



April 1, 2016

Faith Huntington
Director of Electricity and Gas Utilities
Maine Public Utilities Commission
State House Station #18
Augusta, ME 04333-0018

RE: Emera Maine Transmission Line Rebuild or Relocation Projects, 35-A M.R.S.A. §3132(3); Minor Transmission Line Construction Projects, 35-A M.R.S.A. §3132 (3-A); and Additional Transmission Projects Report, Docket 2011-00170.

Dear Ms. Huntington:

Pursuant to 35-A M.R.S.A. § 3132(3) and (3-A) and Chapter 330(§8) of the Maine Public Utilities Commission Rules, enclosed is Emera Maine's annual filing of its Transmission Line Rebuild or Relocation Projects (69 kV and above), and its Minor Transmission Line Construction Projects (69 kV and above). In addition, Emera Maine encloses its Additional Transmission Projects Report required under Interconnection Condition 1.A. of Docket No. 2011-170, Petition of Bangor Hydro-Electric Company (BHE) and Maine Public Service Company (MPS) to Create an Affiliate.

Attached to this letter is a summary list of the projects by category (Attachment A), a map of the service territory depicting the location of all projects (Attachment B), data sheets for all projects (Attachment C), and the Affidavit of the Company President (Attachment D).

Transmission Line Rebuild or Relocation Projects (69 kV and above)

Title 35-A M.R.S.A. § 3132(3) requires each transmission and distribution utility to file an annual report of the "transmission line rebuilding or relocation projects that it intends to carry out during the next 5 years...that will become, or remain at, 69 kilovolts or more." Emera Maine currently has 6 projects it intends to carry out under this category in the next 5 years.

Three of the projects were listed on the 2015 filing. Those include lines 6901, 6910, and 1176/3855. Line 6901, which is now under construction, involves the rebuild of approximately 11.5 miles of line. The line is more than 50 years old and shows significant decay. Similarly, lines 6910 and 1176/3855 show significant decay and will require replacement in the next 5 years.

The other three projects, including lines 6903, 6905, and 6909, are located in the Northern Operating Region (NOR), and are 50 years old or older. Line inspections show significant decay in the structures. As a result, it is expected these lines will require rebuild or replacement in the next 5 years.

Minor Transmission Line Construction Projects (69 kV and above)

Title 35-A M.R.S.A. § 3132(3-A), requires transmission and distribution utilities to separately report minor transmission line construction projects. A minor transmission line construction project is defined as "...a transmission line construction project, the cost of which does not exceed 25% of the utility's current annual transmission property depreciation charge." For 2015, 25% of Emera Maine's annual transmission property depreciation charge is \$3,083,601.

Emera Maine currently has three transmission construction projects at 69 kV and above that are estimated to cost less than \$3,083,601, and therefore constitute minor transmission line construction projects. The first project, line 6913, involves the rebuild of a short segment (less than 1 mile) of 50+ year old line that must be replaced due to age and condition. The second project, line 59, involves rebuilding a 3.5 mile segment between switching stations. Rebuilding the line is necessary due to age (45 years old), and to solve an ISO-NE regional planning study need. The third project involves rebuilding a 3 mile segment of line 6930. This line is 61 years old and inspections show nearly half of the poles have significant decay.

Additional Transmission Projects Report (34.5 kV to 69 kV)

Under Docket No. 2011-170, Emera Maine is required to provide additional information with its annual filing. The additional reporting includes the following: (1) expansion of the report to include transmission line and substation work at 34.5 kV (statute and rule require 69 kV); (2) adds requirement to identify generators that have submitted interconnection requests that would be affected by planned work; and (3) requires the Company President to provide an affidavit stating that no preferences are given to any generator and there is no ratepayer subsidy in allocating costs.

Projects under this Additional Report fall into 3 categories: (1) Wind Generation Projects; (2) Rebuild or Relocation; or (3) Minor Construction. Wind generation projects are categorized separately because wind generators are required to pay for the transmission work associated with their interconnections to the transmission system. There are 4 projects in the Wind Generation category. The remaining projects are categorized as either Rebuild or Relocation, or Minor Construction, based on the same estimated cost criteria applied to projects at 69 kV and above which, as described above, is \$3,083,601.

There are three projects under the Rebuild or Relocation category. The first involves the MDI reliability project. This project involves the construction of a 34.5 kV line and substation. The second project involves the Saxl Park transmission and substation work. This work provides capacity for the expansion of Eastern Maine Medical Center. Finally, the third project involves the rebuild of approximately 16 miles of line 50, which is 59 years old. Inspections show this line has significant decay.

There are 11 projects in the Minor Construction category. The first involves rebuilding a 4.5 mile segment of line 1 between Holden and Lucerne. Structure inspections show significant decay.

The second project also involves a segment of line 1, but is not expected to be completed until after the Holden to Lucerne segment. This second project includes a 6.7 mile section in very poor condition along an abandoned railbed which is difficult to access.

The third project involves the rebuild of a 4.4 mile segment of line 2. This segment includes structures between 50-60 years old that have shown significant decay.

The fourth project involves rerating conductor in two segments of line 8 which will address overloading on line 9, which is located nearby.

The fifth project involves relocating a 2 mile segment of line 13 from ROW to roadside to improve access for maintenance and during outage restoration. This segment is more than 55 years old and inspections show significant decay.

The sixth project is a targeted reconductoring and replacement of certain structures on line 20. The conductor is at least 85 years old and the structures targeted for rebuild are 55 years old or older. Inspections show significant decay.

The seventh project is a targeted reconductoring of approximately 4 miles in two separate segments of line 25, as well as selective structure replacements. The conductor is at least 85 years old, and the structures are at least 55 years old. Inspections show significant decay.

The eighth project is a reconductoring and targeted structure replacement of approximately 0.5 miles of line 75. The structures are at least 55 years old and inspections show significant decay. The conductor upgrade is necessary to match the conductor on the remainder of the line.


The ninth project is a targeted replacement of aged structures on a 7 mile section of line 80. Many of the structures do not allow Emera Maine to meet conductor height clearance standards and are 50 years old or older. Structure inspections show significant decay.

Similar to line 80, the tenth project is a targeted replacement of aged structures on a 7 mile section of line 84. Many of the structures do not allow Emera Maine to meet conductor height clearance standards and are 50 years old or older. Structure inspections show significant decay.

The final project is a rebuild of approximately 1.6 miles of line 89. This project will replace aged structures showing significant decay, and allow the reconductoring of the line to support voltage and load.

We look forward to meeting you in April to review the projects in greater detail. In the meantime, please contact Steve Sloan at (207) 973-2568 or me at (207) 973-2847 if you have any questions about this filing.

Very truly yours,



Tim Pease
Director, Legal and Regulatory Affairs

Transmission Line Rebuild or Relocation Projects (69 kV and above)

Line 6901 Rebuild - Flo's Inn Sub to U.S./Canadian Border
Line 6910 Rebuild - Bridgewater Sub to Mullen Sub
Line 1176/3855 Rebuild - Flo's Inn Sub to U.S./Canadian Border
Line 6903 Rebuild - Otter Creek Sub to Limestone Switching Station
Line 6905 Rebuild - Limestone Switching Station to Madawaska Substation
Line 6909 Rebuild - Madawaska Substation to Fish River Substation

Minor Transmission Line Construction Projects (69 kV and above)

Line 6913 Rebuild (section 12-22) - Main St. Mapleton to Mapleton Substation
Line 59 Rebuild -Columbia to Epping
Line 6930 Rebuild - Dow Siding Road to Maysville

