Specifically, no probabilistic modeling was conducted for this Staff Alternative estimate, which would determine the necessary amount of contingency and escalation required to achieve a selected confidence level. For consistency, this Staff Alternative estimate assumes the same percentage of escalation and contingency (~18%) as does the MPRP TCA estimate. Additionally, given that limited detailed engineering analysis was conducted for certain portions of this Staff Alternative, certain components of the estimate may be subject to significant deviation from the values presented here, should detailed engineering be initiated. Based on experience, and the results of the detailed engineering conducted on the CMP proposed MPRP, several items in the Staff Alternative have been identified as elements which contain the potential for large changes in scope and the associated estimated costs should detailed engineering be initiated. These items are identified and discussed individually below.

New Lines and Rebuilds

The Staff Alternative includes certain new lines (e.g., Coopers Mills to Mason and Buxton to South Gorham) and rebuilds that are not included within the CMP proposed MPRP. As such, detailed designs do not exist for such lines and cannot be used as the basis for the cost estimate for those components of the Staff Alternative. The cost estimates developed for those line sections are based on a desktop evaluation, considering, among other things, the length of those lines, the general features of the right of way, the average cost per mile of similar sections within MPRP, and the estimator's professional experience and judgment.

Mason Substation Expansion

The estimate prepared and presented here for the Mason Substation is based on a desktop evaluation of the site constraints in the area of the existing substation at that location. The Mason desktop study concluded that the additional 345 kV equipment could be physically located adjacent to the existing Mason Substation, allowing re-use of the existing 345/115 kV transformer and 115 kV substation. This desktop study did not include a detailed review of any environmental or real estate constraints in the area. Should further analysis be conducted on the proposed expansion, it may be concluded that the existing site is not suitable for expansion as planned, particularly given on-going residential and commercial development in the area of the existing Mason Substation. If this were the case, the likely alternative would be construction of a new 345/115 kV substation located along the existing transmission corridor. Such an alternative substation would in all likelihood increase the amount of the estimate presented here by tens of millions of dollars.

Buxton

The estimate prepared and presented here for the Buxton Substation is also based on a desktop evaluation of the site constraints. This evaluation identified that the existing substation would need to be expanded to the southeast. This desktop study included limited review of environmental and real estate constraints in the area. Should further analysis be conducted on the proposed expansion, additional cost associated with real estate or environmental mitigation may be identified. The magnitude of these costs would typically represent a relatively small percent of a total project cost, however each situation is unique and the magnitude of any such costs would be determined as part of detailed design.

Stability, Short Circuit and Remote End Upgrades

The MPRP as proposed by CMP, and as estimated in the ISO-NE TCA application, included components of scope identified during stability and short circuit testing studies, as well some consideration of the scope at the remote substations. As these detailed analyses have not been performed for the Staff Alternative, this estimate assumes the same upgrades required for the CMP MPRP would be required for the Staff Alternative.

Summary of Results

Using the approach described above, CMP developed the estimate of cost to design, permit and construct the Staff Alternative, which is summarized in the following table. A detailed breakdown of the transmission line and substation costs is attached for reference.

Staff Alternative, Total Estimated Cost, \$/1,000			
	Lines	Substations	Total
Construction			
Material	\$85,156	\$103,518	\$188,674
Labor	\$246,370	\$62,657	\$309,027
General			
Engineering/Permitting	\$65,703	\$31,477	\$97,180
Administrative	\$1,643	\$764	\$2,407
Reserve	\$32,850	\$19,967	\$52,817
Contingency/Escalation	\$76,229	\$38,562	\$114,791
Land	\$6,898	\$4,882	\$11,780
Total	\$514,849	\$261,827	\$776,676


