NORTHERN MAINE INDEPENDENT SYSTEM ADMINISTRATOR

SEVEN-YEAR OUTLOOK:

AN ASSESSMENT OF THE ADEQUACY OF

GENERATION AND TRANSMISSION FACILITIES

ON THE NORTHERN MAINE

TRANSMISSION SYSTEM

April, 2008

INTRODUCTION

The Northern Maine Independent System Administrator ("NMISA") was created in 1999 in response to the mandate of the legislature of the State of Maine that effective retail electric competition is available to all of Maine's electricity consumers by March 1, 2000.[1] The NMISA's size, scope, purpose and electricity market were designed to facilitate the development and implementation of retail electric competition and foster regional reliability efforts in the electrically isolated area of the state in portions of Aroostook, Washington and Penobscot Counties. Northern Maine is characterized by low population density and a very low electric demand in comparison with other electricity markets.

The dominant characteristics of the Northern Maine Market are its electrical isolation, large geographic size, small electric demand, and modest population. The electric system in Northern Maine is not directly interconnected with the rest of New England, including any other Maine utility or any other domestic electric system. NMISA participants, therefore, are not participants in the New England Regional Transmission Organization ("RTO") and are not subject to the control of ISO New England ("ISO-NE"), the entity that operates the New England RTO. The region's only access to the electric system that serves the remainder of Maine and the rest of New England is through the transmission facilities of New Brunswick Power ("NB Power").[2] The New Brunswick System Operator ("NBSO") is the Balancing Authority and Reliability Coordinator ("RC") for the Control Area that includes the Northern Maine and Maritimes regions.

The maximum peak demand for the NMISA region in 2007 was 136 MW, with a projected annual peak load growth of less than 2%. The 2007 energy consumed was 816,978 MWh. There are approximately 90,000 residents and approximately 42,000 electricity consumers in Northern Maine.

The NMISA is a Federal Energy Regulatory Commission ("FERC")-approved independent system administrator and regional transmission group that encompass the transmission systems of all FERC-jurisdictional and non-jurisdictional utilities in Northern Maine. The NMISA operates as an independent, objective and non-discriminatory administrator of transmission access, transmission information access, and related functions, and monitors and operates the electricity markets in Northern Maine for energy, ancillary, and other services. The NMISA is governed by a seven member stakeholder Board of Directors comprising representatives of MPS and Eastern Maine Electric Cooperative ("EMEC"), municipal utilities (Houlton Water Company ("HWC") and Van Buren Light & Power District ("VBL&P")), large customers, generators, Competitive Electricity Providers ("CEPs"), and the Maine Public Advocate as representative of all other retail electric consumers.

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1 P.L. 1997ch.316, 35-A M.R.S.A. §§ 3201, *et seq.*

2 The NB Power transmission system connects to 2 345 kV transmission lines one of which is owned and operated by Maine Electric Power Company ("MEPCO"). MEPCO is jointly owned by Central Maine Power Company ("CMP"), Bangor Hydro Electric Company ("BHE"), and Maine Public Service Company ("MPS").

A Tariff and the Northern Maine Market Rules ("NMMRs") govern the NMISA. On May 1, 2006 the NMMRs were amended, adding NMMRs 8 and 9. NMMR 9, System Planning, sets forth provisions relating to the responsibilities for the NMISA, the Transmission Owners ("TOs"), the Demand-Side Management ("DSM") program operators/providers, and the Generators in relation to the adequacy and reliability of the Northern Maine Transmission System ("NMTS"). NMMR 9.2, Long-Term System Planning, states that the NMISA will prepare a Base Case for the planned development of the NMTS for the following seven years, beginning April 1 of each year. The Base Case comprises four sections: Load Forecast, Generation Resources, Resource Adequacy, and Transmission Planning. Because the NMISA is a nested control area connected radial to the NBSO, the Base Case is modeled after their *Ten-Year Outlook: An Assessment of the Adequacy of Generation and Transmission Facilities in New Brunswick 2007-2016*.

LOAD FORECAST

The load forecast for the region includes the combined loads of MPS, EMEC, HWC, and VBL&P. The average annual load growth for energy (MWh) from 2001 to 2007 was 0.55%. The peak demand (MW) annual load growth for same period was 0.77%. Both exclude the Perth Andover load in New Brunswick that is fed from the NMTS. Perth Andover was part of the NMISA system until January 1, 2005 when the NBSO assumed responsibility.

The forecast used in the Base Case includes an annual load growth of 1% resulting in 2008 projected energy load of 825,148 MWh. The remainder of the period was simply escalated by 1% per year, consistent with the growth for the past six years. The peak load for each year was calculated using the seven-year average load factor of 66.80%.

Table 1 reflects the seven-year load forecast

Table 1
NMISA 7-Year Load Forecast

Year	MWh	Peak
2008	825,148	141
2009	833,400	142
2010	841,734	144
2011	850,151	145
2012	858,652	147
2013	867,239	148
2014	875,911	150

GENERATION RESOURCES

A. CURRENT RESOURCES

Table 2 (below) lists the generation resources located on the NMTS. Northern Maine is unique in that it receives most of its generation from renewable resources. The majority of the generation consists of three biomass plants and several hydropower facilities. However, for one of the biomass plants, Boralex Sherman, the PURPA contract with MPS terminated 12/31/2006, and thus, as discussed later, it is not considered a resource after that date.

The most recent capacity in the region is the Wind Project at Mars Hill, rated at 42 MW at full output and credited with 13 MW of firm capacity. The facility became partially operational in December 2006 and fully operational during the 1st quarter of 2007.

