

Maine Power Connection Study DRAFT

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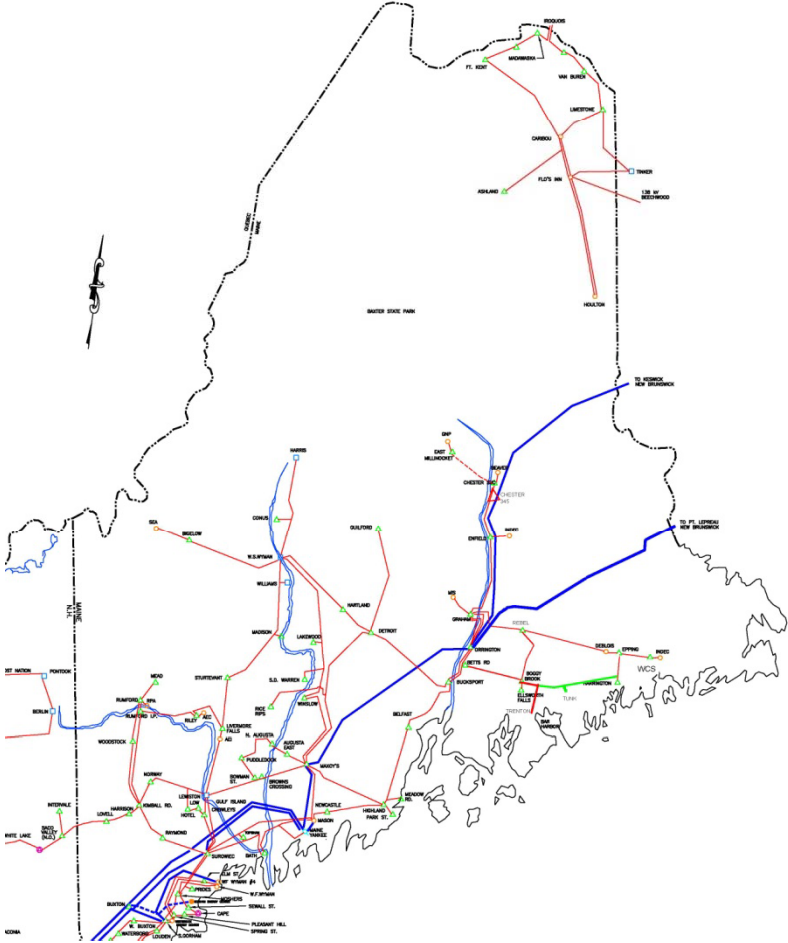
Maine Power Connection (MPC) Study

- MPC Study: a study, comprised of 3 parts, to evaluate the integration of the transmission system served by Maine Public Service (MPS) to the New England transmission system
 - MPC Study conducted assuming that MPS joins ISO-NE as a market participant and becomes an additional participating transmission owner
 - MPC Study conducted assuming that MPS service territory will include existing demand, resources, and projected wind resources

Current MPS Interconnection

- Today MPS is served by the New Brunswick System Operators (NBSO) through New Brunswick only; there is no direct connection to the rest of New England
 - Two 69 kV ties from MPS Madawaska & Grand Isle to NB Iroquois Substation
 - Two 69 kV ties from MPS Limestone & Flo's Inn to NB Tinker Substation; steps up to a single 138 kV line
 - One 138 kV tie from MPS Flo's Inn to NB Beechwood Substation

Maine Geographic Transmission Map



MPC Study – Part A

- Study the interconnection of MPS service territory to the rest of the New England transmission system
- Current Status
 - Study effort led by MPS and Central Maine Power (CMP)
 - Interconnection evaluated with a 138 kV line which taps the 345 kV Section 396 between Chester and Keswick
 - Initial Phase A steady state testing completed – no report finalized
 - Further investigation pending Part B

MPC Study – Part B

- MPS receives interconnection request from Aroostook Wind Energy (AWE), under MPS OATT, for 800 MW (nameplate) of wind
 - Initial study effort led by CMP and MPS with ISO-NE participating as an Affected Party under MPS OATT
- ISO-NE receives an application from MPS for Regional Network Service (RNS) on August 1, 2008