Summary of Transmission Line Estimated Costs MPUC Staff Alternative		Single circuit 345kV on existing ROW. Surowice to Raven Farm	Rebuild Section 166. Surowice to divergence with S374.	Rebuild Section 167. Surowice to divergence with S374.	Rebuild Section 25. Section 392 to divergence with Section 68	Single circuit 345kV on existing ROW. Detroit to Albion	Single circuit 345kV on existing ROW. Orrington to Detroit	Rebuild Section 203. Detroit to Intersection with Section 388.	Rebuild Section 67. Detroit to divergence with S66
	Line Section	3020	166	167	25	3028	3023	203	67
	Construction								
	Material	\$5,989,000	\$566,000	\$566,000	\$148,000	\$9,660,000	\$19,242,000	\$4,808,000	\$445,000
	Labor	\$13,131,000	\$2,532,000	\$2,493,000	\$780,000	\$22,279,000	\$51,380,000	\$16,332,000	\$1,516,000
	General								
	Engineering/Permitting	\$3,788,000	\$610,000	\$603,000	\$181,000	\$6,338,000	\$14,012,000	\$4,188,000	\$386,000
	Administrative	\$95,000	\$15,000	\$15,000	\$5,000	\$158,000	\$350,000	\$105,000	\$10,000
	Reserve	\$1,894,000	\$305,000	\$302,000	\$90,000	\$3,169,000	\$7,006,000	\$2,094,000	\$193,000
	Contingency/Escalation	\$4,396,000	\$711,000	\$703,000	\$213,000	\$7,346,000	\$16,243,000	\$4,861,000	\$450,000
	Land	\$118,000				\$2,023,000	\$2,230,000		
	Total	\$29,411,000	\$4,739,000	\$4,682,000	\$1,417,000	\$50,973,000	\$110,463,000	\$32,388,000	\$3,000,000


**Summary of Transmission Line
Estimated Costs
MPUC Staff Alternative**




	Rebuild Section 66. Detroit to divergence with S67	Single circuit 345KV on existing ROW. Albion Rd to Coopers Mills Rd	Rebuild Section 84 (now 258), Albion Rd to Coopers Mills	Relocate portions of Section 67 (now 257) in areas required by location of additional ROW purchase.	Rebuild Section 86. Bucksport to Searsport	Separate Bucksport DCT. Sections 65 and 205	Separate Kennebec River DCT. Sections 375 and 377 across the Kennebec river.	Separate the Maine Yankee DCT. Sections 375 and 392 from M.Y. to divergence of S392	Re-rate Section 378. Maine Yankee to Mason
Line Section	66	3024	258	257	86	65/205	375/377	375/392	378
Construction									
Material	\$419,000	\$10,671,000	\$2,729,000	\$1,296,000	\$1,876,000	\$366,000	\$2,350,000	\$2,195,000	\$524,000
Labor	\$1,504,000	\$22,949,000	\$10,174,000	\$4,820,000	\$6,826,000	\$594,000	\$16,430,000	\$4,856,000	\$981,000
General									
Engineering/Permitting	\$378,000	\$6,676,000	\$2,552,000	\$1,208,000	\$1,720,000	\$188,000	\$3,718,000	\$1,397,000	\$289,000
Administrative	\$9,000	\$167,000	\$64,000	\$30,000	\$43,000	\$5,000	\$93,000	\$35,000	\$7,000
Reserve	\$189,000	\$3,338,000	\$1,276,000	\$604,000	\$860,000	\$94,000	\$1,859,000	\$698,000	\$144,000
Contingency/Escalation	\$441,000	\$7,734,000	\$2,965,000	\$1,405,000	\$2,000,000	\$220,000	\$4,317,000	\$1,621,000	\$343,000
Land		\$2,527,000							
Total	\$2,940,000	\$54,062,000	\$19,760,000	\$9,363,000	\$13,325,000	\$1,467,000	\$28,767,000	\$10,802,000	\$2,288,000