In the EMEC region there is a 54 MW wind project under development. The project will not interconnect with the NMTS, it will follow an existing right of way to the Bangor Hydro non-PTF transmission system.

Table 2: NMISA Generation Resources

Plant	Capacity (MW)	Type	Notes
Tinker Station			
Hydro #1	4.00	Hydro	
Hydro #2	1.80	Hydro	
Hydro #3	1.80	Hydro	
Hydro #4	4.00	Hydro	
Hydro #5	23.00	Hydro	
Diesel	1.00	Diesel	
Flo's Inn			
Diesel #1	1.40	Diesel	
Diesel #2	1.40	Diesel	
Diesel #3	1.40	Diesel	
Caribou Station			
Steam #1	9.00	Oil	
Steam #2	14.00	Oil	
Diesel #2	2.50	Diesel	
Diesel #3	2.50	Diesel	
Diesel #4	1.00	Diesel	
Diesel #5	1.00	Diesel	
Hydro #1	0.45	Hydro	
Hydro #2	0.45	Hydro	
Loring			
Diesel #1	1.00	Diesel	
Diesel #2	1.00	Diesel	
Diesel #3	1.00	Diesel	
Diesel #5	2.10	Diesel	

Table 2: NMISA Generation Resources

Plant	Capacity (MW)	Type	Notes
Squa Pan Hydro	1.40	Hydro	
Other Resources			
Boralex - Fort Fairfield	33.00	Biomass	
Boralex - Ashland	37.00	Biomass	
Evergreen Wind (Mars Hill)	42.00	Wind	In Service Early 2007
Boralex - Sherman	19.00	Biomass	Retired
Total Capacity	208.2		

B. PROPOSED RESOURCE ADDITIONS

There are three proposed projects under study through MPS's Large Generation Interconnect Procedure consisting of two wind projects at 800 MW and 50 MW, and a Gas Turbine rated at 55 MW summer, 70 MW winter. All three projects are designated as Network Resources. For more information see the following link:
http://www.mainepublicservice.com/corporate/transmission/genintreq.asp

RESOURCE ADEQUACY

The calculation by which the NMISA ensures resource adequacy is based upon the Northeast Power Coordinating Council's ("NPCC's") Document C-13, "18-month Load and Capacity Assessment". The C-13 process determines Gross Margin and Net Margins weekly for the 18-month period. The analysis is conducted twice a year, in the spring and fall, for the coming capability periods. Essentially, the analysis compares the load forecast to net resources plus operating reserve. Net resources are the installed capacity adjusted for firm sales, DSM, forced and unplanned outages, and unit deratings. Weekly, the information from the C-13 for the coming week is updated with current information and provided to the NBSO, RC for the Balancing Area, in preparation for the NPCC-wide conference call. The C-13 is published in the Documents section of the NMISA web site.

The NMISA is part of NPCC's Maritimes Balancing Area, with NBSO acting as the Balancing Authority as well as the RC. NMISA's Operating Reserve requirement is its proportionate share of the Maritimes Area Operating Reserve requirement. The NBSO calculates the Operating Reserve requirement for the region by maintaining adequate Operating Reserve capacity to cover 100% of the single largest contingency plus 50% of the second largest contingency. The NMISA's responsibility is based upon its monthly non-coincident peak share of the total Maritimes Area load. The average annual Operating Reserve responsibility is approximately 16 MW.

For the Base Case, a 20% planning reserve criterion was used. The difference between planning reserve and Operating Reserve is that planning reserve projects over a long-term horizon while Operating Reserve plans for actual requirements in the near term to operate the system. The NBSO also determines the planning reserve. The amount is based upon NPCC

generation reliability criterion that a loss of load expectation shall be, on average, no more than 0.1 days per year. NMISA also participates in the NBSO's *Maritimes Area Triennial Review of Resource Adequacy*. In the latest study, 2004, it was determined that the 20% planning reserve margin is adequate for the Maritimes Area.

The Load and Resources Review attempts to determine if adequate resources will be available over the long run to meet the projected annual peak plus a planning reserve of 20%. The resources are the sum of the installed capacity plus firm purchases less firm sales. A positive number indicates resources are adequate and a negative indicates a deficiency. Also, transfer capacity is included to show the system's capability to import resources to relieve any deficits. Similarly, the projected surplus or deficit from the NBSO's 10-Year Outlook for 2007-2016 is included in Table 3 below to show the potential availability of excess capacity within the Maritimes Balancing Area.

In all years, the Base Case for the NMISA system shows a deficit. Based upon the expiration of Boralex Sherman's long-term contract with MPS effective December 31, 2006, this unit is shown in the Base Case as providing zero capacity during the planning period. However, the unit operated until February 28th, 2007 on a short-term contract. In addition, as discussed earlier, additional generation projects are at early stages of development and may become available during the planning period. Given the uncertainty of the ultimate construction of such early stage projects or the execution by Boralex Sherman of a new long-term power supply contract, none of these are included in this analysis. Table 3 reflects the NMISA's Load and Resources Review from 2008 to 2014.

