



Central Maine Power

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June 3, 2009

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:

On May 29, 2009, CMP filed its report on the Maine Public Utilities Commission Staff Requested Needs Analysis prepared by RLC Engineering. The report is confidential and was submitted under the terms and conditions of First Revised Protective Order No. 2, Critical Energy Infrastructure Information, dated August 27, 2008. Enclosed please find a redacted version of that filing.

Sincerely,

Debra J. Mills
Analyst, Regulatory & Tariffs

cc: All Parties

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STATE OF MAINE PUBLIC UTILITIES COMMISSION

DOCKET NO. 2008-255

**CENTRAL MAINE POWER COMPANY
Request for Certificate of Public Convenience
and Necessity for the Maine Power Reliability Program
Consisting of the Construction of Approximately
350 miles of 345 kV and 115 kV Transmission Lines ("MPRP")**



Central Maine Power



An Energy East Company

**Maine Public Utilities Commission Staff
Requested Needs Analysis**

REDACTED

May 29, 2009

Prepared by:



ENGINEERING

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Executive Summary

CMP hereby presents the results of the load flow analyses undertaken at the request of the Commission Staff.¹ The load flow study results (hereinafter "the Report") show widespread and persistent planning criteria violations under the scenarios requested by Commission Staff. Furthermore, these load flow analyses demonstrate conclusively that immediate action to bolster Maine's high voltage transmission system is required. Specifically, the requested flow analyses show:

- At peak load levels below those already being experienced in Maine, the current system cannot meet accepted planning criteria;
- At peak load levels for the expected planning period (i.e. 2000 MW), the analyses suggested by the Staff show broad and pervasive violations of transmission system reliability criteria;
- As the Staff requested, the Report reflects the continued availability of the Special Protection Systems ("SPSs") now in operation. Importantly, the Report shows the SPSs may or may not operate under the conditions investigated and operation of the SPSs actually produces additional violations;
- The Staff's consultant requested that CMP evaluate load shedding of up to 500 MW – essentially the simultaneous involuntary blacking out of nearly one third of Maine's electric customers – as a way of satisfying reliability criteria. The analysis shows that such load shedding, even if it were an appropriate approach to planning, which it is not, would have to be done before the contingency occurred in order to prevent the critical violations found in the analyses.²

As asserted in the Needs Assessment and further demonstrated in the Report, the fundamental weaknesses in the current high voltage transmission system in Maine result from insufficient 345 kV transmission and inadequate transformation capability to meet current and future load flow conditions. These conditions have developed from the dramatic changes in Maine's load, generation and transfer patterns in the nearly 40 years since the last major additions to Maine's high voltage transmission system were put into service.

As the Needs Assessment and the Non-Transmission Alternatives Assessment³ show, unacceptably low voltage and unacceptably high line power flows occur throughout the system as a result of a wide variety of contingencies. Indeed, at the peak load levels projected in the Needs Assessment, testing even to N-1 showed such pervasive failures that testing to N-1-1, as required by NERC standards,⁴ would have provided little additional useful information, and the effort instead focused on what approach would best resolve the violations. The essential weaknesses in

¹ See letter from Jared des Rosiers to Karen Geraghty dated March 11, 2009.. As CMP indicated in that communication, CMP does not believe that the scenarios requested by Staff reflect appropriate or NERC and NPCC compliant transmission planning practices.

² Such load shedding and the economic injury it would cause to Maine's businesses and people stands in contrast to the economic benefits that flow from MPRP.

³ See Exhibits I-1 and I-3 in the initial filing in this case.

⁴ The system must be planned to avoid violations at N-1-1 under mandatory planning standards. See NERC Standard TPL-003.

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Maine's system – and the need to build the additional 345 kV transmission and associated transformation capability proposed in MPRP – persist. Even at peak load levels below those already seen in Maine (as requested by Staff for CMP to analyze), the system cannot meet planning criteria, and, where the studies use peak load levels well within the expected planning period (e.g. 2000 MW), the broad and pervasive violations demonstrated in the Needs Assessment emerge clearly. Because the application of required planning standards and assumptions could only have the result of showing even greater weakness (as, in fact, CMP has already shown in the Needs Assessment) than that shown in the Report, the Report simply adds greater weight to the argument that further delay in upgrading Maine's high voltage transmission system is unwise.

MPRP, which at its core provides one additional 345 kV path from Orrington to Three Rivers⁵ and associated autotransformers, fully cures the violations both today and for a significant period into the future.

Overview of Results

The Report presents results for N-1 and N-1-1 for the cases requested by Staff. In these cases, due to the character of the contingencies that result in the violations and the underlying weakness in the system under a variety of load and interface conditions, there are few opportunities outside of shedding load following the first (N-1) event to "posture" the system to withstand the second (N-1-1) event.

Consistent with Staff's request, the Report reflects the continued availability of the SPSs now in operation. CMP has elsewhere described why continuing to rely on increasingly complex SPSs is a course that neither CMP nor the Commission should follow. What the Report shows, however, is that not only are the SPSs unpredictable in their operation (because, depending on prior flow conditions, they may or may not be "armed" at a particular flow level), but there are circumstances where the existence and operation of the SPS actually produces additional violations.

