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 1, 2010

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 be 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 Power Pool and are not subject to the control of ISO New England ("ISO-NE"). 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 Balancing Authority Area that includes the Northern Maine and Maritimes regions.

The maximum peak demand for the NMISA region in 2009 was 134 MW, with a projected annual peak load growth of less than .5%. The 2009 energy consumed was 739,507 MWh -- a 6.32% reduction from 2008. 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 services, 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 two 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. 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.

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 2009 was -0.74%. The peak demand (MW) annual load growth for same period was 0.38%. 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 .5% resulting in 2010 projected energy load of 743,205 MWh. The remainder of the period was simply escalated by .5% per year. Although the recent trend is for declining sales, a modest sales growth was used for planning purposes. The peak load for each year was calculated using the same growth factor for energy.

Table 1 reflects the seven-year load forecast

Table 1
NMISA 7-Year Load Forecast

Year	MWh	Peak
2010	743,205	134.7
2011	746,921	135.3
2012	750,655	136.0
2013	754,408	136.7
2014	758,180	137.4
2015	761,971	138.1
2016	765,781	138.8

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. In the MPS region the majority of the generation consists of two biomass plants and several hydropower facilities

Recently, in the EMEC region 20 MW of hydro/oil capacity became available from DOMTAR, a local paper mill.

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	
Squa Pan Hydro	1.40	Hydro	
Other Resources			
Boralex – Fort Fairfield	33.00	Biomass	
Boralex - Ashland	37.00	Biomass	
Evergreen Wind	42.00	Wind	
DOMTAR	20.00	Hydro/OIL	
Boralex - Sherman	19.00	Biomass	Mothballed
Total Capacity	228.20		

B. PROPOSED RESOURCE ADDITIONS

There are two proposed projects under study through MPS's Large Generation Interconnect Procedure consisting of two wind projects at 255 MW and 50 MW. For more information see the following link:
http://www.mainepublicservice.com/electricity-supply/transmission/generation-interconnection-requests.aspx

RESOURCE ADEQUACY

The purpose of the Base Case is to provide information to Market Participants and potential Market Participants of any forecasted long-term deficiency. 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, demand response, 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 Authority, 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 Authority 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 14 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 Comprehensive Review of Resource Adequacy*. In the latest study, 2007, 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 New Brunswick is included in Table 3 below to show the potential availability of excess capacity within the Maritimes Balancing Authority.

In all years, the Base Case for the NMISA system shows a surplus. The Boralex Shermanunit is shown in the Base Case as providing zero capacity during the planning period. Although the unit operated at various intervals through 2007 and 2008 under short-term contracts, in 2009, Boralex requested that the unit be retired. Pursuant to NMMR 8.8.3, NMISA granted Boralex's request. In addition, as discussed earlier, additional generation projects are

proposed. These projects may become available during the planning period. Given the uncertainty of the ultimate construction of such projects, none of these are included in this analysis. Table 3 reflects the NMISA's Load and Resources Review from 2010 to 2016.

Table 3
Load and Resources Review (MW)

Year	2010	2011	2012	2013	2014	2015	2016
Peak	134.7	135.3	136.0	136.7	137.4	138.1	138.8
+Reserve 20%	161.6	162.4	163.2	164.0	164.9	165.7	166.5
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
DOMTAR	20	20	20	20	20	20	20
Mars Hill Wind	13.0	13.0	13.0	13.0	13.0	13.0	13.0
Firm Purchases	35.0	5.0	5.0	5.0	5.0	5.0	5.0
Firm Sales	-44.0	-7.0	-7.0	-7.0	-7.0	-7.0	-7.0
Total	168.9	175.9	175.9	175.9	175.9	175.9	175.9
Deficiency (+/-)	7.3	13.5	12.7	11.9	11.0	10.2	9.4
Transfer Capacity	90	90	90	90	90	90	90
New Brunswick (+/-)	465	515	778	748	728	698	658

Historically, the peak has occurred in December.

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 as Exhibit 1.

The MPS system is interconnected with New Brunswick via three 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 100 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. MPS is investigating adding Special Protection Schemes to increase the export capability of the interface.