Table 3
Load and Resources Review (MW)

Year	2008	2009	2010	2011	2012	2013	2014
Projected Peak	142.4	143.8	145.3	146.7	148.2	149.7	149.7
+Reserve at 20%	170.9	172.6	174.3	176.1	177.8	179.6	179.6
Capacity							
Boralex Ashland	37	37	37	37	37	37	37
Boralex Fort Fairfield	33	33	33	33	33	33	33
Boralex Sherman	0	0	0	0	0	0	0
Tinker Hydro	35	35	35	35	35	35	35
Caribou Steam	23	23	23	23	23	23	23
Diesel	17	17	17	17	17	17	17
Mars Hill Wind	13.0	13.0	13.0	13.0	13.0	13.0	13.0
Firm Purchases	5.0	5.1	5.1	5.2	5.2	5.3	5.3
Firm Sales	-9.0	-9.0	-9.0	-9.0	-9.0	-9.0	-9.0
Total Capacity	153.9	154.0	154.0	154.1	154.1	154.2	154.2
Deficiency – Base Case (+/-)	-17.0	-18.7	-20.3	-22.0	-23.7	-25.5	-25.4
Transfer Capacity	105	105	105	105	105	105	105
NBP[3] surplus/deficiency	198	-280	312	281	427	373	318

The purpose of the Base Case is to provide information to Market Participants and potential Market Participants of any forecasted long-term deficiency.

[3] New Brunswick Power or NB Power.

DEMAND SIDE MANAGEMENT

There are no major DSM projects on the NMTS. Most DSM projects are on the local level through the Efficiency Maine program that each utility supports. For more information, the website can be found at the following link: http://www.efficiencymaine.com/.

TRANSMISSION PLANNING

Transmission System

The NMTS consists of two independent transmission systems, MPS in Aroostook County and EMEC in portions of Washington County and Penobscot County. The two systems are interconnected only through the NB Power transmission system.

A summary description of the MPS transmission system prepared by MPS's Engineering Department is attached hereto as Exhibit 1 and is incorporated herein by reference.

The MPS system is interconnected with New Brunswick via 3 transmission lines, a 100 MVA import rated interconnection from Flo's Inn to Beechwood, a 64 MVA import rated interconnection at Tinker Station, and a 56 MVA import rated interconnection from Iroquois to Madawaska. The Total Transfer Capability ("TTC") between the NB Power system and the MPS system is 90 MW for imports to Northern Maine and 105 MW for exports to New Brunswick. The TTC calculation for the MPS-New Brunswick interface assumes a single contingency loss of the Flo's Inn to Beechwood transmission line.

The EMEC transmission system consists of a radial 69 kV transmission line that originates at Oak Bay, NB substation and terminates at Topsfield, ME substation and is approximately 40 miles long. There are 5 load substations that are connected by this line, including Domtar Paper Company, which is also a generator. Other than at Oak Bay, there is one transmission circuit breaker (CM-1) located in St Stephen, NB, before the line crosses the border to Maine. There are three sectionalizing switches (air break) in the line headed to Topsfield. The majority of the line is 266.8 ACSR Partridge conductor, and there is a 5-mile section of 1/0 AAAC between Woodland and Princeton. The EMEC system has a TTC of 15 MW for both imports from and exports to New Brunswick.

Potential Transmission Upgrades

As with generation resources, the purpose of the Base Case is to provide information to Market Participants, including the TOs, and potential Market Participants of any forecasted deficiencies to allow such Market Participants to bring forward proposals to address potential deficiencies. In addition, pursuant to NMMR 9.3.5, where the Base Case identifies that action is or will be required to alleviate an existing or emerging transmission constraint, the NMISA is directed to take the actions described in NMMR 9.4.1 when, in the NMISA's independent judgment, no adequate proposal exists to address the problem. Pursuant to NMMR 9.3.7, a transmission constraint is considered "emerging" if the NMISA identifies it to be likely to occur

within one to five years, and it is considered "potential" if the NMISA identifies it to be likely to occur within six to seven years.

A series of capitalized maintenance projects are planned by MPS. A summary of these projects are included as Exhibit 2, and incorporated by reference. The effect of such capitalized maintenance projects is expected to be the reduction in transmission Operations and Maintenance ("O&M") expenses, reduced probability of outages along these segments, and the extension of the useful lives of these facilities. These projects are not expected to increase the TTC of the system.

Since the previous Seven Year Outlook, two major transmission upgrades have been proposed and the northern interface has experienced increased reservation activity, reducing the ATC for exports.

First, in the EMEC region, an additional 54 MW of wind generation is under development. However, this project will not interconnect with the NMTS. Rather, it will be connected by a generator lead to the Bangor Hydro-Electric (BHE) local network via an existing right of way between EMEC and BHE. The transmission line will run from Stetson Mountain in EMEC's franchise area to BHE's Chester substation. Currently, there are no plans to ingrate this project into the NMTS. Pursuant to NMMR 8, NMISA will not evaluate this project for reliability impacts because it will not interconnect with the NMTS.

Second, on February 27, 2008, MPS requested to join ISO-NE, integrating the northern NMTS and New England's Pool Transmission Facilities (PTF) with the construction of a 345kV line. Pursuant to NMMR 8, the NMISA will evaluate the project for reliability impacts and under its market monitoring obligations, evaluating the impact on the wholesale electric market in northern Maine. Exhibit 3 attached hereto, discuses the project in more detail.

Pursuant to NMMR 9.3.2, NMISA is required to analyze whether any potential investments in the transmission system are necessary to maintain reliability in accordance with NMISA Reliability Standards (see NMMR 8), which include NPCC Reliability Standards, improve the performance of the Northern Maine Market, or reduce the cost of congestion constraints. In general, no facts have been identified that demonstrate the likelihood of an inability of the NMTS to meet NPCC Reliability Standards during the seven-year period covered by this report. There is no existing or emerging shortage of transmission capacity to serve load. Similarly, NMISA has identified no significant existing, emerging or potential constraints, including any that would result in congestion costs. NMISA in the past year has experienced more exports on the northern interface, decreasing the ATC. The increased activity is a result of generators qualifying for Renewable Energy Credits in other markets, thus exporting their output. During certain situations, the northern part of the system operates radial with the New Brunswick Transmission System, decreasing the TTC from 90 MW to 64 MW. With a Transmission Reserve Margin of 10 MW and firm reservations of 50 MW, only 4 MW of firm ATC is available. Under this circumstance the NMISA considers it an "emerging constraint" under NMMR 9. However, because constraints caused by the export of generation from new Northern Maine generation to other markets, the transmission expansion policy pursuant to MPS's OATT would require exporting generators to upgrade the interconnection upon

requesting additional transmission transfer capacity beyond the ATC. It should be noted that this emerging situation is a market barrier for new generation expansion in Northern Maine. The NMISA is not aware of any planned deactivation, disconnection or retirement of any existing transmission facilities.