Additional Transmission Projects Report

1. Wind Generation Projects

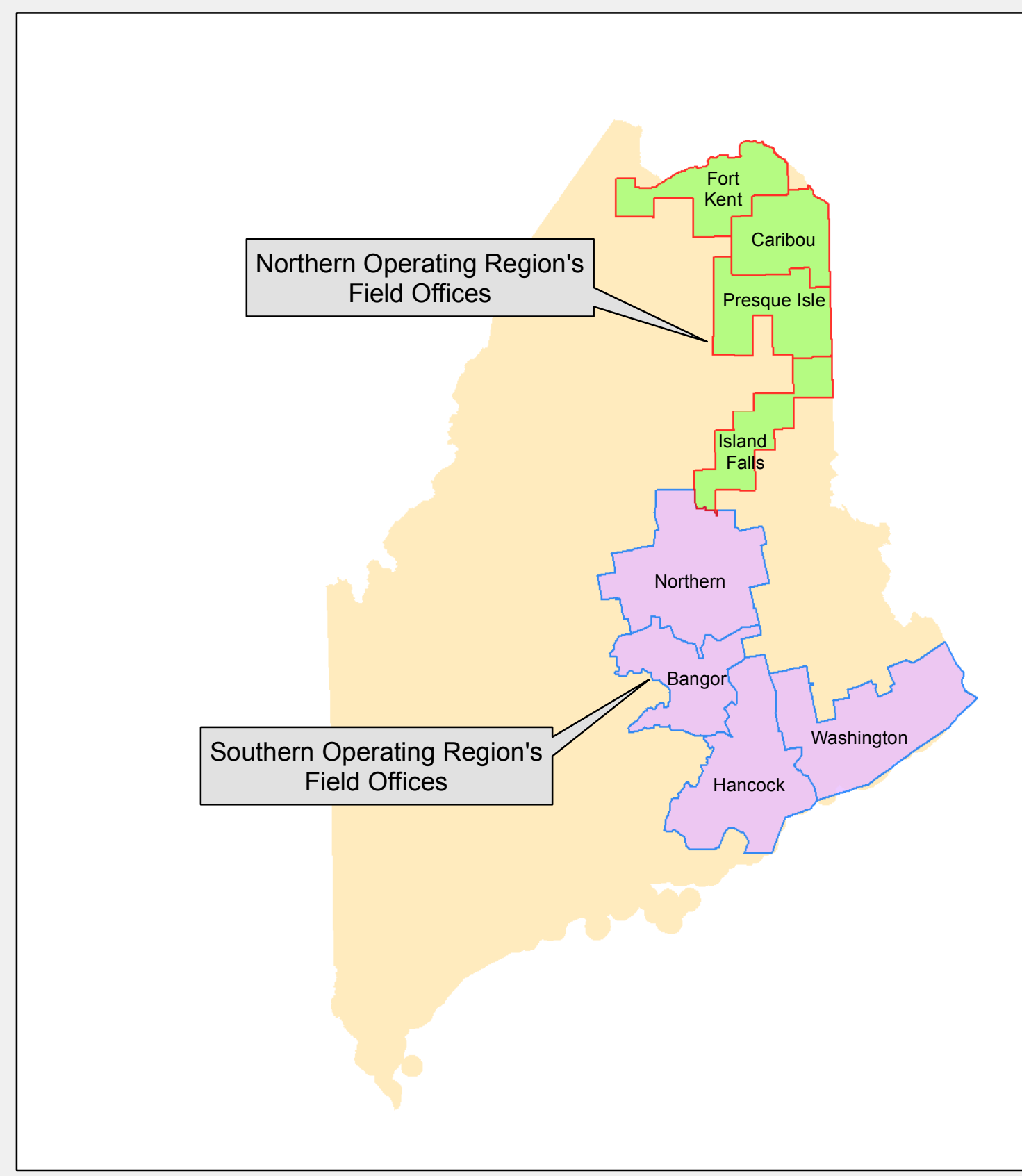
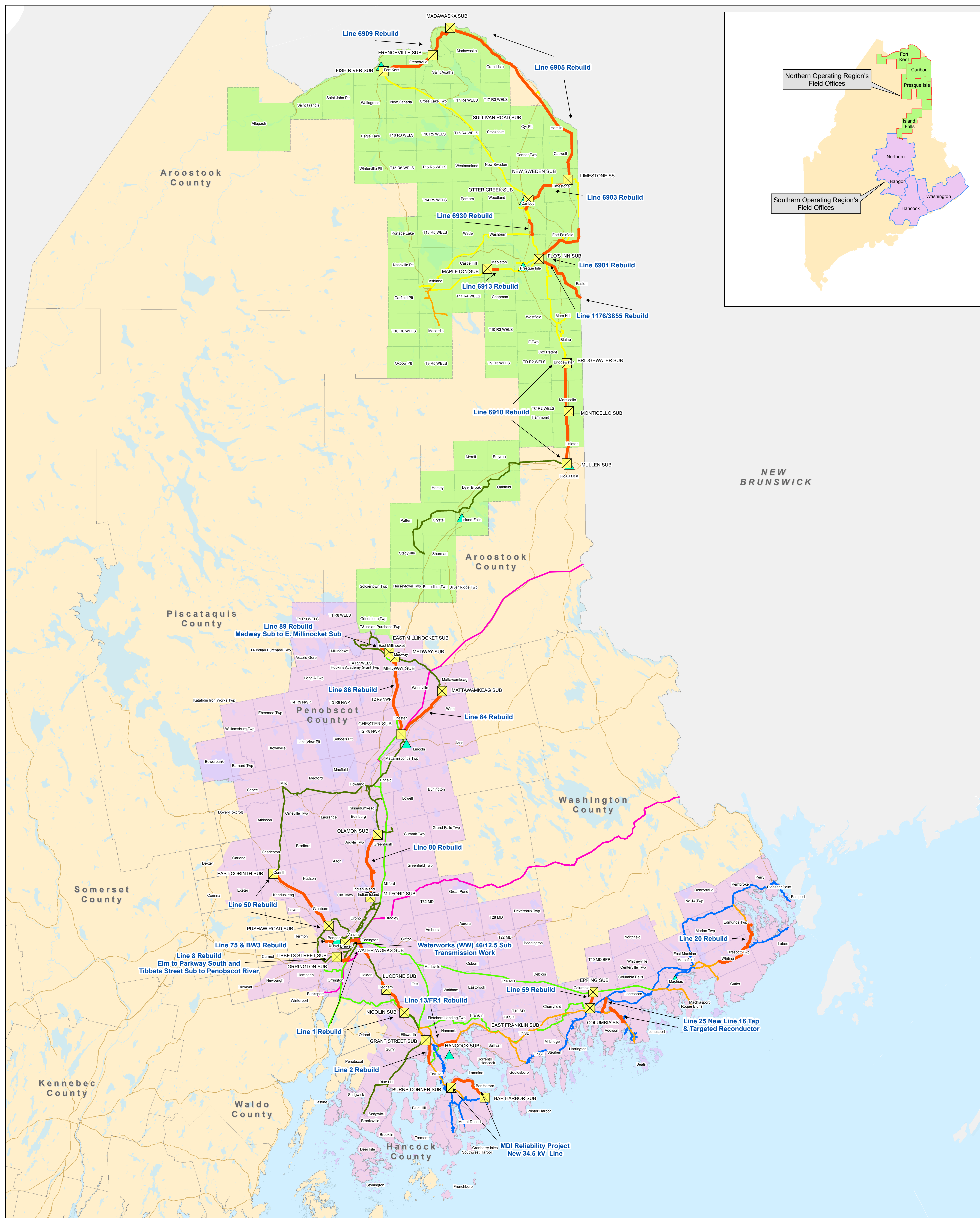
Orrington Series Cap - Bingham Wind Generator Interconnect
Passadumkeag Wind Generator Interconnect
Pisgah Mountain Wind Farm Interconnect (9 MW wind generation project connecting to Line 66)
Hancock Wind Interconnect (51 MW wind generation project connecting to Bull Hill Sub)

2. Major Projects

MDI Reliability Project - Transmission - New 34.5 kV Line
MDI Reliability Project - Transmission - New BH Sub/Switching Station
Saxl Park 46/12.5 Substation and transmission work
Line 50 Rebuild - Pushaw Substation to East Corinth Substation

3. Minor Projects

Line 1 Rebuild - Holden & Lucerne ROWs
Line 1 Rebuild - Nicolin to Lucerne
Line 2 Rebuild - Grant to Bayside Road
Line 8 Rebuild - Elm Street to Parkway South and Tibbetts Street to Penobscot River
Line 13 Part 5 - Intersection of Washington Junction to Kilkenney Stream
Line 20 Targeted Rebuild - Whiting to Tide Mill Road, Edmunds
Line 25 Targeted Reconnector - Merritt School Road to Johnson Lane and Addison to line 16
Line 75/BW3 Rebuild - I-95 to Valley Ave
Line 80 Targeted Rebuild - Milford to Olamon
Line 84 Targeted Rebuild - Chester to Penobscot River
Line 89 Rebuild - Medway to East Millinocket



