

Group Sites > Capital Financial Pl...

Project Information

Title	Line 6903 Rebuild Phase 1 (Pole 96 to 127)
Project #	851B
Blanket Account	No
Work Order Number	
Work Order Link	
Project Manager	<input type="checkbox"/> SIROIS, Sonny
Project Owner	SLOAN, STEPHEN
Project Category	Major Capital
Budget Status	Candidate
Region	NOR
County	Aroostook
Project Priority	1
Construction Class	Transmission
PTF	No
Project Owner AOR	Transmission Development
Business Driver	Prospective Project
Circuit ID	6903
Project Type_	Line Rebuild; Equip Upgrade; Improve Reliability
Project Description	<p>Phase 1 of this targeted maintenance project will address about half of all known priority Line 6903 facility condition issues discovered during recent ground line internal wood pole strength and above ground visual condition assessments. This project will rebuild the section of Line 6903 from pole 96 to 127 that has been heavily damaged by lightning strikes, woodpecker activity and internal at and below ground level. This project will enhance the performance of this targeted line segment during thunderstorms through the placement of an overhead static wire and fiberglass isolating rods in guying assemblies. All brown hollow post type insulators that have a history explosive failure due to cracking will be replaced by polymer clamp post type insulators. Poor condition crossarm braces, split/rotting wood pole tops, broken conductor strands and missing guy guards will be addressed and a leaning wood pole assembly straightened. The conductor (336 ACSR) is marginally sized as per the 2014 RLC Transmission System Reliability Investigation study and as a result will be exchanged for larger ampacity 795 ACSR conductor.</p>
Project Scope	<p>Rebuild a 1.86 mile long section of Line 6903 between Otter Creek Tap and Limestone beginning at pole 96 and ending at pole 127 with taller heavier class wood poles. Place at the top of this line segment an overhead static wire on top for improved lightning protection where none exists today and place fiberglass insulation rods in all guying assemblies. Repair all broken crossarm, braces and replace all existing brown post type glass insulators. Replace the existing 336 ACSR wire with higher ampacity 795 ACSR wire on the 1.86 mile section to be rebuild.</p>
Asset Additions	-
Asset Replacements	Poles; 3-PH Conductor; Other
Project Justification	<p>Line 6903 is a 12-mile long, 69 kilovolt (kV) transmission line located in Emera Maine's Maine Public District (EM-MPD) and a key part of the Company's Northern Maine 69kV transmission loop for reliability in its Northern Operating Region. Line 6903 was originally built in 1961 and can be divided up into three distinct segments; (1) Caribou Substation to Otter Creek Tap, (2) Otter Creek Tap to Loring Tap and (3) Loring Tap to Limestone Switching Station. The first segment from Caribou Substation to Otter Creek Tap is located in a utility maintained right-of-way (ROW) and was entirely rebuilt in 2010 using 477 ACSR Hawk gauge wire. The second and third segments (Otter Creek to Loring Tap and Loring Tap to Limestone Switching Station) combined are 9.8-miles in length and primarily located alongside State</p>

Route 89. For the most part these line segments remain original 1961 construction (single wood pole, horizontal wood sawn crossarm and 336 ACSR conductors). In an effort to sustain and enhance the reliability of this older section of Line 6903 the Company's Asset Management Group is recommending a hybrid targeted maintenance project to consist of following maintenance work:

1. Rebuild a 3.8-mile Roadside Segment with Overhead Lightning Protection:
Northern Maine is a known active thunderstorm area. Like many other EM-MPD 69kV lines built in the late 1950s and early 1960s, older segments of Line 6903 do not have any installed lightning protection measures, such as lightning arrestors or overhead static wire, making its wood poles susceptible to lightning strike and damage. A recent visual inspection of the Line 6903 segments between Otter Creek and Limestone Switching Station identified many wood poles with splintered pole tops caused by past lightning strikes. The proposed segment of Line 6903 to be rebuilt is ground zero for this type of destructive weather activity. Twenty-one (21) of the 26 wood poles (81%) with damaged top due to a lightning strikes are located between poles 57 and 126. To minimize such damage in the future Asset Managers are recommending that this 3.8-mile line segment be rebuilt using taller heavier class wood poles with horizontal polymer line post insulators topped with an overhead static wire that will provide Line 6903 conductors with effective shielding from lightning. Relocating this transmission line across the road will lower overall project costs by allowing it to be built with the existing line energized, this will improve construction efficiency through the reduction of contractor downtime during periods when the existing line cannot be taken out of service for reliability reasons and the lack of need to work around high voltage energized conductors. It will also enable telephone and cable assets to more easily transfer to these new poles.