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 five 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 five-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

A series of capitalized maintenance projects is planned by MPS. A summary of these projects is included as Exhibit 2. 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.

In the EMEC region, an additional 54 MW of wind generation became operational in January 2009. However, this project is not interconnected with the NMTS. Rather, it is 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 runs from Stetson Mountain in EMEC's franchise area to BHE's Chester substation. The developer is proposing to increase the capacity of the facility. Currently, there are no plans to ingrate this site into the NMTS. Pursuant to NMMR 8, NMISA did not evaluate this project for reliability impacts because it is not interconnected with the NMTS.

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 known as the Maine Power Connection project. In July of 2008 MPS filed a petition for a Certificate of Public Convenience and Necessity for the project with the Maine PUC. Pursuant to NMMR 8, the NMISA evaluated the project for reliability impacts and, under its market monitoring obligations, evaluated the impact on the wholesale electric market in northern Maine. The study is posted on the NMISA website at the following url: http://www.nmisa.com/docs/NES_MPC_Report.pdf. On February 5, 2009, the MPUC dismissed the petition without prejudice, citing as the reason that further analysis is required.

On January 22, 2010, MPS applied to ISO New England for an Elective Transmission Upgrade ETU designated as Maine Power Connection 2010. The proposed MPC 2010 Project (ISO New England Queue Position #324) consists of a 345 kV line originating in Bridgewater, where it connects to a proposed 200-250 MW wind generation farm denoted as QP#324 Wind Project, extending south to Houlton where it will connect through a 345/69 kV autotransformer to the MPS network, and on to Haynesville, where it will tie into the Chester to Keswick MEPCO line (Section 3001) through a new 345 kV switching substation. The total length of the proposed line is approximately 51 miles: 25 miles from Bridgewater to Houlton, and 26 miles from Houlton to Haynesville. NMISA understands that the project will be treated as a merchant transmission line. MPS plans to file a CPCN with the MPUC when the required studies are completed. NMISA is a participant on the MPC Working Group.

On December 21, 2009, Algonquin Power Fund (America) Inc. (Algonquin), formally Integrys, filed a CPCN with the MPUC to construct a 345 kV electric transmission line referred to as the Northern Maine Interconnect (NMI), which would run from Houlton, Maine to an interconnection point with the Maine Electric Power Company (MEPCO) 345 kV line located in Haynesville, Maine. The NMI is proposed to be constructed along the so-called "Bridal Path" which runs from Houlton to Haynesville. The Bridal Path is approximately 26 miles long with a standard cleared corridor width of between 170 and 225 feet. The NMI would cross 78 parcels of land, and would pass within 300 feet of 20 existing dwellings. Algonquin then applied with ISO-NE for an ETU on December 28, 2009. The project is QP#322 in ISO-NE's queue. On February 10, 2010 Algonquin sent a letter to the ISA in the form of a Connection Agreement pursuant to NMMR 8.

On January 7, 2009 First Wind submitted to the MPUC in Docket No. 2008-104 a plan to develop 106.5 MW of wind in Oakfield, consisting of two phases. Phase I is a 49.5 MW located in Oakfield and Phase II is a 57 MW expansion of Phase I located in areas in and around Oakfield. The NMISA will evaluate the project pursuant to NMMR 8.

Various other opportunities for enhancement of interconnections with non-NMTS systems 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.

Potential Transmission Deficiencies

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 transmission deficiencies to allow such Market Participants to bring forward proposals to address potential deficiencies. 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. 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.

In the 2009 Seven-Year Outlook ("2009 Report"), the NMISA identified an emerging constraint due to the uncertainty and potential loss of in-region generation in Northern Maine. In the 2009 Report, the NMISA noted that none of the three Boralex units (Sherman, Ashland and Fort Fairfield) had a contract that extends through the seven-year period covered by this report and that, 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, transmission upgrades or other actions could become necessary to ensure compliance with NPCC reliability standards. In the 2009 Report, the NMISA noted that such set of circumstances were likely to occur within the next one to five years, absent corrective action.

