



**Transmission Owner Planning Advisory  
Committee Meeting  
November 15, 2023**

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# **Local System Plan Presentation**

Presenter: Forrest Kugell, Senior Transmission Planning Engineer (AVANGRID)

# Purpose of Local System Plan

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Per Attachment K – Local, this LSP presentation:

- Describes projected improvements to non-PTF that are needed to maintain reliable customer service.
- Reflects:
  - LSP Needs Assessments
  - Corresponding transmission system planning studies
- LSP is communicated at the TOPAC meeting once a year.
- PAC, Transmission Customers, and other Stakeholders have 30 days to provide written comments for consideration to AVANGRID.
  - AVANGRID Contact:
    - Forrest Kugell
    - Senior Engineer, Transmission Planning
    - Central Maine Power Company
    - 83 Edison Drive
    - Augusta, Maine 04336
    - (email: [Forrest.Kugell@cmpco.com](mailto:Forrest.Kugell@cmpco.com))

## Avangrid LSP Communication

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- Each TO is individually responsible for publicly posting and updating the status of its respective LSP and the transmission projects list on a website in a format similar to the RSP project list
- The ISO-NE RSP project list contains links to each individual TO's transmission project list and is located at:  
[Link to ISO-NE's RSP project list](#)
- CMP's LSP project list is located at:  
[Link to CMP's LSP](#)
- UI's LSP project list is located at:  
[Link to UI's LSP](#)

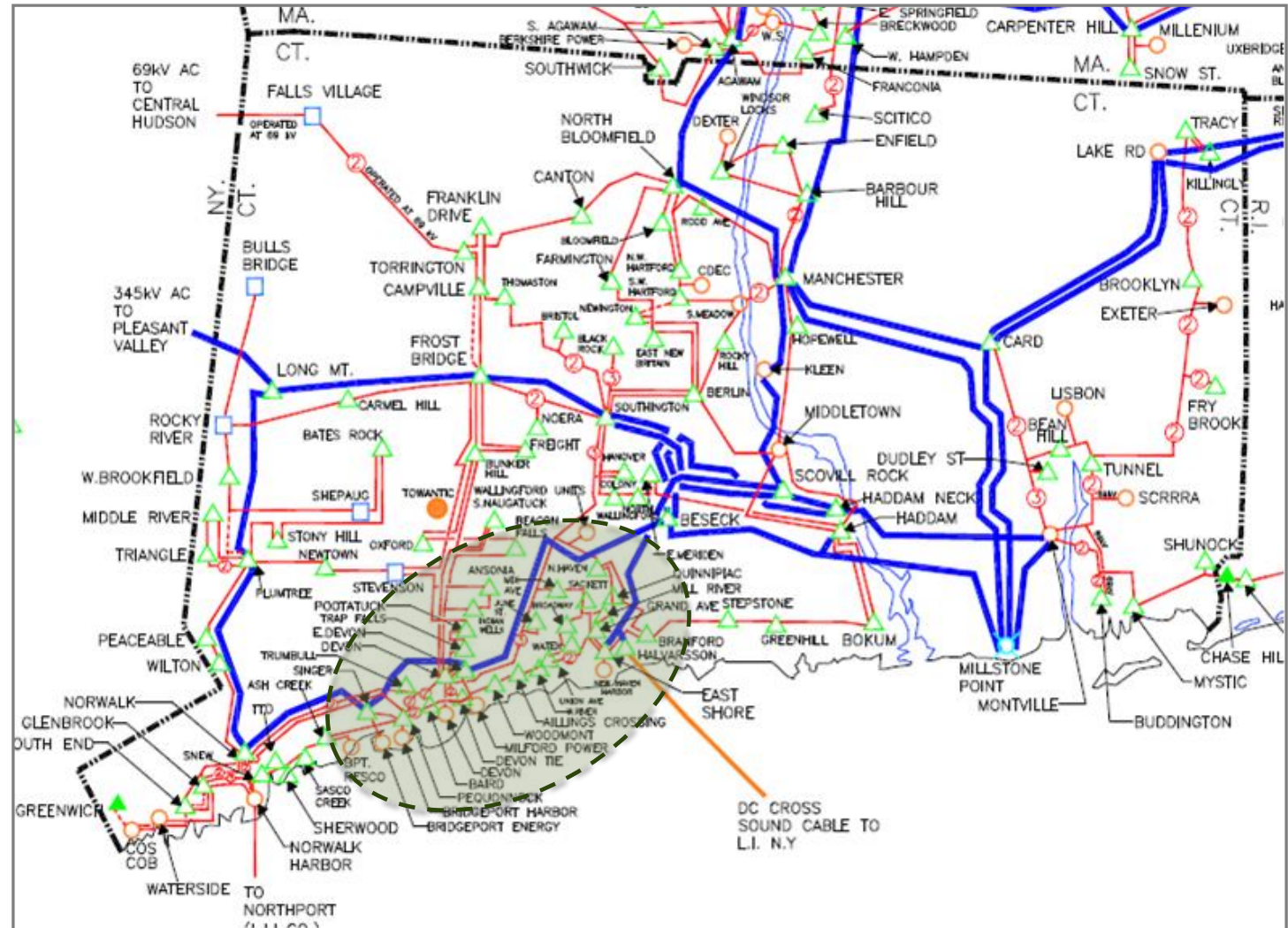
# Avangrid's Local System Planning Process