Existing Transmission Lines	69 KV	Chapter 330 Project Areas	Southern Operating Region
19.9 KV	115/138 KV	Substations	Northern Operating Region
34.5 KV	345 KV		
44/46 KV			

DATA SOURCES: MAINE OFFICE OF GIS, ESRI, AND EMERA MAINE
 PROJECTION: NAD 1983 UTM ZONE 19N

EMERA MAINE
 NORTHERN AND SOUTHERN OPERATING REGIONS
 AND TRANSMISSION SYSTEMS
 PROJECTS IN CHAPTER 330 FILING

DATE: APRIL 2016



Chapter 330 Data - Northern Maine Reliability Solution - Line 6901 Rebuild (Flo's Inn Sub to U.S/Canadian Border)

Project: Northern Maine Reliability Solution - Line 6901 Rebuild (Flo's Inn Sub to U.S/Canadian Border)

Project Number: 2238

Project Type: Rebuild/Rerate

PTF: No

Project Status: Under Construction

Budget Year: 2014 - 2016

Cost (Estimate): \$9,500,000

Reason for Need:

Age and Condition, sag limited for thermal ratings, major limiting factor for N-1 planning criteria, spar arms are in poor condition. (Emera Maine completed spot replacements for critical spar arms in 2014 to defer full rebuild.) Requires coordination with NB Power and Algonquin. Rebuild of line 6901 is the decision of the conclusion of the Northern Maine Reliability docket and MPUC order.

Regulatory Activity: MPUC Docket 2014-00048

Characteristics:

- Line Identification: 6901
- Location: Flo's Inn Substation in Presque Isle to NB Border
- Line Length: 11.5 Miles
- Peak Load: 44 MVA
- Voltage Level: 69kV
- Year Constructed: 1964
- Existing Structure/Material/Design: Wood Pole H-frame structures
- Existing Conductor: 336.4 ACSR Linnct

Proposed Solution:

- New Structure/Material/Design: Single wood poles with HLP insulators
- New Conductor: 795 ACSR
- Impact on Existing/Proposed Generators? Yes
- Description of the Impact:
 - Impacts all generators with export. Thermal rating of entire line will increase with associated upgrade to Tinker transformer and T-line. Will provide additional import/export capacity.
- Potential Alternatives:

Comments:

***Estimate is the cost for work in the U.S.

Breakdown of Estimate:

\$3.3M - Project Development from NMRS

\$6.2M - Line

Line length based on rebuilding 8.9 miles of line and the installation of 2.6 miles of fiber optic communications cable on previously rebuilt line.



Chapter 330 Data - Line 6910 Rebuild (Bridgewater Substation to Mullen Substation)

Project: Line 6910 Rebuild (Bridgewater Substation to Mullen Substation)
Project Number:
Project Type: Rebuild/Rerate
PTF: No

Project Status: Planned
Budget Year: 2016 - 2017
Cost (Estimate): \$7,760,000

Reason for Need:

Age and Condition, sag limited for thermal ratings, limiting factor for N-1 planning contingencies. 47% of poles are showing some signs of internal decay and 14% of poles have been replaced due to condition.

Regulatory Activity: MPUC Docket 2014-00048

Characteristics:

- Line Identification: 6910
- Location: Bridgewater to Mullen
- Line Length: 19.4 miles
- Peak Load: 16 MVA
- Voltage Level: 69kV
- Year Constructed: 1952
- Existing Structure/Material/Design: Wood Pole H Frame Structures
- Existing Conductor: 2/0 Copperweld

Proposed Solution:

- New Structure/Material/Design: Single wood pole with HLP insulator
- New Conductor: 795 ACSR
- Impact on Existing/Proposed Generators? No
- Description of the Impact:

- Potential Alternatives:
 138 kV line to Flo's Inn.

Comments:

***Cost estimate is based on a full rebuild using an average construction cost for 69 kV lines of \$400,000 per mile based on 2015 recent line construction projects utilizing Emera Maine construction crews. These estimates are subject to change based on project timing, market costs, engineering design, internal vs. external construction, and other factors, for the to-be-determined project solution.

Project schedule allows for construction beginning in summer of 2016 with completion by end of year 2017.



Chapter 330 Data - L1176/3855 Rebuild (Flo's Inn Substation to the U.S./Canadian Border)

Project: L1176/3855 Rebuild (Flo's Inn Substation to the U.S./Canadian Border)

Project Number:

Project Type: Rebuild/Recreate

PTF: No

Project Status: Planned

Budget Year: 2016 - 2017

Cost (Estimate): \$7,140,000

Reason for Need:

Pole age and condition, substandard clearances and thermal limits. Requires coordination with NB Power. 44% of poles show some signs of internal decay and 12% of poles have been replaced due to condition.

Regulatory Activity: MPUC Docket 2014-00048

Characteristics:

- Line Identification: 1176 (3855)
- Location: Flo's Inn substation in Presque Isle to NB Border.
- Line Length: 11.9 miles
- Peak Load: 57MVA
- Voltage Level: 138kV
- Year Constructed: 1957
- Existing Structure/Material/Design: H-frame wood
- Existing Conductor: 266.8 ACSR Partridge

Proposed Solution:

- New Structure/Material/Design: Single wood poles with HLP insulators
- New Conductor: 795 ACSR Drake
- Impact on Existing/Proposed Generators? Yes
- Description of the Impact:
 - May increase ATC and TTC ratings to NBP. May impact all generators with export. May provide additional capacity for Northern Maine generators.
- Potential Alternatives:
 - An additional 138 or 345 kV Line to NBP or ISO-NE.

Comments:

***Under the assumption of normal de-energized reconstruction, the estimated cost is \$7,140,000. Cost estimate is based on a full rebuild using an average construction cost for 69 kV lines of \$600,000 per mile based on 2015 recent line construction projects and/or project cost analysis. These estimates are subject to change based on project timing, market costs, engineering design, internal vs. external construction, and other factors, for the to-be-determined project solution.

If a second 138 kV connection is not completed to resolve reliability needs, reconstruction may have to be conducted with the line energized, or a new parallel line would be constructed. The cost range for these two options is \$13,000,000 to \$14,000,000.

Project development in 2016 with construction in 2017.



Chapter 330 Data - Line 6903 Upgrade (Otter Creek Substation to Limestone Switching Station)

Project: Line 6903 Upgrade (Otter Creek Substation to Limestone Switching Station)

Project Number:

Project Type: Rebuild/Rerate

PTF: No

Project Status: Proposed

Budget Year: 2017 - 2020

Cost (Estimate): \$5,880,000

Reason for Need:

L6903 has very low thermal limits which prohibit some maintenance activities and limit transfers during system contingencies. There have been 69 to 12 kV contacts in the past due to inadequate separation between transmission and distribution lines.

Regulatory Activity:

Characteristics:

- Line Identification: 6903
- Location: Caribou to Limestone
- Line Length: 9.8 miles
- Peak Load: 30 MVA
- Voltage Level: 69kV
- Year Constructed: 1961
- Existing Structure/Material/Design: Single pole wood with crossarms - roadside
- Existing Conductor: 336.4 Linnet ACSR

Proposed Solution:

- New Structure/Material/Design: Single wood pole with HLP insulators
- New Conductor: 795 ACSR Drake
- Impact on Existing/Proposed Generators? Yes
- Description of the Impact:
 - May increase system ATC/TTC limits when combined with other system upgrades.
- Potential Alternatives:

Comments:

Existing line has no lightning protection and substandard clearances to distribution underbuild.

***Cost estimate is based on a full rebuild using an average construction cost for 69 kV lines of \$600,000 per mile based on 2015 recent line construction projects and/or project cost analysis. These estimates are subject to change based on project timing, market costs, engineering design, internal vs. external construction, and other factors, for the to-be-determined project solution.

Project schedule allows for development in 2016 with construction in 2017.



Chapter 330 Data - Line 6905 Rebuild (Limestone Switching Station to Madawaska Substation)

Project: Line 6905 Rebuild (Limestone Switching Station to Madawaska Substation)

Project Number:

Project Type: Rebuild/Rerate

PTF: No

Project Status: Proposed

Budget Year: 2017 - 2021

Cost (Estimate): \$23,040,000

Reason for Need:

Age and condition based rebuild. 45% of poles are showing signs of internal decay.