With respect to interconnections with non-NMTS systems, various opportunities for enhancement have been studied over the past few years. In 2004, MPS proposed the construction of a fourth transmission interconnection between the NMTS and the NB Power system. By order dated October 21, 2005, the MPUC declined to grant MPS a certificate of public convenience and necessity to construct that proposed line. As part of that investigation, an upgrade to the transformation equipment at Tinker Station was explored as an alternative manner in which to increase transfer capability between the MPS and NB Power systems. The 2007 Seven Year Outlook discussed the Northern Maine Transmission Working Group. That group evolved into the Maine Power Connection Study Group. The purpose of the group is to study the technical feasibility of connecting MPS to ISO-NE**.** As previously mentioned, the details of that assessment are set forth in Exhibit 3.

In general, the construction of additional transfer capability with neighboring systems may become necessary upon the construction of new generating facilities in Northern Maine requiring additional transfer capability for their output to be exported, or such additional transfer capability may be required if the total generating capacity located in Northern Maine is reduced to a level where a single contingency loss of an existing transmission interconnection would result in the unavailability of sufficient generating capacity to serve Northern Maine's load.

In the event that additional generation comes on-line in Northern Maine, the owners of such generation would be required under the MPS and EMEC Open Access Transmission Tariffs ("OATTs") to pay for the cost of system upgrades necessary to accommodate such generation.

With respect to generation unit retirements, however, neither the deactivated Boralex Sherman unit nor the two operating Boralex units have contracts that extend through the seven-year period covered by this report. In the event that all of these biomass units were mothballed or retired, and new generation capacity added to the system failed to provide an offsetting increase in firm capacity, additional transmission upgrades, such as that previously proposed by MPS in the 2004 MPUC proceeding, or that currently under review by the Maine Power Connection Study Group, could become necessary to ensure compliance with NPCC reliability standards. Since the NMISA understands that Boralex is currently committed to maintaining its units on-line, none of the potential transmission projects appear necessary at this time to ensure compliance with NPCC Reliability Criteria. However, NMISA will continue to monitor the status of these operating units, as well as the status of the Boralex Sherman plant and proposed new generating units, with respect to the potential impact on transmission expansion requirements. The NMISA notes that the time for a major transmission project to proceed from its conception to its in-service date is likely to be approximately four years. Therefore, any major change in the status of existing or proposed generating units would need to be addressed swiftly.

In addition to the impact that transmission upgrades may have on compliance with NPCC Reliability Criteria, such projects also have the potential to increase competition in the Northern Maine market. As part of this report, NMISA has not attempted to quantify the potential impact of transmission upgrades on market performance. The NMISA notes that, in general, retail energy prices in Northern Maine have been below those of the ISO-New England market, suggesting that any transmission constraints are not adversely affecting the Northern Maine Market. The NMISA further notes that enhancing the transfer capability between two transmission systems would tend to cause energy clearing prices in the two systems to equalize. On the other hand, the Northern Maine Market is extremely small and is characterized by a small number of generators and marketers among its Market Participants. Enhancing transmission interconnections with other systems will increase the opportunity of potential Market Participants to serve load in Northern Maine, thereby increasing competition.

The NMISA finds that no transmission constraints are more likely than not to occur over the next one to five years, or within six to seven years. Therefore, it is unnecessary at this time to undertake the actions described in NMMR 9.4.1.

SUMMARY OF RESULTS

Load Forecast

The load forecast for Northern Maine projects an average growth rate of 1% per year over the seven-year planning period covered in the Base Case for both energy and demand.

The anticipated peak hourly demand for Northern Maine is expected to increase from 142 MW in 2008 to 150 MW in 2014, the final year covered in the Base Case.

Generation Resources

NMISA projects that it is more likely than not that the 19 MW Boralex Sherman facility will not be available during the period covered by the Base Case, but that the 37 MW Boralex-Ashland and 33 MW Boralex-Fort Fairfield units will remain in service.

NMISA projects that, based upon committed generation resources, the system will be deficient by 17.0 MW in 2008 and that this deficiency will grow to 25.4 MW by 2014.

Based upon the NBSO's 10-Year Outlook for the period 2007-2017, the New Brunswick system is likely to be surplus in all years except 2009, when it will be deficient by 280 MW during a refurbishment of the Point Lepreau nuclear power facility.

NMISA believes that the projected deficiency in Northern Maine can be satisfied from off system purchases or from the construction or reactivation of generation resources not included in the Base Case.

Transmission Planning

NMISA finds that no transmission constraints are more likely than not to occur during the period 2008 to 2014.

The system currently complies with NPCC Reliability Criteria and is projected to do so through the planning period.

Routine annual capital projects that are currently projected for the planning period are a series of capitalized maintenance projects by MPS that will not increase transmission capacity compared to current levels, but should generally increase system reliability and decrease transmission O&M expenses.

In the event that on-system generation were to decrease substantially from current projected levels, for instance if the 70 MW of Boralex units were retired, it may become necessary to quickly enhance interconnections with neighboring systems.