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- All Avangrid local system upgrades are determined in accordance with ***Avangrid Transmission Planning Criteria***.
- LSP needs assessments can result from:
  - Periodic Assessment of Transmission Facilities
  - Load Growth
  - Retail or Wholesale Customer Request
  - Generator Interconnection Request
  - Asset Conditions
  - Public Policy Requirements
- Any new project or major project change since the 2022 LSP presentation will be highlighted using **red** text.

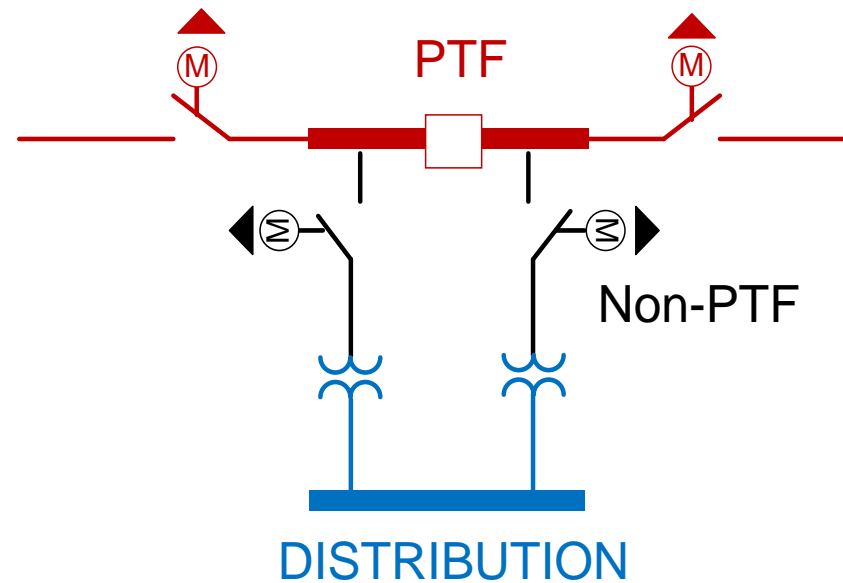
# UI Local System Plan

There are currently no UI projects that qualify for the LSP