Regulatory Activity:

Characteristics:

- Line Identification: 6905
- Location: Limestone to Madawaska
- Line Length: 38.4 miles
- Peak Load: 13MW
- Voltage Level: 69kV
- Year Constructed: 1964
- Existing Structure/Material/Design: H-frame/Wood Pole/Wood Pole Crossarm
- Existing Conductor: 336.4 ACSR

Proposed Solution:

- New Structure/Material/Design: Single Wood Pole with HLP Insulators
- New Conductor: 795 ACSR
- Impact on Existing/Proposed Generators? No
- Description of the Impact:

- Potential Alternatives:

Comments:

***Cost estimate is based on a full rebuild using an average construction cost for 69 kV lines of \$600,000 per mile based on 2015 recent line construction projects and/or project cost analysis. These estimates are subject to change based on project timing, market costs, engineering design, internal vs. external construction, and other factors, for the to-be-determined project solution.



Chapter 330 Data - Line 6909 Rebuild (Madawaska Substation to Fish River Substation)

Project: Line 6909 Rebuild (Madawaska Substation to Fish River Substation)
Project Number:
Project Type: Rebuild/Rerate
PTF: No

Project Status: Proposed
Budget Year: 2017 - 2020
Cost (Estimate): \$10,680,000

Reason for Need:
Pole age and condition. 39% of poles are showing decay and 8% of poles have been replaced due to deteriorated condition.

Regulatory Activity:

Characteristics:

- Line Identification: 6909
- Location: Madawaska to Fort Kent
- Line Length: 17.8 miles
- Peak Load: 17.5
- Voltage Level: 69kV
- Year Constructed: 1966
- Existing Structure/Material/Design: Wood pole H-frame structures
- Existing Conductor: 336.4 ACSR

Proposed Solution:

- New Structure/Material/Design: Single pole with HLP insulators
- New Conductor: 795 ACSR
- Impact on Existing/Proposed Generators? No
- Description of the Impact:

- Potential Alternatives:

Comments:

***Cost estimate is based on a full rebuild using an average construction cost for 69 kV lines of \$600,000 per mile based on 2015 recent line construction projects and/or project cost analysis. These estimates are subject to change based on project timing, market costs, engineering design, internal vs. external construction, and other factors, for the to-be-determined project solution.



Chapter 330 Data - Line 6913 (12-22) Rebuild (Main St Mapleton to Mapleton Substation)

Project: Line 6913 (12-22) Rebuild (Main St Mapleton to Mapleton Substation)
Project Number: 2349
Project Type: Rebuild/Rerate
PTF: No

Project Status: Planned
Budget Year: 2016 - 2017
Cost (Estimate): \$486,000

Reason for Need:

Age and insufficient clearances to meet NESC to buildings and conflict with ornamental / shade trees.

Regulatory Activity:

Characteristics:

- Line Identification: 12-22 (6913)
- Location: Mapleton
- Line Length: 0.81 miles
- Peak Load: 8 MVA
- Voltage Level: 69kV
- Year Constructed: 1963
- Existing Structure/Material/Design: Wood, Single Pole and Crossarm, Post Insulators, Dist. U/B
- Existing Conductor: 336.4 ACSR Transmission, #2 ACSR Distrib

Proposed Solution:

- New Structure/Material/Design: Wood, Single Pole and horizontal Post Insulators, Dist. U/B
- New Conductor: 336.4 ACSR Linnet Trans., and 336.4 AAC
- Impact on Existing/Proposed Generators? No
- Description of the Impact:
None without a complete line rebuild.
- Potential Alternatives:
138 kV Line

Comments:

***Cost estimate is based on a full rebuild using an average 69 kV line construction cost of \$600,000 per mile based on 2015 recent line construction projects and cost analysis. These estimates are subject to change based on project timing, market costs, engineering design, internal vs. external construction, and other factors, for the to-be-determined project solution.



Chapter 330 Data - Line 59 Rebuild (Columbia to Epping)

Project: Line 59 Rebuild (Columbia to Epping)
Project Number:
Project Type: Rebuild/Rerate
PTF: No

Project Status: Conceptual
Budget Year: 2018
Cost (Estimate): \$2,520,000

Reason for Need:

Rebuild the Line 59 segment from Columbia Falls Switching Station to Epping Switching Station to solve an ISO-NE Regional Transmission Planning Study need.

Regulatory Activity:

Characteristics:

- Line Identification: Line 59
- Location: Columbia to Epping
- Line Length: 3.5 miles
- Peak Load: 19.2 MVA
- Voltage Level: 115kV
- Year Constructed: 1971
- Existing Structure/Material/Design: Wood Pole H-Frame
- Existing Conductor: 266 ACSR

Proposed Solution:

- New Structure/Material/Design: Single Wood Pole with HPI
- New Conductor: 795 ACSR
- Impact on Existing/Proposed Generators? Yes
- Description of the Impact:

- Potential Alternatives:
None

Comments:

***Cost estimate is based on a targeted rebuild using an average 115 kV roadside line construction cost of \$600,000 per mile based on recent line construction projects and cost analysis with a 20% adder applied for contingency purposes. These estimates are subject to change based on project timing, market costs, engineering design, internal vs. external construction, and other factors, for the to-be-determined project solution.



Chapter 330 Data - Line 6930 Rebuild (Dow Siding to Maysville)

Project: Line 6930 Rebuild (Dow Siding to Maysville)
Project Number:
Project Type: Rebuild/Rerate
PTF: No

Project Status: Conceptual
Budget Year: 2019 - 2021
Cost (Estimate): \$1,800,000

Reason for Need:

Age and condition. 44% of poles are showing signs of decay and 7% of poles have been replaced due to condition.

Regulatory Activity:

Characteristics:

- Line Identification: 6930
- Location: Caribou to Washburn
- Line Length: 3.0 miles
- Peak Load: 28
- Voltage Level: 69kV
- Year Constructed: 1955
- Existing Structure/Material/Design: Single pole with wood arm
- Existing Conductor: 477 ACSR

Proposed Solution:

- New Structure/Material/Design: Single pole with HLP insulators
- New Conductor: 795 ACSR
- Impact on Existing/Proposed Generators? No
- Description of the Impact:

- Potential Alternatives:

Comments:

***Cost estimate is based on a full rebuild using an average construction cost for 69 kV lines of \$600,000 per mile based on 2015 recent line construction projects and/or project cost analysis. These estimates are subject to change based on project timing, market costs, engineering design, internal vs. external construction, and other factors, for the to-be-determined project solution.



Chapter 330 Data - Orrington Series Cap - Bingham Wind Generator Interconnect

Project: Orrington Series Cap - Bingham Wind Generator Interconnect
Project Number: 330A
Project Type: Substation
PTF: Yes

Project Status: Under Construction
Budget Year: 2016 - 2017
Cost (Estimate): \$0

Reason for Need:

Wind Project system upgrade. Series Capacitor installation required as part of the Bingham Wind Project in CMP's service territory per ISO's System Impact Study.

Regulatory Activity:

Characteristics:

- Line Identification: OR Sub
- Location: Orrington
- Line Length: -
- Peak Load: 1200MVA
- Voltage Level: 345kV
- Year Constructed:
- Existing Structure/Material/Design:
- Existing Conductor:

Proposed Solution:

- New Structure/Material/Design:
- New Conductor:
- Impact on Existing/Proposed Generators? Yes
- Description of the Impact:
Upgrades could benefit all gens in the Emera Maine territory by increasing transfer capacity.
- Potential Alternatives:
N/A

Comments:

Latest forecast estimate of \$16,300,000 is under original estimate of \$17,300,000. All cost fully reimbursed by generator.



Chapter 330 Data - Passadumkeag Wind Generator Interconnect

Project: Passadumkeag Wind Generator Interconnect
Project Number: 9230
Project Type: Build
PTF: No

Project Status: Under Construction
Budget Year: 2015 - 2016
Cost (Estimate): \$0

Reason for Need:

Work necessary to interconnect new 115kV Substation to Line 64 to accommodate new 39.8MW Wind Generation. Distribution line rebuild also needed to accommodate wind collection lines.