2. Replace Brown Hollow Post Type Insulators:
More than 200 brown hollow post type insulators are used in Line 6903 between Otter Creek Tap to Limestone Switching Station to hold the energized 69kV 336 ACSR conductors in space. Over time this type of insulator may develop micro-fissures that can allow moisture inside that can then result in explosive failure. In the past five years the EM-MPD district has experienced five transmission outages due to a failure of this component type, of which one of these failures occurred on Line 6903. This project will remove from service all brown hollow post type insulators and replace them with polymer clamp post type insulators.

3. Various Other Transmission Work:
This project will also address and correct facility issues identified during a recent visual inspection that includes: replacement of eight cracked/rotting crossarm braces, placement of missing guy guards, repair of damaged conductor strands and the straightening of one leaning wood pole.

In summary, this proposed project will address all known high priority end-of-life condition assets that currently exist on the Line 6903 segment between Otter Creek Tap to Limestone Switching Station while also enhancing its lightning protection/performance during thunderstorms. Additional lower priority work will be addressed in 2020 under a smaller scale targeted maintenance project.

Project Risk Assessment

All proposed targeted maintenance work is located alongside of Route 89 for which flaggers will be needed to ensure crew safety. Because the current plan is to rebuild this new line across the road from the exist work around energized conductors to minimize customer impacts will not be needed.

Screening Criteria for Consideration of NWA (Non-wires Alternative) Solution 5. This project addresses asset condition ONLY

Alternative Projects None - Run the line to failure and accept a lower level of reliability for customers living in the Caribou and Limestone regions.

Estimated Total Project Cost 3,975,300

Estimate Grade B - Planning Estimate (-25% to +25%)

Estimated Direct Cost \$2,764,586

Estimated Overhead Cost \$851,689

Estimated Labor Overhead	\$499,603
Estimated Non-Labor Overhead	\$443,275
Estimated AFUDC	\$339,026
Estimated Nonunion Cost (ST)	\$50,000
Estimated Union Cost (ST)	\$233,800
Estimated Union Cost (OT)	\$83,786
Estimated Outside Service Cost	\$570,000
Estimated Direct Purchases	\$98,000
Estimated Inventory Cost	\$1,625,000
Estimated Lobby Stock	\$104,000
Estimated Salvage	\$0
Estimated Credits	\$0
Estimated Reimbursement	\$0
Estimated OM	\$0
Estimated Contingency	\$20,000
Planning Hours	300
Engineering Hours	100
Line Resources	Travel Line
Estimated Line Hours	4,000
Estimated PST Hours	
Other Hours	900
Project Status	Closed
Project Start Date	12/4/2018
Construction Start Date	7/29/2019
In Service Date	12/31/2020
Approval Log	;

Approval of Project Number (up to \$10K Spend) (version 15.0)
 by NORMAN, DAVID on 8/1/2017 1:58:42 PM
 Approval Limit per LOSA \$100K
 Total Project Cost \$3,787,373.73;

Approval of Project Justification Criteria (version 32.0)
 by BELLIVEAU, ROBERT on 12/19/2017 4:29:55 PM
 Approval Limit per LOSA \$500K
 Total Project Cost \$687,154.61;

Approval of Project Justification Criteria (version 45.0)
 by PARADIS, MARK on 10/24/2018 8:17:11 AM
 Approval Limit per LOSA \$0
 Total Project Cost \$9,619,214.12;

Approval of Project Estimate (version 51.0)
 by NORMAN, DAVID on 11/14/2018 9:07:23 AM
 Approval Limit per LOSA \$100K
 Total Project Cost \$2,071,473.37;

Approval of Project Estimate (version 56.0)
 by MILLER, PAUL on 11/20/2018 12:58:32 PM
 Approval Limit per LOSA \$500K
 Total Project Cost \$2,071,473.37;