Summary of Transmission Line Estimated Costs MPUC Staff Alternative		Terminate section 68, 388 and 392 at Coopers Mills Substation	Terminate Section 386 at the Raven Farm St Substation	Terminate Section 386 at the So. Gorham Substation to create sections 386 and 3040.	Single Circuit 345kV on existing ROW. Maxey's to Mason	Single Circuit 345kV on existing ROW. South Gorham to Buxton	Rebuild Section 81. Mason to Surowiec.	Rebuild Section 207 at Kennebec River Crossing	Separate S68/204 DCT	TRANSMISSION TOTAL
Line Section		68	386	386			81	207	68/204	
Construction										
Material		\$1,165,000	\$249,000	\$134,000	\$10,045,000	\$3,347,000	\$4,712,000	\$732,000	\$922,000	\$85,156,000
Labor		\$1,708,000	\$619,000	\$506,000	\$23,919,000	\$7,659,000	\$21,451,000	\$6,631,000	\$4,300,000	\$246,370,000
General										
Engineering/Permitting		\$566,000	\$170,000	\$126,000	\$6,749,000	\$2,183,000	\$5,189,000	\$1,458,000	\$1,030,000	\$65,703,000
Administrative		\$14,000	\$4,000	\$3,000	\$169,000	\$55,000	\$130,000	\$36,000	\$26,000	\$1,643,000
Reserve		\$283,000	\$85,000	\$63,000	\$3,374,000	\$1,092,000	\$2,594,000	\$729,000	\$515,000	\$32,850,000
Contingency/Escalation		\$660,000	\$199,000	\$147,000	\$7,814,000	\$2,531,000	\$6,017,000	\$1,693,000	\$1,199,000	\$76,229,000
Land										\$6,898,000
Total		\$4,396,000	\$1,326,000	\$979,000	\$52,070,000	\$16,867,000	\$40,093,000	\$11,279,000	\$7,992,000	\$514,849,000

Summary of Substation Estimated Costs MPUC Staff Alternative 	Coopers Mills Rd	Orrington	Surowiec	So. Gorham	Remote Ends
Construction					
Material	\$43,657,000	\$1,210,000	\$10,037,000	\$14,623,000	\$893,000
Labor	\$33,307,000	\$505,000	\$4,980,000	\$5,636,000	\$436,000
General					
Engineering/Permitting	\$14,310,000	\$310,000	\$2,785,000	\$3,760,000	\$238,000
Administrative	\$358,000	\$8,000	\$70,000	\$94,000	\$6,000
Reserve	\$7,745,000	\$1,555,000	\$2,567,000	\$1,930,000	\$119,000
Contingency/Escalation	\$17,547,000	\$633,000	\$3,609,000	\$4,599,000	\$299,000
Land	\$2,441,000				
Total	\$119,365,000	\$4,221,000	\$24,048,000	\$30,642,000	\$1,991,000

Summary of Substation Estimated Costs MPUC Staff Alternative 	Short Circuit upgrades	Buxton 345	Mason Station	Raven Farms	34.5kV Capacitor Bank (Voltage Support)
Construction					
Material	\$3,962,000	\$3,826,000	\$10,725,000	\$9,699,000	\$349,000
Labor	\$1,572,000	\$1,813,000	\$6,152,000	\$5,330,000	\$209,000
General					
Engineering/Permitting	\$1,786,000	\$1,040,000	\$3,131,000	\$2,787,000	\$95,000
Administrative	\$26,000	\$26,000	\$78,000	\$70,000	\$2,000
Reserve	\$510,000	\$972,000	\$2,018,000	\$1,893,000	\$47,000
Contingency/Escalation	\$1,387,000	\$1,356,000	\$3,903,000	\$3,493,000	\$124,000
Land				\$2,441,000	
Total	\$9,243,000	\$9,033,000	\$26,007,000	\$25,713,000	\$826,000

<p>Summary of Substation Estimated Costs MPUC Staff Alternative</p>  <p>MAINE POWER RELIABILITY PROGRAM <small>A CENTRAL MAINE POWER COMPANY PROGRAM</small></p>	<p>34.5kV Capacitor Bank (Voltage Support)</p>	<p>34kV Capacitor Bank (Power Factor Correction)</p>	<p>SUBSTATION TOTAL</p>
Construction			
Material	\$349,000	\$4,188,000	\$103,518,000
Labor	\$209,000	\$2,508,000	\$62,657,000
General			
Engineering/Permitting	\$95,000	\$1,140,000	\$31,477,000
Administrative	\$2,000	\$24,000	\$764,000
Reserve	\$47,000	\$564,000	\$19,967,000
Contingency/Escalation	\$124,000	\$1,488,000	\$38,562,000
Land			\$4,882,000
Total	\$826,000	\$9,912,000	\$261,827,000