The Maine Power Connection Group continues to evaluate the potential economic and reliability benefits of enhancing interconnections with neighboring systems.

On February 27, 2008, Maine Public Service requested to interconnect with ISO-NE and become a Transmission Owner under the NEPOOL Agreement. As a TO they are requesting to roll in costs for a 345 kV line, facilitating the development of the large wind projects in the queue.

EXHIBIT 1

Summary of MPS Transmission Lines

MPS has 377.76 circuit miles and 376.47 pole miles of transmission lines. The difference is a small double circuit section on 6903 and 6908 lines. We serve an area of approximately 3,600 square miles and 36,500 retail customers through transmission and distribution level systems. A breakdown of transmission mileage is as follows:

Voltage	Circuit Miles	Pole Miles
34,500	11.98	11.98
44,000	46.80	46.80
69,000	307.09	305.80
138,000	11.89	11.89

The main trunk portion of Line 3470 has been classified as transmission by FERC. Most of this line mileage is for subtransmission lines, i.e. it serves our 28 distribution substations. Two lines, 6904 and 3855 are true transmission lines that do not serve any distribution stations.

A detailed description of each line follows:

3470 This line was first constructed in 1941 and has been upgraded many times over the years in various sections. It originates in Ashland at Ashland Substation and runs south along Route #11 to Masardis and east to Squa Pan Hydro and consists of 10.48 miles of transmission single pole construction with 3/0 ACSR and 3#6 copper wire. Additional 3470 mileage is classified as distribution line.

4407 This line was rebuilt in sections from 1997 to 2002. It originates in Houlton at the Mullen substation and runs west along the Ludlow Road, then south along Route #2 to Island Falls 27.38 miles. From Island Falls to the Wheelabrator/ Sherman plant in Stacyville 4407 is interrupted by Line 4425 From Stacyville to Sherman sub in Sherman is a short 0.59 mile piece of 4407. The line is constructed mostly of 336.4 ACSR conductors on single pole transmission structures.

4425 This line was built in 1985 and 1986 to serve the Wheelabrator/ Sherman plant in Stacyville. It has since replaced an older section of 4407 and is located in the middle of that line. It starts in Island Falls near the substation of the same name and extends west parallel to Route 159 to Patten, then south parallel to Route #11 to the Wheelabrator/ Sherman plant in Stacyville for 16.39 miles. This line was constructed cross-country with 795 ACSR conductors on two pole “H” frame structures.

6901 This line was built in 1964. It starts at the eastern Canadian border near the Fort Fairfield / Limestone town line and extends south along the border to just south of the Aroostook River then turns southwest to Presque Isle where it terminates at Flo's Inn substation. Total US line mileage is 11.53 miles. The 1.72 mile eastern end of the line is owned by WPS PDI-Canada Company and begins at their Tinker substation in Aroostook Falls, New Brunswick and extends to the US border. The line is constructed of single and two pole transmission structures with 336.4 ACSR conductors.

6903 This line was constructed in 1961. It starts at the Limestone substation in Limestone and extends westerly along Route #89 then crosses the Aroostook River twice until it terminates in the Caribou Substation in Caribou. This line, through a tap, feeds the former Loring AF Base. The main line is 11.91 miles long and is constructed mostly of single pole transmission conductors with 336.4 ACSR conductors. A short section of the line is two pole "H" frame, double circuit line with 6908, and 2/0 F Copperweld conductors.

6904 This line was built in 1964. It starts at the eastern Canadian border near the Fort Fairfield / Limestone town line and extends north along the border, then turns west to Route #1A in Limestone where it terminates at Limestone substation. Total US line mileage is 9.14 miles. The 1.44 mile eastern end of the line is owned by WPS PDI-Canada Company and begins at their Tinker substation in Aroostook Falls, New Brunswick and extends to the US border. The line is constructed of two pole "H" frame transmission structures with 336.4 ACSR conductors.

6905 This line was constructed in sections from 1964 to 1966. It starts at the northern US border in Madawaska and then east along Route #1A and turns south near the Eastern border with Canada in Hamlin and runs near Route #1A south to Limestone Substation in Limestone. The 1.88 mile northern end of the line is owned by NB Power and begins at their Iroquois substation in Edmundston, New Brunswick and extends south to the US border. The US portion of the line is 41.41 miles of mostly two pole "H" frame structures, with some single pole structure roadside along Route #1A. The line has mostly 336.4 ACSR conductors with a short piece of 3/0 ACSR conductors between Van Buren and Grand Isle. This line feeds the Van Buren municipal load.

6908 This line was constructed from 1950 to 1951. Since there are no line breakers at Fish River sub, this line is really the southern end of Line 6909, which runs all the way down from Madawaska. Line 6908 originates at the Fish River substation in Fort Kent and runs southerly near Route #161 to Caribou where it terminates at the Caribou substation. It is constructed of two pole "H" frame structures with 2/0F Copperweld conductors.

6909 This line was constructed in sections in 1961, 1966, and 1968. It starts at the northern US border in Madawaska and then westerly, cross country, south of Route #1, and to Fish River Substation in Fort Kent where it connects with line 6908. The 1.88 mile northern end of the line is owned by NB Power and begins at their Iroquois substation in

Edmundston, New Brunswick and extends south to the US border. The US portion of the line is 17.7 miles of two pole “H” frame structures with 336.4 ACSR conductors.

6910 This line was built in 1952 and 1953. It begins at Flo’s Inn Sub in Presque Isle then runs southerly, cross country, along a parallel path to Route #1 to Mullen sub in Houlton, crossing over Route #1 several times. It was constructed of 2/0F Copperweld conductors on two pole “H” frame structures.