As discussed below, as of the date of this 2010 Seven-Year Outlook, the facts that led the conclusion in the 2009 Report that there was an emerging transmission constraint have not improved and, in some respects, have worsened.

In February 2009, the Standard Offer Service for MPS was awarded to New Brunswick Power Generation Corp. Initially, Boralex notified NMISA that, in the absence of purchased power agreements for the output of the Sherman and Fort Fairfield units, Boralex would terminate operations at those units. As a result of the termination notices, pursuant to NMMR 8, NMISA coordinated with MPS to conduct studies to determine if Reliability Must Run ("RMR") contracts were necessary. However, in March 2009, NMISA was notified that the Fort Fairfield unit would continue operations serving native load pursuant to two-year power purchase agreement between Boralex and NB Power Generation Corp. Accordingly, the studies were cancelled. The Boralex Sherman unit has been retired and the power purchase contract for the output of Fort Fairfield will terminate April 1, 2011. There is no way for the NMISA to predict at this point whether the Fort Fairfield unit will operate after April 1, 2011.

Current analysis indicate that the current Northern Maine transmission system may not be sufficient to provide reliable service if the Boralex units were to all become unavailable at some point. While 20 MW of DOMTAR capacity has been added, it is attached to the EMEC system and will not alleviate the capacity shortage in the MPS area. Moreover, it is not prudent from both a reliability and financial standpoint for the Northern Maine region to rely on last-minute RMR agreements to address these capacity concerns. Therefore, in the absence of certainty as to the availability of the current in-region generating capacity, there is an emerging need for transmission system upgrades.

As noted in the previous section, there are two proposed high voltage transmission projects that would, if constructed, provide additional transmission transfer capability in and out of Northern Maine and likely could alleviate the emerging constraint. The NMISA notes,

however, 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. Absent corrective action, however, transmission constraint noted above likely will emerge within one to five years.

In addition, in recent years the NMISA 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 68 MW. The NMISA considers this circumstance an "emerging constraint" under NMMR 9.[3]

Finally, the construction of new generating facilities in Northern Maine may also require the construction of additional transfer capability with neighboring systems in order for those new generating units to export their output, 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.

The NMISA is not aware of any planned deactivation, disconnection or retirement of any existing transmission facilities.

Conclusion

The NMISA finds that, absent corrective action, transmission constraints are more likely to occur than not over the next one to five years. Pursuant to NMMR 9.4.1, the NMISA studied the available options and published the results in the "Report on Technically Feasible Options to Meet Reliability Standards," dated February 1, 2010 ("Reliability Report").[4] A comparison from section 5 of the Reliability Report (at 23) of the total annual cost/Mw, and the resulting Load Carrying Capability ("LCC") of the options studied is:

[3] As this constraint is caused by the export of generation from new Northern Maine generation to other markets, the transmission expansion policy pursuant to MPS's Open Access Transmission Tariff ("OATT") presumably would require exporting generators to upgrade the interconnection upon requesting additional transmission transfer capacity beyond the ATC.

[4] The report may be found on the NMISA website at http://www.nmisa.com/docs/NMISA_Reliability_Evaluation_(Feb_1_2010)_-_Redacted_Version.pdf.

Option	Annual Cost ($K)	Annual Cost** ($K/Mw)	Winter LCC (Mw)		N-1 Satisfied?*
			Non-Radial	Radial	
Mullen Reactive	115	11.5	116	94	No
Additional Reactive/Peaking (Diesel and Steam)	3,000	142.9	127	120	Yes
Additional Reactive/Tinker Upgrade	781	31.2	131	120	Yes
RMR-Existing Biomass	0-2,800	0-59.6	153	134	Yes
Limestone-St. Andre (Line 3875)	1,850	50.0	143	120+	Yes
Houlton-Haynesville	4,730	81.6	164	120+	Yes
Houlton-Woodstock	2,200	42.9	167	120+	Yes
New Diesel Generation	6,050	151.3	146	120+/-	Yes

* For both the non-radial and radial modes.