Regulatory Activity:

Characteristics:

- Line Identification: -
- Location: Passadumkeag
- Line Length: -
- Peak Load: 40MVA
- Voltage Level: 115kV
- Year Constructed:
- Existing Structure/Material/Design:
- Existing Conductor:

Proposed Solution:

- New Structure/Material/Design:
- New Conductor:
- Impact on Existing/Proposed Generators? Yes
- Description of the Impact:
Dedicated feed to the new Passadumkeag generator. All costs paid by the generator.
- Potential Alternatives:
N/A

Comments:

Wind farm not yet operating due to ownership transition. Line and Sub work is complete. Latest forecast estimate of \$953,000 is over original estimate of \$650,000 due to engineering changes on the part of the generator.



Chapter 330 Data - Pisgah Generation Interconnect

Project: Pisgah Generation Interconnect
Project Number: 9013
Project Type: Build
PTF: No

Project Status: Under Construction
Budget Year: 2016
Cost (Estimate): \$443,320

Reason for Need:
Generation Interconnect

Regulatory Activity:

Characteristics:

- Line Identification: Line 66
- Location: Pisgah Mountain
- Line Length:
- Peak Load:
- Voltage Level: 115kV
- Year Constructed:
- Existing Structure/Material/Design:
- Existing Conductor:

Proposed Solution:

- New Structure/Material/Design:
- New Conductor:
- Impact on Existing/Proposed Generators? Yes
- Description of the Impact:
This is for a new generator
- Potential Alternatives:

Comments:

Project to include line work on Line 66 to connect customer and protection upgrades at Graham Station and Rebel Hill for Line protection.



Chapter 330 Data - Hancock Wind Interconnection - Bull Hill 2

Project: Hancock Wind Interconnection - Bull Hill 2
Project Number: 9519
Project Type: Substation
PTF: No

Project Status: Under Construction
Budget Year: 2016
Cost (Estimate): \$109,125

Reason for Need:
Generator Interconnect

Regulatory Activity:

Characteristics:

- Line Identification:
- Location:
- Line Length:
- Peak Load:
- Voltage Level:
- Year Constructed:
- Existing Structure/Material/Design:
- Existing Conductor:

Proposed Solution:

- New Structure/Material/Design:
- New Conductor:
- Impact on Existing/Proposed Generators? No
- Description of the Impact:
 Need for interconnection of Generator
- Potential Alternatives:

Comments:

Project to include oversight in yard, control wiring changes and WHM install. Commissioning also included.



Chapter 330 Data - MDI Reliability Project - Transmission - New 34.5 kV Line (Burns Corner Sub to Acadia Sub)

Project: MDI Reliability Project - Transmission - New 34.5 kV Line (Burns Corner Sub to Acadia Sub)

Project Number:

Project Type: Build

PTF: No

Project Status: Under Construction

Budget Year: 2015 - 2017

Cost (Estimate): \$8,000,000

Reason for Need:

A second transmission feed to Bar Harbor is required to improve reliability and serve load growth.

Regulatory Activity: MPUC Docket 2014-00137 Ten Person Complaint: Dismissed June 2015.

Characteristics:

- Line Identification: Line 34
- Location: Bar Harbor
- Line Length: 8.9 Miles
- Peak Load: 18.9MVA
- Voltage Level: 34.5kV
- Year Constructed:
- Existing Structure/Material/Design: n/a
- Existing Conductor: n/a

Proposed Solution:

- New Structure/Material/Design: Single wood pole with spacer cable over 8' arm
- New Conductor: 795 AAC 35 kV covered
- Impact on Existing/Proposed Generators? No
- Description of the Impact:
none
- Potential Alternatives:
Upgrade the existing Line 22 feeding Bar Harbor energized without building a second feed. Alternative routing on Crooked road studied and determined to be inferior option.

Comments:

Cost estimate based on recommended Rte 3 route using bundled spacer conductor 34.5 kV overbuild. Know Road/Rt 3 routing selected by Emera Maine with the engagement by community Advisory Committee. Completion of Line part 2 is dependent on a MDOT Rebuild of Route 3 from Salsbury cove to town.



Chapter 330 Data - MDI Reliability Project - Transmission - New BH Sub/Switching Station

Project: MDI Reliability Project - Transmission - New BH Sub/Switching Station

Project Number:

Project Type: Substation

PTF: No

Project Status: Under Construction

Budget Year: 2015 - 2016

Cost (Estimate): \$10,000,000

Reason for Need:

Replacing aging and overloaded distribution substation

Regulatory Activity: MPUC Docket 2014-00141 Ten Person Complaint dismissed December 2015.

Characteristics:

- Line Identification: AA Sub
- Location: Bar Harbor
- Line Length: -
- Peak Load: 14.6MVA
- Voltage Level: 34.5kV
- Year Constructed:
- Existing Structure/Material/Design:
- Existing Conductor:

Proposed Solution:

- New Structure/Material/Design:
- New Conductor:
- Impact on Existing/Proposed Generators? No
- Description of the Impact:
None
- Potential Alternatives:
3 final alternative locations considered, open-air substation design originally considered; enclosed switchgear design is only viable alternative

Comments:

Current cost estimate is based on use of compact, Gas Insulated Switchgear technology to meet location-specific requirements unique to MDI/Bar Harbor. Visual and sound impacts will be mitigated with historically designed control house facade.



Chapter 330 Data - Saxl Park Sub - Line 41 Transmission (Graham Station to Saxl Park Substation)

Project: Saxl Park Sub - Line 41 Transmission (Graham Station to Saxl Park Substation)

Project Number: 716A

Project Type: Build

PTF: No

Project Status: Under Construction

Budget Year: 2015 - 2016

Cost (Estimate): \$1,450,000

Reason for Need:

Provide new 46kV line into Water works area in Bangor for supply to new Saxl Park Substation. There is no EMMC contribution to this project.

Regulatory Activity:

Characteristics:

- Line Identification: L41
- Location: Graham to Saxl Park
- Line Length: 1.95 Miles
- Peak Load:
- Voltage Level: 46kV
- Year Constructed: L41 will share poles with local GS3 whic
- Existing Structure/Material/Design: Wood
- Existing Conductor: None

Proposed Solution:

- New Structure/Material/Design: Wood
- New Conductor: 556 MCM
- Impact on Existing/Proposed Generators? No
- Description of the Impact:

- Potential Alternatives:

Comments:



Chapter 330 Data - Saxl Park Substation

Project: Saxl Park Substation
Project Number: 9481
Project Type: Substation
PTF: No

Project Status: Under Construction
Budget Year: 2015 - 2017
Cost (Estimate): \$4,900,000

Reason for Need:

New substation to provide capacity for EMMC expansion and replacement of Waterworks substation. New substation will be called Saxl Park while Waterworks sub remains in service. EMMC will be contributing \$2,760,000 to this project.

Regulatory Activity:**Characteristics:**

- Line Identification: N/A
- Location: 500 feet north of Satate Street behind Ronald Macd
- Line Length: N/A
- Peak Load:
- Voltage Level: 46kV
- Year Constructed: N/A
- Existing Structure/Material/Design: N/A
- Existing Conductor: N/A

Proposed Solution:

- New Structure/Material/Design:
- New Conductor:
- Impact on Existing/Proposed Generators? No
- Description of the Impact:

- Potential Alternatives:

Comments:



Chapter 330 Data - Line 50 Rebuild (Pushaw Substation to East Corinth Substation)

Project: Line 50 Rebuild (Pushaw Substation to East Corinth Substation)

Project Number:

Project Type: Rebuild/Rerate

PTF: No

Project Status: Planned

Budget Year: 2017 - 2019

Cost (Estimate): \$9,240,000

Reason for Need: _____

Age and condition of 1957 wood poles and conductor. Existing smaller diameter conductors need to be upgraded to improve voltage level and load growth.