6911 This radial line was built in two parts as a tap off line 6912. The original piece fed a processing plant in 1959. An extension was constructed in 1985 to serve a new West Caribou distribution sub. It begins at the Caribou transmission sub and extends westerly 1.67 miles to West Caribou distribution sub. It was constructed of mostly 3/0 ACSR conductors on single pole structures. It was modified in 2005 to feed from either the Caribou transmission bus directly for improved reliability or as a tap off Line 6912.

6912 This line was originally constructed in 1955 with half upgraded in 2005. Half of this line was formerly Line 6906 (recently rebuilt), and the original half replaced by 6906 was reclassified as Line 6930 and is now associated with that line. This causes some confusion with the age and former designation of these lines. Line 6912 begins at Flo’s Inn in Presque Isle and extends northerly on both sides of the Aroostook River until it terminates at the Caribou sub in Caribou. It is 10.47 miles long and consists of 477 ACSR conductors on single pole transmission structures.

6914 This line was constructed in sections in 1963, and 1965. Portions were rebuilt in 1985, 1987, and 1989. This line extends from Flo’s Inn sub in Presque Isle south along Route 167 and State Street, then westerly to Presque Isle switching, where it can be tied to Line 6915, and continues on or parallel to Route #163 to Ashland sub in Ashland. The line is 24.28 miles with 477, 336.4 and 3/0 ACSR conductors supported by various single pole transmission structures.

6915 This line was constructed in sections in 1960, and 1963. This line extends from Flo’s Inn sub in Presque Isle west across the Aroostook River and skirts along the west side of urban Presque Isle to Presque Isle Switching Station, where it can be tied to Line 6914. The line is 5.64 miles with 336.4 ACSR conductors supported by various single and two pole “H” frame transmission structures.

6916 This line was constructed in 2006 to serve the Evergreen wind farm project. This line extends from the Mars Hill Switching Station, on the north side of the Mars Hill urban area, east 3.75 miles to the Evergreen Collector sub also in Mars Hill. The line consists of 336.4 ACSR conductors on single pole transmission structures.

6917 This line was constructed in 1966. It is a radial line from Limestone Switching Station south along Route #1A to Pond Substation, 1.12 miles, all in Limestone. 6917 can be fed from either 6903 or 6905 by operating switches at Limestone Switching Station. It consists of 3/0 ACSR conductors on single pole structures.

6920 This line was constructed in sections in 1965, from 1967 to 1969, and in 1976. This line runs parallel to, and in close proximity to line 6910. See line 6910 for a route description. This line is constructed of 336.4 ACSR conductors on two pole “H” frame transmission structures. The Evergreen wind farm will be tied to this line near Mars Hill.

6928 This line was constructed in 1992 to feed the Boralex Ashland plant. It feeds from the Ashland substation in Ashland west 2.69 miles to the Ashland Industrial Park just off the Realty Road. The line is constructed of 795 ACSR conductors supported by single pole transmission structures. This is a radial feed.

6930 This line was constructed in 1955, 1969, and from 1974 to 1975. The Caribou end of this line was formerly 6912. This line runs from Caribou Substation in Caribou, south along the Aroostook River, then west cross country to Ashland sub in Ashland. This line consists of 477 and 336.4 ACSR conductors on single and two pole “H” frame transmission structures.

3855 This line was constructed in 1957. It was upgraded from a 69 kV to a 138 kV transmission line. It starts at the eastern Canadian border near the Easton / Mars Hill town line and extends northwest cross country to Presque Isle where it terminates at Flo’s Inn substation. Total US line mileage is 11.89 miles. The 8.2 mile eastern end of the line is owned by NB Power and begins at their Beechwood substation in New Brunswick and extends to the US border. The line is constructed of two pole “H” frame transmission structures with 266.8, 336.4, and 556.5 ACSR conductors.

EXHIBIT 2

MAINE PUBLIC SERVICE
TRANSMISSION
CAPAITAL ADDITIONS

The basis for this Ten-Year Outlook is the Twenty-Year MPS Transmission Asset Management and Capital Expenditure Plan from 2003. It also includes projects identified by the MPC Part A study of existing reliability issues. This letter will discuss the highlights of the plan and the preliminary schedule of work to accomplish the goals of the plan. This Ten-Year Outlook represents the implementation of our present planning goals and a capital budget summary.

There were three main components of the 2003 Planning study. First, MPS desires to maintain and improve its periodic asset management inspections. The results of these inspections provide valuable condition information, which allows engineering to determine whether spot, or wholesale replacement, of structures is more appropriate. Second, MPS desires to replace transmission lines and equipment as they reach their end of life. This can be line or substation equipment. Third, MPS desires to have in place an expansion plan for use as new customers require service and to improve the efficiency of the system for the efficient transfer of energy. Last but not least, MPS desires to construct and maintain a system designed to meet industry accepted reliability standards.

The following bulleted list is our present schedule for capital improvements over the next Ten-Year Outlook period:

- 2008 MPS will finish construction of the approximately 7 mile line from Flo's Inn to Mars Hill Switching Station. Also, the MHSS will be expanded to a five breaker ring bus for improved voltage stability and reliability under contingencies.
- 2009 MPS will rebuild the first half of line 6901, 5.92 miles from Flo's Inn to the Fort Fairfield substation.
- 2009 MPS will rebuild 3 miles of existing line 6905 between Limestone and Van Buren. This will eliminate a bottleneck of small conductor and increase total line thermal capability.
- 2010 MPS will rebuild the second half of line 6901, 5.61 miles from Fort Fairfield to the US – Canadian border. MPS will upgrade the interconnection to WPS and NB Power to improve summer thermal ratings and to meet contingency requirements. Additional work by WPS is required to complete the upgrade of 6901 into Tinker Station in Canada.
- 2011-2012 MPS will begin a two year project to increase the capacity of the 11.89 mile line 3855/1176, Flo's Inn to Beechwood interface with NB Power. This will improve reliability and add additional contingency capacity following a Tinker interface

outage. This will require an 8.2 mile matching rebuild on the Canadian side of the border to Beechwood by NB Power.