** Based on the incremental non-radial LCC during winter period.

The results and conclusion of the Reliability Report are summarized as follows:[5]

> The annual costs for each of the options, with the exception of the "Mullen Reactive" option, are the estimated net costs to meet the N-1 reliability standard. The Mullen Reactive option will not meet the standard, but it does reduce the likelihood of a loss of load operating in the normal, non-radial mode to once in 300 years and is substantially less expensive than any of the other options. It does not mitigate the risk significantly in the radial mode, which is estimated at once in about 3 years. However, that risk might be eliminated if the NBSO accepts and operates the system to meet the N-1 reliability standard for the NMTS.
>
> The remaining options all are estimated to meet the N-1 reliability standard in both the non-radial and radial modes. From the estimates it is apparent that the option which adds additional reactive to southern Aroostook, combined with upgrading the capacity of the Tinker transformer, is significantly less expensive to satisfy the N-1 reliability standard for the current peak load forecast.
>
> Finally, it should be noted that these options are put forth with the purpose of meeting the N-1 reliability standard only. However, each of the options may also provide other benefits. For example, even though the Houlton-Woodstock line is more expensive than Line 3875 and the Tinker upgrade options, it may provide a back-up to loss of lines

[5] Reliability Report at 23-24.

between northern and southern Aroostook (Flo's Inn to Mullen) or defer the need to rebuild/upgrade various transmission lines (for example, lines 6910/6920), which could justify its selection as an overall least cost solution.

Based upon that analysis, the NMISA has concluded that the most prudent and cost effective solution to the emerging transmission constraint if needed, is to employ RMR agreement(s) as a stop-gap solution to a possible shut-down of in-region biomass generation until the Additional Reactive/Tinker Upgrade described above could be constructed.

SUMMARY OF RESULTS

Load Forecast

The load forecast for Northern Maine projects an average growth rate of .5% 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 135 MW in 2010 to 139 MW in 2016, the final year covered in the Base Case.

Generation Resources

NMISA projects that, based upon committed generation resources, the system will be surplus by 7.3 MW in 2010 and that this surplus will continue through the planning period.

Based upon the NBSO's 10-Year Outlook for the period 2010-2019, the New Brunswick system is likely to be surplus in all years.

Transmission Planning

NMISA finds that transmission constraints are more likely to occur than not during the period 2010 to 2016.

The system currently complies with NPCC Reliability Criteria, but due to the uncertainty of in region generation, NMISA identified an emerging constraint in the 2009 Seven-Year Plan and employed outside consultants to identify feasible options to address the reliability concerns. The analysis is published on the NMISA's website at the following link: http://www.nmisa.com/docs/NMISA_Reliability_Evaluation_(Feb_1_2010)_-_Redacted_Version.pdf

Routine annual capital projects that are currently projected for the planning period consist of 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.

EXHIBIT 1

Summary of MPS Transmission Lines

MPS has 381.15 circuit miles and 379.89 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	12.45	12.45
44,000	46.67	46.67
69,000	310.14	308.88
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 12.45 miles of transmission single pole construction with 3/0 ACSR and 3#6 copper wire. Additional 3470 mileage is classified as distribution line.

4407 (and Former 4425) The north end of 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 27.37 miles. From Island Falls south, this line was built in 1985 and 1986 to serve the Boralex Sherman plant in Stacyville. 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 Boralex Sherman plant in Stacyville for 16.39 miles. This line was constructed cross-country with 795 ACSR conductors on two pole "H" frame structures. On the very south end in Sherman is a short 0.82 mile piece consisting of 336.4 ACSR conductors on single pole transmission structures which feeds the distribution sub of the same name. (Mileage does not include tap lines)

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 Switching Station. 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 Switching Station in Limestone and extends westerly along Route #89 then crosses the Aroostook River twice until it terminates in the Caribou Switching Station in Caribou. This line, through a tap, feeds the Loring Commerce Centre. The main line is 11.91 miles long and is constructed mostly of single pole transmission structures with 336.4 ACSR conductors. A 2.06 mile section of the line is two pole "H" frame, double circuited with 6908, and 2/0 F Copperweld conductors. "The Double Circuit Tower" or DCT portion of this line from Caribou Switching Station to Otter Creek is being separated and rebuilt to 477 ACSR in 2010.