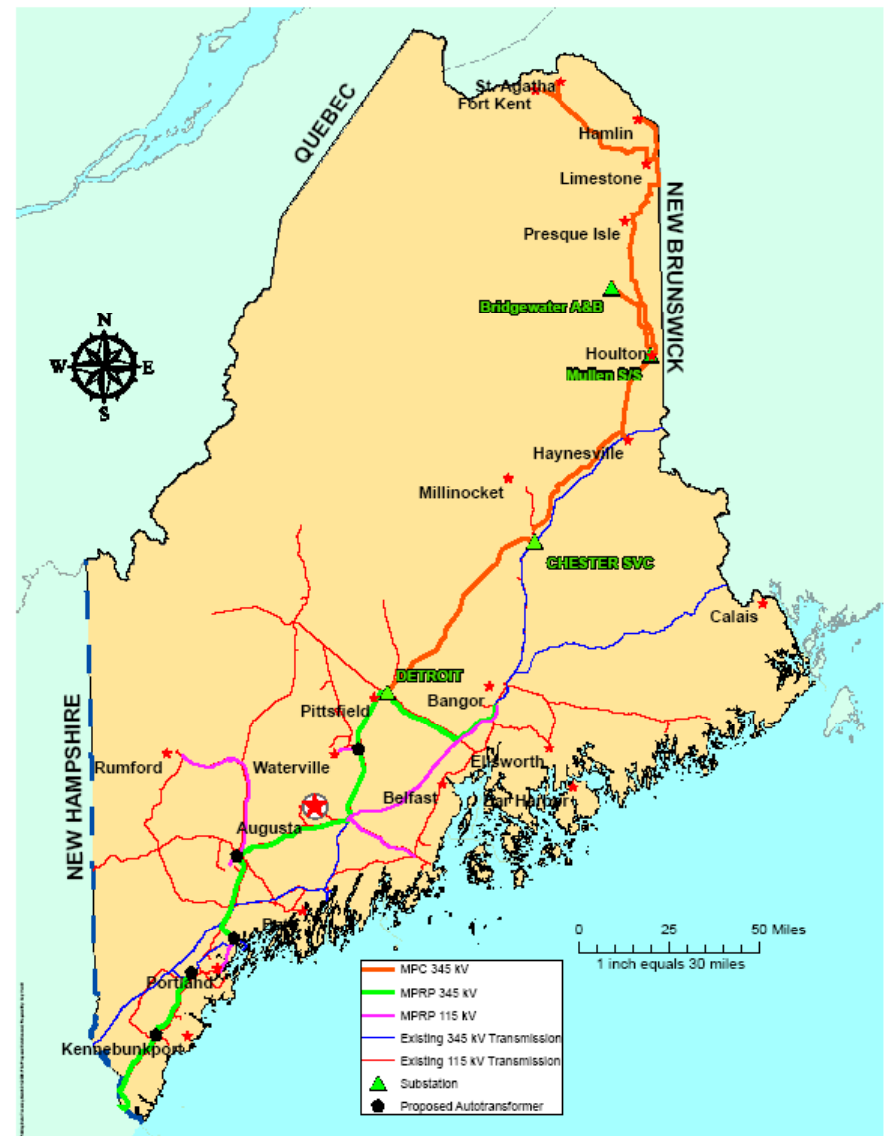
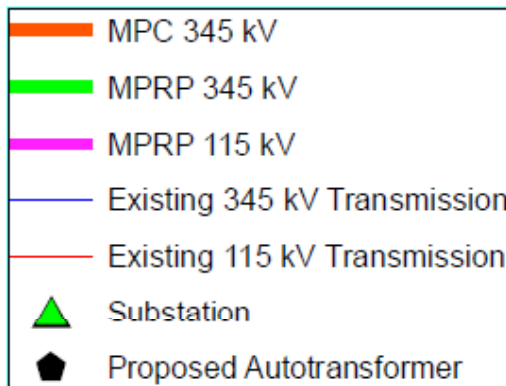
MPC Study – Part B (cont.)

- Part B Study being performed with MPRP (PPA approved) in place
 - MPRP need is based upon CMP/BHE system reliability, needs to proceed unless significant changes to expected system conditions occur
 - Without MPRP, transfers will be limited by Orrington-South interface (1,200 MW)
- Initial steady state evaluations have tested the following configuration
 - New 345 kV line from MPS to Chester to make use of the dynamic reactive capabilities of the SVC as line flows change
 - New 345 kV line from Chester to Detroit
 - Detroit is along the path of the MPRP which creates a new 345 kV circuit from Orrington to a new substation at Albion Rd (previously known as Benton)
 - Creates a new path around Orrington substation in a separate right-of-way (ROW)
 - Reduces the impact of loss of ROW or loss of substation extreme contingency events
 - Avoids ROW constricted area