Regulatory Activity:

Characteristics:

- Line Identification: Line 50
- Location: Bangor to Corinth
- Line Length: 15.4 Miles
- Peak Load: 15.4 MVA
- Voltage Level: 46kV
- Year Constructed: 1957
- Existing Structure/Material/Design: Single Wood Pole with Wood K-Frame Crossarms
- Existing Conductor: Majority 3/0 ACSR with short length 795

Proposed Solution:

- New Structure/Material/Design: Single Wood Pole with HLP Insulators
- New Conductor: 795 ACSR
- Impact on Existing/Proposed Generators? No
- Description of the Impact:
None
- Potential Alternatives:

The underlying assumption driving the need for further NTA analysis on Line 50 assumed that Line 74 would be required to be rebuilt, adding additional capacity, in order to allow for the rebuild of Line 50. Given the need to rebuild Line 50 is predominately driven by age and condition and an alternative to rebuild Line 50 during times of lower capacity requirements has been identified, there is no longer a need that an NTA could solve for.

Comments:

Potential solutions to meet this project need will be evaluated in conjunction with Lines 73 & 74.

***Cost estimate is based on a full rebuild using an estimated 46 kV line construction cost of \$600,000 per mile for energized construction. Estimate based on 2015 recent line construction projects, cost analysis and conversations with experienced contractor. Without the reconductoring of line 74, line 50 may need to be constructed while line is energized in order to keep East Corinth Substation in service during construction. These estimates are subject to change based on project timing, market costs, engineering design, internal vs. external construction, and other factors, for the to-be-determined project solution.



Chapter 330 Data - Line 1 Rebuild (Holden & Lucerne ROWs)

Project: Line 1 Rebuild (Holden & Lucerne ROWs)

Project Number:

Project Type: Rebuild/Rerate

PTF: No

Project Status: Proposed

Budget Year: 2017 - 2019

Cost (Estimate): \$2,800,000

Reason for Need:

Age & condition of poles, crossarms and conductor. Many of the poles in ROW are pre-1970 and have internal decay with many rejected in the past 10 years for insufficient shell thickness/strength. Foot patrols (visual inspection) performed by Company field operations personnel have identified other facility issues that include leaning poles, old glass ring style insulators, preform/ splices and decaying/splitting crossarms that require replacing.

Regulatory Activity:

Characteristics:

- Line Identification: Line 1
- Location: Veazie to Lucerne
- Line Length: 4.5 Miles
- Peak Load: 13.8 MVA
- Voltage Level: 46kV
- Year Constructed: Originally constructed in 1909
- Existing Structure/Material/Design: Single Wood Pole w/Horizontal Wood Crossarms
- Existing Conductor: 4/0 ACSR

Proposed Solution:

- New Structure/Material/Design: Single Wood Pole w/Horizontal Fiberglass Crossarm & HLP Insulators
- New Conductor: 795 ACSR
- Impact on Existing/Proposed Generators? No
- Description of the Impact:
 - Improved reliability and improved access that will reduce maintenance response times.
- Potential Alternatives:
 - Defer and allow increased rate of failure and increased maintenance costs

Comments:

***Cost estimate is based on a targeted rebuild using an average 46 kV roadside line construction cost of \$250,000 per mile and ROW line construction cost of \$500,000 based on recent line construction projects and cost analysis with a 20% adder applied for contingency purposes. These estimates are subject to change based on project timing, market costs, engineering design, internal vs. external construction, and other factors, for the to-be-determined project solution.



Chapter 330 Data - Line 1 Rebuild (Nicolin to Lucerne)

Project: Line 1 Rebuild (Nicolin to Lucerne)
Project Number:
Project Type: Rebuild/Rerate
PTF: No

Project Status: Conceptual
Budget Year: 2020
Cost (Estimate): \$2,770,000

Reason for Need:

The line 1 segment from Nicolin Substation to Lucerne Substation is in old and in very poor condition. Much of this line segment is located along an abandoned railroad track for which access is extremely limited making planned maintenance and unexpected repairs difficult. Many poles are located in or near water making access even during winter months extremely difficult. Foot patrol inspections have recorded many facility issues that include old ring style glass insulators, poor condition crossarms, twisted splices and leaning poles. This line provides backup power flow from Boggy Brook Substation to Lucerne Substation and when the line segment from Graham Station Substation experiences and outage it is switched in remotely returning normal power flow to almost 3000 customers. Without this line the reliability of electricity service to these customers would be seriously impacted.

Regulatory Activity:

Characteristics:

- Line Identification: Line 1
- Location: Lucerne to Nicolin
- Line Length: 6.7 miles
- Peak Load: 13.8 MVA
- Voltage Level: 46kV
- Year Constructed: Latest work 1950s early 1960s
- Existing Structure/Material/Design: Single wood pole with horizontal wood crossarms
- Existing Conductor: Various

Proposed Solution:

- New Structure/Material/Design: Single Pole with horizontal fiberglass crossarm
- New Conductor: 795 ACSR
- Impact on Existing/Proposed Generators? No
- Description of the Impact:
 - Improve reliability, maintenance access and outage response for the critical backup transmission line that serves both Lucerne and Nicoln Substations.
- Potential Alternatives:
 - Accept risk and run line to failure

Comments:

***Cost estimate is based on a targeted rebuild using an average 46 kV roadside line construction cost of \$250,000 per mile and ROW line construction cost of \$500,000 based on recent line construction projects and cost analysis with a 20% adder applied for contingency purposes. These estimates are subject to change based on project timing, market costs, engineering design, internal vs. external construction, and other factors, for the to-be-determined project solution.



Chapter 330 Data - Line 2 Rebuild (Grant to Bayside Road)

Project: Line 2 Rebuild (Grant to Bayside Road)
Project Number:
Project Type: Rebuild/Rerate
PTF: No

Project Status: Proposed
Budget Year: 2017
Cost (Estimate): \$1,320,000

Reason for Need:

The line 2 roadside segment from Grant Street Substation to where it goes into ROW on the Bayside Road has many 1950s and early 1960s vintage poles and crossarms in poor condition as recorded by Company inspectors during recent visual inspections. This project would rebuild this line segment and at the same time a place in-service a larger conductor to help support adequate transmission power flow levels at Trenton in the event of a Line 57 outage.

Regulatory Activity:

Characteristics:

- Line Identification: Line 2
- Location: Grant Street to Bayside Road ROW
- Line Length: 4.4 miles
- Peak Load: 19.5
- Voltage Level: 34.5kV
- Year Constructed: 1950s/early 1960
- Existing Structure/Material/Design: Wood pole with horizontal wood crossarm
- Existing Conductor: Various, 336 AAC 35kV312 AAAC, 266 ACSR,

Proposed Solution:

- New Structure/Material/Design: Single Pole with horizontal fiberglass crossarm
- New Conductor: 795 ACSR or equivalent
- Impact on Existing/Proposed Generators? No
- Description of the Impact:

- Potential Alternatives:
None

Comments:

***Cost estimate is based on a targeted rebuild using an average 46 kV roadside line construction cost of \$250,000 per mile based on 2015 recent line construction projects and cost analysis with a 20% adder applied for contingency purposes. These estimates are subject to change based on project timing, market costs, engineering design, internal vs. external construction, and other factors, for the to-be-determined project solution.



Chapter 330 Data - Line 8 Rebuild (Elm Street to Parkway South)

Project: Line 8 Rebuild (Elm Street to Parkway South)
Project Number: 175A
Project Type: Rebuild/Rerate
PTF: No

Project Status: Planned
Budget Year: 2016
Cost (Estimate): \$396,110

Reason for Need:

Line condition and required Line 8 rating increase due to overload during Line 9 outage identified in the transmission system study. Increased separation from Line 9 or relocation to roadside also required for working clearance and reliability. The section toward the river from Tibbets St. Sub also requires new larger conductors due to overload during contingency.

Regulatory Activity:

Characteristics:

- Line Identification: Line 8
- Location: Brewer
- Line Length: 1.53 miles
- Peak Load: 40.2 MVA
- Voltage Level: 46kV
- Year Constructed: 1953, 1980's
- Existing Structure/Material/Design: Wood Single Pole w/Horizontal Wood Crossarm
- Existing Conductor: 266 ACSR, 336 AAC 46kV, 795 AAC, 556 AAC

Proposed Solution:

- New Structure/Material/Design: Wood Single Pole with FG Crossarm
- New Conductor: 795 AAC
- Impact on Existing/Proposed Generators? No
- Description of the Impact:
None
- Potential Alternatives:
Rebuild in place with substandard separation from Line 9 which limits working clearance and reliability.