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 Switching Station. 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 structures roadside along Route #1A. The line is constructed with all 336.4 ACSR conductors. 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 Switching Station, 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. Portions of this line from Caribou to New Sweden sub are being rebuilt in 2010 to 336.4 ACSR on H frame structures to Otter Creek substation, and the DCT portion with 6903 is being removed and rebuilt with 477 ACSR 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 Switching Station 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 Mars Hill Switching Station in Mars Hill 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. It is 27.28 miles in length.

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 1987 to serve a new West Caribou distribution sub. It begins at the Caribou Switching Station 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 an emergency backup or normally as a tap off Line 6912.

6912 This line was half upgraded in 2005 and finished in 2009. Line 6912 begins at Flo's Inn Switching Station 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 davit arm transmission structures.

6913 (formerly the west end of 6914) This line was constructed in sections in 1963, and 1965. Portions were rebuilt in 1985, 1987, and 1989. This line extends from Presque Isle Switching Station in Presque Isle westerly on or parallel to Route #163 to Ashland Switching Station in Ashland. The line is 19.04 miles with 336.4 and 3/0 ACSR conductors supported by various single pole transmission structures. The number was changed in 2009 in anticipation of installing a ring bus at Presque Isle Switching Station in the near future.

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 Switching Station in Presque Isle south along Route 167 and State Street, then westerly to Presque Isle Switching Station, where it can be tied to Line 6915. The line is 5.24 miles with 477 and 336.4 ACSR conductors supported by various single pole transmission structures. (see 6913 for more details)

6915 This line was constructed in sections in 1960, and 1963. This line extends from Flo's Inn Switching Station 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, a five breaker ring bus, on the north side of the Mars Hill urban area, east 3.50 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. It is 27.28 miles in length not including tap lines.

6928 This line was constructed in 1992 to feed the Boralex Ashland plant. It feeds from the Ashland Switching Station 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 30.65 miles from Caribou Switching Station in Caribou, south along the Aroostook River, then west cross country to Ashland Switching Station in Ashland. This line consists of 477 and 336.4 ACSR conductors on single and two pole "H" frame transmission structures.

6940 This line was rebuilt in 2008 and 2009 and was formerly the north segment of 6910. It begins at Flo's Inn Switching Station in Presque Isle then runs southerly and cross country 14.53 miles, along a parallel path to Route #1 to Mars Hill Switching Station in Mars Hill. It was constructed of 477 ACSR conductors on single pole davit arm and two pole "H" frame structures.

6950 This line was constructed in sections in 1965, from 1967 to 1969, and in 1976. This line was formerly the north end of 6920 and runs parallel to, and in close proximity to line 6940. See line 6940 for a route description. This line is constructed with 336.4 ACSR conductors on two pole "H" frame transmission structures. It is 14.11 miles in length.

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 Switching Station. 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
CAPITAL ADDITIONS

The basis for this Ten-Year Outlook is the Twenty-Year MPS Transmission Asset Management and Capital Expenditure Plan from 2003 and the results of various reliability studies from interconnection requests and NMISA reliability studies. 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 four 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:

- 2010 MPS will rebuild 9.91 miles of line 6908 from Caribou Switching Station to New Sweden substation. A new tap to New Sweden sub will be constructed.
- 2010 MPS will relocate a 1.56 mile section of 6950 around an IWWH wetland. The ROW was acquired in 2007 for 6940.
- 2011 MPS will rebuild the first half of line 6901, 5.92 miles from Flo's Inn Switching Station to the Fort Fairfield substation.
- 2012 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.
- 2013-2014 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.
- 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 6904 into Tinker Station in Canada.

- 2016-18 MPS will rebuild 8 miles of line per year on line 6910 from Mars Hill Switching Station to Mullen Switching Station in Houlton. This will improve reliability and increase summer thermal ratings.
- 2019 MPS will rebuild line 6903, 9.85 miles from Limestone Switching Station to the Otter Creek Sub Tap. Construction will be 477 ACSR on single pole davit arms.
- 2020-2022 MPS will rebuild Flo's Inn Switching Station 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.