Approval of Project Estimate (version 58.0)
 by HERRIN, MICHAEL on 11/21/2018 1:53:49 PM
 Approval Limit per LOSA \$2M
 Total Project Cost \$2,071,473.37;

Approval of Project Estimate (version 61.0)
 by HERRIN, MICHAEL on 12/14/2018 9:22:28 AM
 Approval Limit per LOSA \$2M
 Total Project Cost \$2,071,473.37;

Approval of Project Closure(version 7.0)
 by BOYD, AARON on 12/30/2020 11:46:08 AM
 Approval Limit per LOSA
 Total Project Cost \$3,975,300.36

Approval Status	Completed Approval of Approval of Project Closure
Required Resources	T&D Planning; Transmission Development
Team Members	IRELAND, LUCAS ; PHILBRICK, BRUCE ; SIROIS, Sonny
Planning	Completed
Planner	
Engineering	Completed
Line Engineer	
Trim	Completed
ROW	Completed
Procurement	Required
Tel Pole Set	Required
Customer Rqmts	Not Required
Environ Permits	Not Required
Pole Permits	Required
Other Permits	Not Required
Dig Safe	Required
Final Inspection	Not Required
Released to Line	
Line Status	
Notes	
Attachments	104_02.JPG 108_05.JPG 117_03.JPG 66_01.JPG 6903-Caribou to Limestone Rebuild approval estimate_AB 10-26-18.xlsx 78_06.JPG 851B - 6903 Upgrade - Cost per ACI and ACHI.pdf 851B XR listing summary.xlsx 851B_6903 Rebuild estimate_AB 6-13-19.xlsx 91_02.JPG STRAT Plan- 6903 Rebuild-OC to LSS.xlsx

Content Type: Project
 Version: 10.0
 Created at 7/25/2016 2:35 PM by WRIGHT, AMY
 Last modified at 4/14/2021 12:24 PM by SIROIS, Sonny

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Board Updates

BOD Request Title	BOD Meeting Date	BOD Update Type	BOD Request Status
Line 6903 Upgrade - Otter Creek Sub to Limestone Switching Station	10/27/2017	Funding Request	Approved
Line 6903 rebuild	3/6/2020	Funding Request	Approved

Change Orders - Required for projects exceeding the greater of 10% or \$10,000 of approved spend or for ALL scope changes

Proj#	Change Order Title	Change Order Date	Original Approved Estimate	New Total Cost Estimate
851B	851B 6903 C.O.	11/16/2020	\$2,071,473	\$3,975,300

Chapter 330 Filing

Ch330 Project Title Proj Status Year Budgeted Region Cost Estimate

There are no items to show in this view of the "Chapter 330" list.

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Forecast Entry - 2021 (Monthly Amounts are Direct Costs Only)

[+ new item](#) or [edit this list](#)

✓ Proj#	Expenditure Type	Dept	Jan-2021-Actuals	Feb-2021-Actuals	Mar-2021-Actuals	Apr-2021-Actuals	May-2021	Jun-2021	Jul-2021	Aug-2021	Sep-2021	Oct-2021
851B	Actuals	-	\$8,410	\$0	(\$15,192)	\$0						

Change Order Title	851B 6903 C.O.
Proj#	851B
Change Order Date	11/16/2020
Change Order Reason	Scope Change; Resource Change
Original Approved Estimate	\$2,071,473
New Total Cost Estimate	\$3,975,300
Change Order Scope Impact	Initial approval was for a 2 mile rebuild. A second 2 mile rebuild portion was added and was originally under a separate project.
Change Order Schedule Impact	This change order request will allow for project completion by end of year by shifting the resource from internal labor to contract labor for the wreck out of replaced assets.
Change Order Comments	BOD approval on this project is approved for \$6.9M. This change order allows for the completion of 4 miles of rebuild and the addition of contract labor for a portion of the tear down of old assets.
Change Order Status	Not Started
Estimate Proj #:Project #	851B
Content Type: Change Order Version: 4.0	
Created at 11/16/2020 8:18 AM by <input type="checkbox"/> BOYD, AARON	
Last modified at 11/16/2020 9:28 AM by <input type="checkbox"/> BOYD, AARON	

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