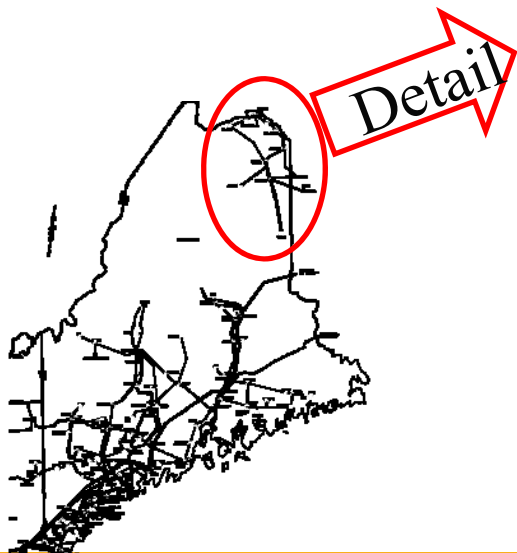
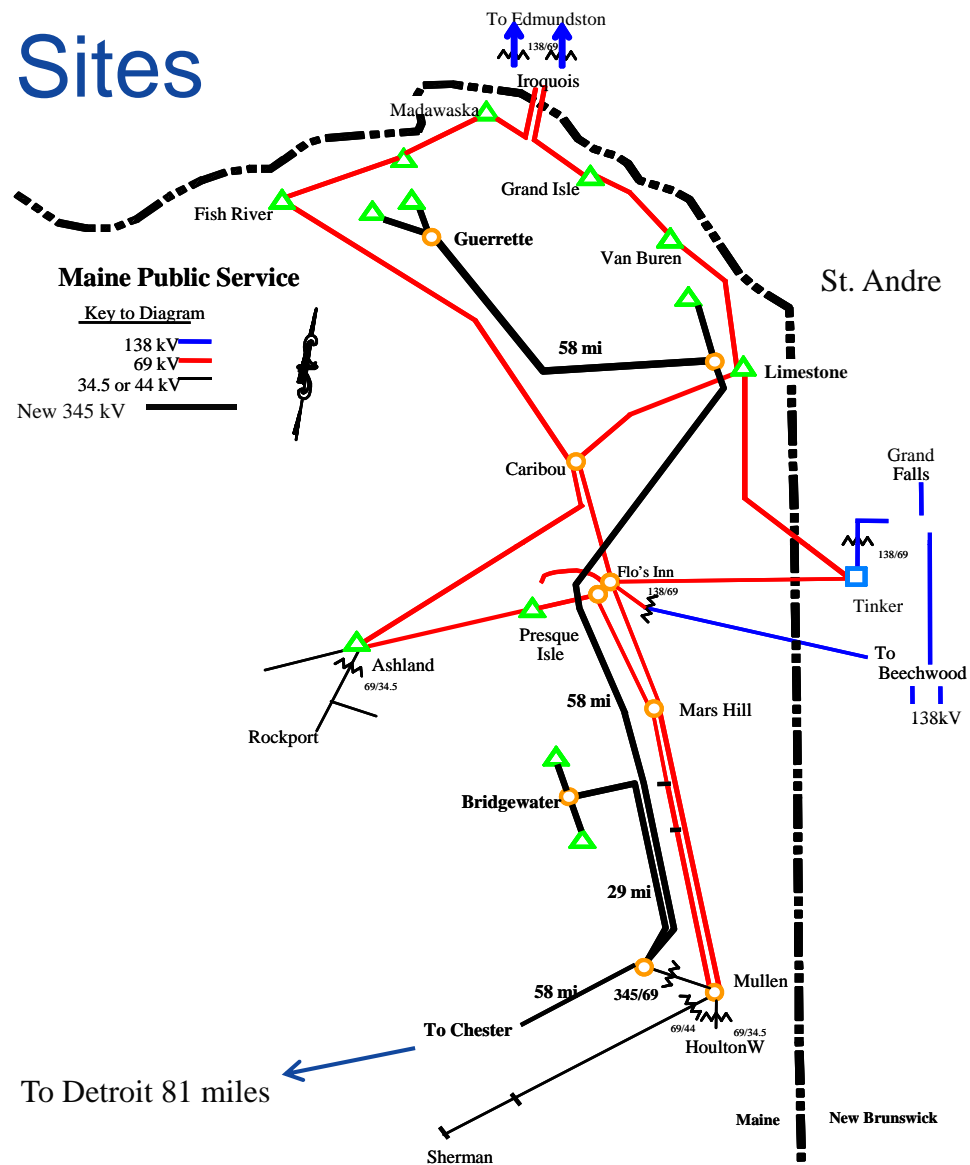
MPC Study – Part B (cont.)

- Initial steady state evaluations
 - Transfer trip necessary to trip the Mullen 345/69 kV transformer following the loss of the 345 kV line between MPS and Chester
 - Prevents pushing 800 MW through the 69 kV MPS system
 - Final requirements for additional reactive compensation awaiting completion of stability testing
- Stability evaluations
 - Initial evaluations have shown the need for a 200 Mvar SVC at Mullen

Location of MPC and MPRP Projects



Locations of AWE Sites



MPC Study – Part C

- Future study work that may include consideration of extending the 345 kV line between Chester and MPS/AWE into New Brunswick
 - St. Andre or Edmundston
 - Relatively short distance from MPS to New Brunswick 345 kV
- May allow for increased interface capability between New Brunswick and New England
- May allow for the elimination of transfer trip which was previously described, and removal/reduction of NB Special Protection Systems (SPSs)

Additional Considerations

- Currently, the Part B component considers AWE at 800 MW
- Additional studies may be needed to evaluate the possibility of placing 300 MW in service with less transmission infrastructure in place in light of the RNS application
 - Determine if all transmission upgrades continue to be needed with 300 MW in service