Comments:

Cost estimate is based on actual estimate.



Chapter 330 Data - Line 8 Rebuild (Tibbetts Street to Penobscot River)

Project: Line 8 Rebuild (Tibbetts Street to Penobscot River)

Project Number:

Project Type: Rebuild/Rerate

PTF: No

Project Status: Proposed

Budget Year: 2017

Cost (Estimate): \$250,000

Reason for Need:

Required Line 8 rating increase due to overload during Line 9 outage identified in the transmission system study.

Regulatory Activity:

Characteristics:

- Line Identification: Line 8
- Location: Brewer
- Line Length: 0.5 mi
- Peak Load: 40.2 MVA
- Voltage Level: 46kV
- Year Constructed: 1950's 1970's 1980's 2000's
- Existing Structure/Material/Design: Wood Single Pole w/Horizontal Wood Crossarm
- Existing Conductor: 336 AAC 556 AAC

Proposed Solution:

- New Structure/Material/Design: Wood Single Pole with FG Crossarm
- New Conductor: 795 AAC
- Impact on Existing/Proposed Generators? No
- Description of the Impact:
 - None
- Potential Alternatives:
 - The only alternatives would be alternative paths for this 0.5 mi section of line at no improvement to reliability or cost.

Comments:

Cost estimate is based on a full rebuild using an average 46 kV line construction cost of \$500,000 per mile based on 2015 recent line construction projects and cost analysis. These estimates are subject to change based on project timing, market costs, engineering design, internal vs. external construction, and other factors, for the to-be-determined project solution.



Chapter 330 Data - L13/FR1 Rebuild Part 5 (Intersection of Washington Junction to Kilkenney Stream)

Project: L13/FR1 Rebuild Part 5 (Intersection of Washington Junction to Kilkenney Stream)

Project Number:

Project Type: Rebuild/Rerate

PTF: No

Project Status: Planned

Budget Year: 2015 - 2016

Cost (Estimate): \$790,553

Reason for Need:

Relocate the Line 13 segment currently in a narrow and difficult access right-of-way (ROW) section to roadside (along US Route 1) to improve access for maintenance and outage restoration. The majority of the wood poles in this segment of Line 13 were placed in-service in the late 1950s and decay has caused some to be rejected and many others are approaching the end of their useful life.

Regulatory Activity:

Characteristics:

- Line Identification: Line 13
- Location: Hancock to East Franklin Substations
- Line Length: 2.0 miles
- Peak Load: 10.7 MVA
- Voltage Level: 34.5kV
- Year Constructed: 1926, rebuilt in 1950s
- Existing Structure/Material/Design: Single wood pole with horizontal wood crossarm
- Existing Conductor: 3/0 ACSR

Proposed Solution:

- New Structure/Material/Design: Single wood poles with 8' arms
- New Conductor: 336 AAC
- Impact on Existing/Proposed Generators? No
- Description of the Impact:
None
- Potential Alternatives:
Defer and accept increasing risk of failure

Comments:



Chapter 330 Data - Line 20 Targeted Rebuild (Whiting to Tide Mill Road, Edmunds)

Project: Line 20 Targeted Rebuild (Whiting to Tide Mill Road, Edmunds)

Project Number:

Project Type: Rebuild/Rerate

PTF: No

Project Status: Proposed

Budget Year: 2017 - 2019

Cost (Estimate): \$1,500,000

Reason for Need:

Poor condition of the ROW poles and copper conductors installed in 1929 to be moved to roadside and replace targeted roadside poles due to age and condition between the village of Whiting and Tide Mill Stream. Work will be coordinated with 2017 MDOT road reconstruction in some sections.

Regulatory Activity:

Characteristics:

- Line Identification: Line 20
- Location: Whiting & Edmunds
- Line Length: 5 miles
- Peak Load: 5.1 MVA
- Voltage Level: 34.5kV
- Year Constructed: Conductor 1920's, Older poles from 1950s
- Existing Structure/Material/Design: Single Wood Pole w/Horizontal Wood Crossarms
- Existing Conductor: Majority No 4 Copper

Proposed Solution:

- New Structure/Material/Design: Wood Single Pole w/Horizontal Fiberglass Crossarms
- New Conductor: 795 ACSR & 556 35kV AAC
- Impact on Existing/Proposed Generators? No
- Description of the Impact:
 - None
- Potential Alternatives:
 - Defer and Increase risk & rate of failures with increased maintenance costs.

Comments:

***Cost estimate is based on a targeted rebuild using an average 46 kV roadside line construction cost of \$250,000 per mile based on recent line construction projects and cost analysis with a 20% adder applied for contingency purposes. These estimates are subject to change based on project timing, market costs, engineering design, internal vs. external construction, and other factors, for the to-be-determined project solution.



Chapter 330 Data - Line 25 Targeted Reconductor (Merritt School Road to Johnson Lane)

Project: Line 25 Targeted Reconductor (Merritt School Road to Johnson Lane)
Project Number:
Project Type: Rcbuid/Rcrate
PTF: No

Project Status: Proposed
Budget Year: 2016
Cost (Estimate): \$400,000

Reason for Need:

Safety - The existing No. 2 ACSR conductor has lost strength due to corrosion of its internal steel core because of the salt air environment.

Allowing this conductor to remain in-service increases the risk of conductor failure during energized work and the potential to harm the public should it break and fall into the roadway or energized distribution located underneath.

Regulatory Activity:**Characteristics:**

- Line Identification: Line 25
- Location: Columbia Falls to Jonesport
- Line Length: 2 Miles
- Peak Load: 1.6 MVA
- Voltage Level: 34.5kV
- Year Constructed: Conductor dates from 1920's, Last major
- Existing Structure/Material/Design: Single Wood Pole with Wood Crossarms
- Existing Conductor: No 2 ACSR

Proposed Solution:

- New Structure/Material/Design: Single Wood Pole with FG Crossarm
- New Conductor: 336 AAC 35kV
- Impact on Existing/Proposed Generators? No
- Description of the Impact:
 - Improves reliability and safety by eliminating the risk of this segment of weakened conductor breaking and falling into a road of distribution underbuild during normal use of maintenance.
- Potential Alternatives:
 - Defer and accept increased rate of failure and increased maintenance costs

Comments:

***Cost estimate is based on a reconductor cost estimate of \$200,000 per mile. This estimate is subject to change based on project timing, market costs, engineering design, internal vs. external construction, and other factors (such as hot vs cold line work).



Chapter 330 Data - Line 25 Tap (Line 16 to Addison)

Project: Line 25 Tap (Line 16 to Addison)

Project Number:

Project Type: Build

PTF: No

Project Status: Conceptual

Budget Year: 2018

Cost (Estimate): \$630,000

Reason for Need:

The existing wood poles comprising the 2.7 mile long Line 25 transmission line segment from Columbia Falls to Addison is approaching end of life. Many poles comprising this line segment were placed in service in mid 1950 and support No. 4 copper wire. Establishing a new Line 25 tap from Harrington to Addison with a larger size conductor would provide a stronger and more reliable power flow source at the head of this transmission line.

Regulatory Activity:

Characteristics:

- Line Identification: Line 25
- Location: Harrington to Addison
- Line Length: 2.1 miles
- Peak Load: 1.6 MVA
- Voltage Level: 34.5kV
- Year Constructed: N/a
- Existing Structure/Material/Design: N/a
- Existing Conductor: N/a

Proposed Solution:

- New Structure/Material/Design: Single wood pole with horizontal fiberglass crossarms
- New Conductor: 795 AAC (No change to overall line rating)
- Impact on Existing/Proposed Generators? No
- Description of the Impact:
 - Improves reliability by removing from service many old wood poles nearing end of life and increasing power flow to Addison village through installation of larger conductor.
- Potential Alternatives:
 - Rebuild existing Line 25 tap from Columbia Falls to Addison

Comments:

***Cost estimate is based on a targeted rebuild using an average 46 kV roadside line construction cost of \$250,000 per mile based on 2015 recent line construction projects and cost analysis with a 20% adder applied for contingency purposes. These estimates are subject to change based on project timing, market costs, engineering design, internal vs. external construction, and other factors, for the to-be-determined project solution.