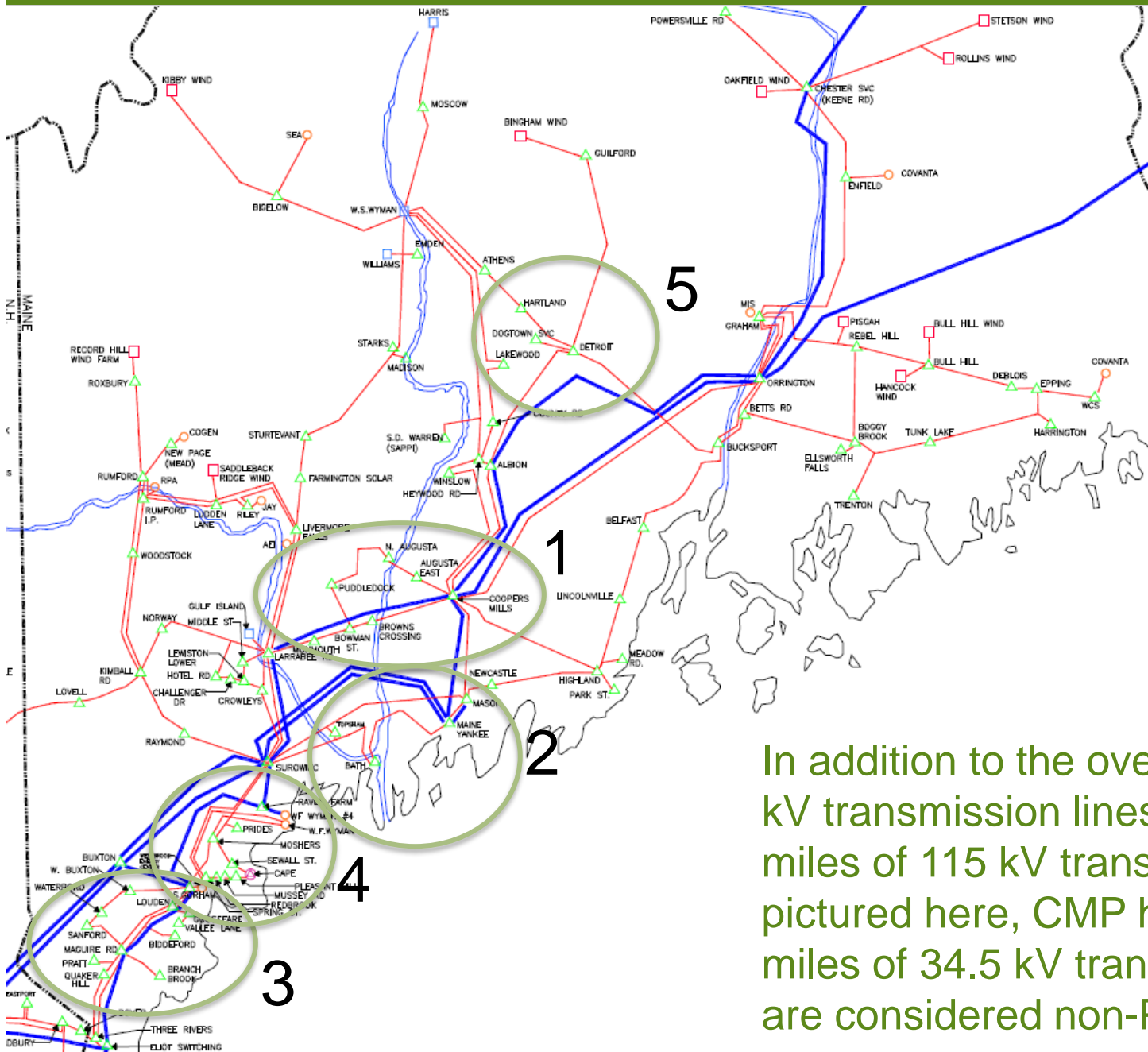
# Characteristics of UI's Transmission System

## Typical UI 115/13.8 kV Substation



- There are no radial 115 kV transmission lines on UI's system
- Nearly all of UI's transmission facilities are classified as PTF
- The only non-PTF on UI's system are the 115 kV taps to 115/13.8 kV transformers

# CMP's Local System Plan



1. Augusta
2. Brunswick & Topsham
3. Southern
4. Greater Portland
5. Detroit

In addition to the over 500 miles of 345 kV transmission lines and over 1250 miles of 115 kV transmission lines pictured here, CMP has over 1000 miles of 34.5 kV transmission lines that are considered non-PTF.