While the load flow analyses were performed for both N-1 and N-1-1 using the full requisite list of contingencies,⁶ the studies show that the bulk of the violations resulted from two broad kinds of contingencies:

⁵ In the few areas where there is sufficient 345 kV transmission, no additional 345 kV is proposed. MPRP also includes some additional 115 kV facilities.

⁶ The list of contingencies producing violations, and the associated violations, are detailed in the Report.

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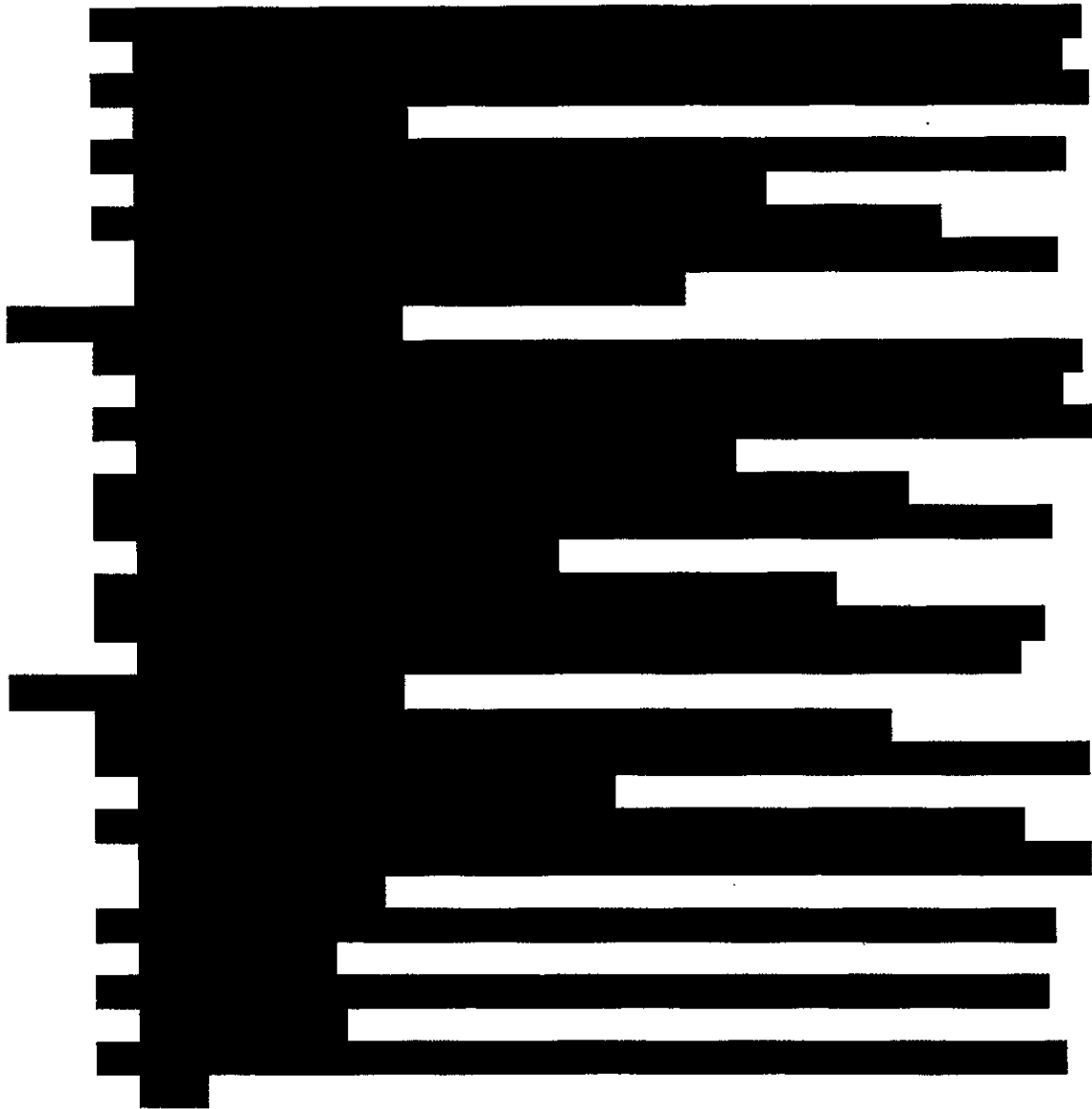
Section 5 of the Report describes the findings where these major elements are lost either as the N-1 or N-1-1 event. Mandatory planning standards, of course, require that the system be designed and built to prevent ALL violations. In broad outline, the findings show:

[REDACTED]

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[REDACTED]

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Taken together, the results of the analyses requested by Commission Staff show that voltage, thermal and DNS violations pervade the system. MPRP is the most cost-effective and best technical solution to the current risky situation of Maine's high voltage transmission system.

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All other material in this exhibit is Confidential Critical Energy Infrastructure Information