- 2013-2014 MPS will rebuild Flo's Inn 69 kV sub to a "breaker and a half" scheme and a 138 kV substation with a three breaker ring bus. These changes will eliminate a 69 kV stuck breaker contingency and improve reliability through the newly rebuilt 3855 line to Beechwood by adding a second autotransformer.
- 2015 MPS will rebuild 9.14 miles of line 6904 from Limestone Switching Station to the US Canadian border for improved summer thermal performance and to meet contingency requirements. Additional work by WPS is required to complete the upgrade of 6901 into Tinker Station in Canada.
- 2016 MPS will finish upgrading 5.22 miles of line 6912 from Maysville to Flo's Inn to improve reliability and summer thermal capacity.
- 2017 MPS will rebuild 8 miles of line 6908 from Caribou to New Sweden substation. A new tap to New Sweden sub will be constructed.
- 2018-20 MPS will rebuild 8 miles of line per year on line 6910 from Blaine to Mullen substation. This will improve reliability and increase summer thermal ratings to meet growing demand.

This schedule is subject to change for financial reasons, customer additions, new generator integration, or system reliability and stability issues. MPS expects there will be ongoing annual transmission improvements for every year into the foreseeable future.

Other minor projects such as breaker replacements and protection and control upgrades will be completed as necessary.

EXHIBIT 3

MAINE POWER CONNECTION
OVERVIEW

The Northern Maine Area

From an electric system perspective, Northern Maine is mostly Aroostook County, with a portion of Penobscot County, Maine. Northern Maine encompasses an area approximately the size of the states of Connecticut and Rhode Island combined. This area is served by the Maine Public Service (MPS) 138, 69, and 44 KV transmission system, which supplies both MPS retail customers and three wholesale customers:

1. Houlton Water Company
2. Van Buren Light & Power District
3. Eastern Maine Electric Cooperative (most of EMEC is served by New Brunswick Power)

Northern Maine is presently interconnected only with the New Brunswick Power transmission system. No direct transmission interconnection exists between Northern Maine and the electric transmission systems of the rest of the State of Maine and the rest of the United States of America. Northern Maine is part of the Maritimes Canada Control Area (along with New Brunswick, Nova Scotia, and Prince Edward Island), but has its own energy market and RTG, administered by Northern Maine Independent System Administrator (NMISA) under the United States Federal Energy Regulatory Commission (FERC) jurisdiction.

This Study

This Maine Power Connection Study is in response to a number of issues and objectives that have come together creating an interest among various stakeholders to evaluate the feasibility of directly connecting Northern Maine to the New England transmission system. The issues and objectives driving the interest in the new interconnection include:

i) The MPS system is unable to meet a n-1-1 reliability criterion;

ii) The Maine Public Utilities Commission (MPUC) order in Docket No. 2006-513 concluded that market failure has occurred in the Northern Maine electricity market and identified a MPS interconnection to New England as a possible solution;

iii) The generator interconnection request submitted by Aroostook Wind Energy, Inc. (AWE) under the MPS OATT to connect a 800 MW wind project to the MPS transmission system; and

iv) The recent Maine-New Brunswick Memorandum of Understanding (MOU) suggested that the parties would study the feasibility of expanding the transmission infrastructure to increase electrical flows across borders.

Each of the above issues is supported by different stakeholders and has somewhat disparate objectives for the ultimate line configuration, but all have the common goal of connecting Northern Maine to the New England market.

Central Maine Power (CMP) and MPS entered into a MOU "to work together to evaluate the feasibility, develop and implement electric transmission projects to increase the transmission capability between the MPS system and the rest of the State of Maine and possibly the Province of New Brunswick by developing a 345 kV electricity transmission line between the MPS system and the MEPCO line with the possibility of extending from Edmundston, New Brunswick to Orrington, Maine (the "Project")." This study is the first phase of the CMP-MPS MOU.

Transmission upgrades identified in this study will improve MPS transmission system reliability and meet the reliability standards of the North American Electric Reliability Corporation (NERC) and Northeast Power Coordinating Council, Inc. (NPCC), they also may improve the economic performance and maintainability of the system.

The Maine Electric Power Company (MEPCO) and NRI/IPL New Brunswick–Maine transmission interconnections are unique and face transmission security concerns; there is a long 345 kV corridor between Maritimes Canada and the rest of New England with multiple transmission interfaces. These interfaces are based on thermal, voltage, and stability constraints, including a unique voltage stability constraint, and rely on several special protection systems to perform adequately.

The reliability of the Northern Maine transmission system is dependent upon the capacity of 138/69 kV transformation, the reliability of the parallel NB Power transmission system, and internal generation.