Chapter 330 Data - Line 75 & BW3 Rebuild (I-95 to Valley Ave ROW)

Project: Line 75 & BW3 Rebuild (I-95 to Valley Ave ROW)
Project Number: 589A
Project Type: Rcbuid/Rerate
PTF: No

Project Status: Proposed
Budget Year: 2017
Cost (Estimate): \$325,000

Reason for Need:

Rebuild to address age and condition of plant (both in ROW and that which spans I-95) and upgrade the conductor to match the remainder of the line.

Regulatory Activity:**Characteristics:**

- Line Identification: Line 75
- Location: Bangor
- Line Length: 0.46 miles
- Peak Load: 10.4 MVA
- Voltage Level: 46kV
- Year Constructed: 1950s
- Existing Structure/Material/Design: Single wood Pole w/Horizontal Wood Crossarm
- Existing Conductor: 3/0 ACSR

Proposed Solution:

- New Structure/Material/Design: Single wood poles with 8' arm
- New Conductor: 795 ACSR
- Impact on Existing/Proposed Generators? No
- Description of the Impact:
None
- Potential Alternatives:
Defer and accept increased risk of failure

Comments:

***Cost estimate is based on cost of Phase I of the line 75 rebuild.



Chapter 330 Data - Line 80 Targeted Rebuild (Milford to Olamon)

Project: Line 80 Targeted Rebuild (Milford to Olamon)

Project Number:

Project Type: Rebuild/Rerate

PTF: No

Project Status: Proposed

Budget Year: 2017 - 2021

Cost (Estimate): \$2,100,000

Reason for Need:

Safety - Many Line 80 poles from the 1950s and early 1960s do not meet current working clearance standards due to their short height with possible NESC clearance violations on a portion of these existing poles.

Poles - Majority of 1950s and early 1960s wood poles are nearing their end of life because of condition. Recent sound and bore inspection activity suggests increased ground line decay (9 poles were identified with insufficient shell thickness/strength of which four were labeled priority rejects) of 1950s and early 1960s wood poles. Current project would address 180-200 poles, which equates to just under 7 miles or 30% of the total line length.

Conductor - Majority of Line 80 conductor is the non-standard 4/0 ACSR and does not support some transmission planning contingencies due to voltage drop, has been subjected to above average incidence of damage from trees along narrow ROWs and sections located along the banks of a major river waterway.

Regulatory Activity:

Characteristics:

- Line Identification: Line 80
- Location: Milford to Stanford Substations
- Line Length: 7 miles
- Peak Load: 9.6 MVA
- Voltage Level: 46kV
- Year Constructed: 1950s
- Existing Structure/Material/Design: Single Wood Pole w/Horizontal Wood Crossarms
- Existing Conductor: 4/0 ACSR majority

Proposed Solution:

- New Structure/Material/Design: Single Wood Pole w/Horizontal Fiberglass Crossarms
- New Conductor: 795 AAC (No change to overall line rating)
- Impact on Existing/Proposed Generators? Yes
- Description of the Impact:
 - Minor impact to existing hydro generation at W.Enfield and Milford.
- Potential Alternatives:
 - Defer rebuilds and accept increase risk of pole/crossarm failure

Comments:

Multi-year line segment rebuild and targeted pole replacement project proposed to address aging pole plant for the purpose of improving reliability and accessibility. The focus of early targeted Line 80 rebuild work (when coupled with planned Maine DOT projects from Milford to Costigan Substation) will improve the reliability of this line segment that provides transmission power flow to 600 distribution customers.

***Cost estimate is based on a targeted rebuild using an average 46 kV roadside line construction cost of \$250,000 per mile based



Chapter 330 Data - Line 84 Targeted Rebuild (Chester to Penobscot River)

Project: Line 84 Targeted Rebuild (Chester to Penobscot River)

Project Number:

Project Type: Rebuild/Rerate

PTF: No

Project Status: Conceptual

Budget Year: 2020 - 2021

Cost (Estimate): \$2,100,000

Reason for Need:

Safety - Substandard strength & working clearance due to size and condition of poles.

Poles - Many aging poles (both roadside and in ROW) have internal decay and should be targeted for replacement based upon condition.

Conductors - No 2 & 1/0 Cu conductors that date from 1930 no longer provide contingency backup for Line 86 as shown in the transmission study.

If an alternative transmission power flow source/path is not developed in the near-term then the complete upgrade/uprate of the entire length of Line 84 will be necessary before Line 86 can be taken out of service for rebuilding.

Regulatory Activity:

Characteristics:

- Line Identification: Line 84
- Location: Chester to Penobscot River north of Mattwamkeag Su
- Line Length: 7 miles
- Peak Load: 5.1 MVA
- Voltage Level: 46kV
- Year Constructed: Last major rebuild in 1950's
- Existing Structure/Material/Design: Wood Single Pole w/Horizontal Wood Crossarms
- Existing Conductor: Majority 1/0 & No. 2 Copper

Proposed Solution:

- New Structure/Material/Design: Single Wood Pole w/Horizontal Fiberglass Crossarm & HLP Insulators
- New Conductor: 795 AAC & 795 ACSR
- Impact on Existing/Proposed Generators? No
- Description of the Impact:
 - None
- Potential Alternatives:
 - Accept risk and run the line to failure

Comments:

***Cost estimate is based on a targeted rebuild using an average 46kV roadside line construction cost of \$250,000 per mile based on recent line construction projects and cost analysis with a 20% adder applied for contingency purposes. These estimates are subject to change based on project timing, market costs, engineering design, internal vs. external construction, and other factors, for the to-be-determined project solution.



Chapter 330 Data - Line 89 Rebuild (Medway to East Millinocket)

Project: Line 89 Rebuild (Medway to East Millinocket)
Project Number: 377B
Project Type: Rebuild/Rerate
PTF: No

Project Status: Planned
Budget Year: 2016
Cost (Estimate): \$750,000

Reason for Need:

Poles - Many of the older poles from the 1950's have decay and other condition issues associated with age. The existing poles also lack proper strength for new conductors.

Conductor - Existing sub-standard No 2 Cu conductor installed in the 1930's has an increasing risk of failure due to condition. New larger conductors are necessary to support voltage & load.

This project completes the five part rebuild of Line 89 from Medway to Millinocket started in the 1990's.

Regulatory Activity:

Characteristics:

- Line Identification: Line 89
- Location: Medway to East Millinocket
- Line Length: 1.6 miles
- Peak Load: 8.2 MVA
- Voltage Level: 46kV
- Year Constructed: Conductor 1930's, Poles 1950's & 1970's
- Existing Structure/Material/Design: Single Wood Pole w/Horizontal Wood Crossarms
- Existing Conductor: No 2 Copper

Proposed Solution:

- New Structure/Material/Design: Single Wood Pole w/Horizontal Fiberglass Crossarm
- New Conductor: 559 AAC
- Impact on Existing/Proposed Generators? No
- Description of the Impact:
None
- Potential Alternatives:
Defer and Increase risk & rate of failures

Comments:


Cost estimate is based on a full rebuild using an average 46 kV line construction cost of \$500,000 per mile based on 2015 recent line construction projects and cost analysis. These estimates are subject to change based on project timing, market costs, engineering design, internal vs. external construction, and other factors, for the to-be-determined project solution.

STATE OF MAINE)
)
COUNTY OF PENOBSCOT)

AFFIDAVIT

NOW, BEFORE ME, the undersigned authority, personally came and appeared, Alan C. Richardson, who first being duly sworn by me, did depose and say:

1. I am President and Chief Operating Officer of Emera Maine.
2. I have reviewed Emera Maine’s Annual Filing of Transmission Line Rebuild or Relocation Projects, 35-A M.R.S.A. §3132(3); Minor Transmission Line Construction Projects, 35-A M.R.S.A. §3132 (3-A); and Additional Transmission Projects Report, Docket 2011-00170, A.1 Interconnection Conditions, with the person(s) responsible for its development and affirm that the utilities have not planned or made any improvements to the transmission system with the intent of giving any existing or proposed generator preferential treatment nor with the intent of providing any ratepayer subsidy in terms of allocating the costs of any such improvements between generators and ratepayers.



Alan C. Richardson
President & COO

Subscribed and sworn to me this 15th day of April, 2016.



Notary Public Attorney at LAW
My Commission Expires