Study Objective

The purpose of this study is to analyze the Northern Maine transmission system and develop alternative transmission interconnections to the MEPCO and New England transmission systems to improve MPS system reliability without adversely affecting New Brunswick–Maine transmission interface transfer capability. The analysis will be done consistent with the Northeast Power Coordinating Council, Inc. Document A-2, *"Basic Criteria for Design and Operation of Interconnected Power Systems,"* and ISO New England Planning Procedure No. 3, *"Reliability Standards for the New England Area Bulk Power Supply System,"* and applicable North American Electric Reliability Corporation Reliability Standards. The proposed program will evaluate alternative transmission solutions to determine the most cost-effective means to ensure system reliability in accordance with the ISO New England Planning Procedure No. 4, *"Procedure for Pool-Supported PTF Cost Review."* The proposed solutions will also be evaluated to ensure that they pose no significant adverse impact on the stability, reliability and operating characteristics of the interconnected bulk power transmission system in accordance with the ISO New England Planning Procedure No. 5-3, *"Guidelines for Conducting and Evaluating Proposed Plan Application Analysis."* This study will consist of steady state voltage and thermal analyses, short-circuit analyses, and stability analyses.

As noted above, several different but related objectives have been identified by different stakeholder groups for the proposed interconnection. Each of the objectives may be satisfied with or require different transfer capabilities as well as different end points for the line, for example:

a. The Northern Maine stakeholder group seeks a transmission solution that addresses the market failure concerns identified by the MPUC in Docket No. 2006-513. A potential transmission solution for this objective will be a line connecting the closest points of the MPS and MEPCO systems, i.e., a short line of approximately 25 miles extending from the MPS 69 kV system in the vicinity of Houlton and tapping into Section 396 of the MEPCO line with a new 345 kV terminal in the vicinity of Haynesville. The study will evaluate the transfer capability of the line in both directions to determine i) whether the resulting flows in the south-to-north direction will allow Northern Maine load to be served with firm power from the New England market, and ii) whether the north-to-south flows will be adequate to allow generation in Northern Maine to reach the New England market. In both cases, parallel flows through New Brunswick and New Brunswick–Maine transmission interface capability will need to be evaluated.
b. AWE is pursuing development of a 800 MW wind project in Northern Maine. To the extent this project elects to move forward, a much greater transfer capability will be required than for objective (a) above. The northern terminal for this line will be determined through the AWE interconnection process.
c. A third possible objective of the new line will provide for a third interconnection between Maine and New Brunswick. Possible northern terminals for this line include NB Power's St. Andre and Edmundston 345 kV substations.

Study Scope

The scope of work will consist of the following:

- Develop ten-year forecasted load base cases with multiple dispatch scenarios as required to reasonably stress the system in Northern Maine and the surrounding region under study.
- Conduct a comprehensive steady-state analysis of the current system including planned upgrades to determine transmission system reliability performance under several system conditions and operating scenarios.
- Benchmark stability transfer limit performance for the current system on a list of critical 345 kV system faults on and near the New Brunswick–Maine transmission interface.
- Determine the need for 345 kV and/or 138/115 kV system expansion or upgrades to meet reliability criteria. The transmission system reliability assessment will include:
    1) all lines in service (N-0);
    2) contingency analysis (N-1) of design contingencies; and
    3) contingency analysis with an element out of service (N-1-1) of design contingencies
- Assessment of Maine 345 kV and 138/115 kV expansion alternatives that include possible corridors for new transmission lines between the Maine Electric Power Company 345 kV corridor and the Maine Public Service system and the New Brunswick Power system. Possible corridors have been identified, which include both existing and

new rights-of-way (ROW) to accommodate new transmission lines. These routes will be the basis of the alternatives analyzed for this study.
- Complete studies for ISO-NE Tariff Section I.3.9 Proposed Plan Application approval by demonstrating that proposed reinforcements do not cause adverse system impact on the stability, reliability and operating characteristics of the interconnected bulk power transmission system.
- Prepare and present for Transmission Cost Allocation approval for complete cost-recovery of the program.

Study Process

First, the Maine Power Connection Study seeks to involve stakeholders in its development of a cost-effective and strategic transmission system expansion plan to address both system-wide and specific reliability needs in Northern Maine. A Maine Power Connection Study Group has been organized to facilitate data gathering, development of assumptions, and review of results and reports. Central Maine Power Company and its consultants will take the lead role in all planning studies and management. The Study Group will involve representatives from the following:

- Central Maine Power Company (and its consultants)
- Maine Public Service Company
- Northern Maine Independent System Administrator (NMISA)
- ISO New England (ISO-NE)
- New Brunswick Power Transmission Corporation
- New Brunswick System Operator
- Bangor Hydro Electric Company
- Nova Scotia Power
- Eastern Maine Electric Cooperative
- Houlton Water Company

The Study Group will generate a list of assumptions to be considered in the bulk transmission reliability study to meet Northern Maine's and the Regional Transmission Organization's (RTO) needs. These studies will be conducted based on the Draft Transmission Planning Process currently under development by ISO-NE. The following is a preliminary list of study assumptions that have been determined:

- Generator dispatch in Maine and New Brunswick, and elsewhere in New England
- Proposed generation projects and their respective upgrades to be considered
- Alternative transmission system reinforcements associated with proposed reliability projects
- Design basis of all existing and proposed Special Protection Systems
- Maine and New Brunswick contingency and stability fault list
- Stressed internal and external transmission interface conditions
- Published voltage schedules
- Chester SVC mode and settings (Breg/Vreg)
- Series Compensation

- New Brunswick transmission upgrades based on the most recent Comprehensive Area Transmission Review and northern New England transmission upgrades based on the most recent ISO-NE Regional System Plan and utilities' plans.

The study will be conducted in three steps:

1. A "Needs Assessment" will be done to determine requirements for reliability, operability, and maintainability.
2. An "Alternatives Assessment" will be done to develop and evaluate alternative solutions to meet the needs identified in the first step.
3. A "Final Reliability Analysis" will be done to ensure that the chosen proposed transmission alternative is both cost-effective and meets all applicable reliability standards.