## LSP Projects – Augusta Area

Project Origin	Major Project	Project Description	Needs Assessment	Projected In-Service Date	Status
Augusta Area Reliability Study	Puddledock 115 kV Breaker Additions	Expand Puddledock Road Substation to accommodate two 115 kV Breakers	N-1 Voltage Collapse	2029	Canceled
	Puddledock 115/34.5 kV Transformer	Add a second 115/34.5 kV Transformer at Puddledock	N-1-1 Low Voltage	2027	Canceled
	South China 34.5 kV Substation	<del>New 2 x 2.7 MVAR Capacitor Banks</del> 10 MVAR DRD	N-1-1 inoperability with both High/Low voltage	2027	Proposed
	Augusta East 34.5 kV Substation	Replace the existing 5.4 MVAR Capacitor with a 10 MVAR DRD	N-1-1 inoperability with both High/Low voltage	2027	Concept



## LSP Projects – Brunswick/Topsham Area

Project Origin	Major Project	Project Description	Needs Assessment	Projected In-Service Date	Status
Brunswick - Topsham Area Reliability Study	Line work	Re-rate 34.5 kV Section 76	Overloaded under single element contingency conditions	2025	Moved
	Topsham 34.5 kV Substation	Upgrade Topsham T2 34.5/12.47 kV transformer	Overloaded under normal operating conditions	2029	Canceled
	Bath 34.5 kV Substation	New 5.4 MVAR 34.5 kV capacitor bank	Low voltage	2028	Canceled

## LSP Projects – Lakes Region Area

Project Origin	Major Project	Project Description	Needs Assessment	Projected In-Service Date	Status
Lakes Region Area Reliability Study	Eastern Sub-Area Upgrades	New 115/34.5 kV S/S at New Gloucester with a four breaker ring bus and 115/34.5 kV transformer and (8 mile) 115 kV transmission line to Surowiec (Section 282)	Voltage collapse and thermal violations under contingent system conditions	2027	Canceled
		Relocate Raymond 34.5 kV S/S and rename to Webbs Mills S/S, install two 5.4 MVAR capacitor banks	Room needed for expansion	2027	Canceled
		New (8 mile) 34.5 kV line from New Gloucester to Webbs Mills	Voltage collapse and thermal violations under contingent system conditions	2027	Canceled
	Northern Sub-Area Upgrades	New (9.5 mile) 34.5 kV line from Bridgton to Kimball Road (Section 98)	Voltage collapse under contingent system conditions	2027	Canceled

## LSP Projects – Southern Area

Project Origin	Major Project	Project Description	Needs Assessment	Projected In-Service Date	Status
Southern Area Reliability Study	Section 110 Rebuild	Rebuild of 34.5 kV line with 795 ACSR from Sanford to South Sanford	N-1-1 thermal violations	2025	Planned
	Section 113 Rebuild	Rebuild of 34.5 kV line with 795 ACSR from Sanford to Section 113A Tap	N-1-1 thermal violations	2027	Canceled

## LSP Projects – Portland Area

Project Origin	Major Project	Project Description	Needs Assessment	Projected In-Service Date	Status
Portland Area Reliability Study	Raven Farm Expansion (115/34.5 kV)	New 115 kV bus with four breaker, breaker-and-a-half configuration. Also, install a 115/34.5 kV transformer and 34.5 kV line to Elm Street	Voltage collapse and thermal violations under contingent system conditions	2030	Canceled
	Line work	Rebuild 34.5 kV Section 181	Overloaded under single element contingency conditions	2028	Canceled
		Rebuild a portion of 34.5 kV Section 180	Overloaded under single element contingency conditions	2028	Canceled

## LSP Projects – Portland North Area

Project Origin	Major Project	Project Description	Needs Assessment	Projected In-Service Date	Status
Portland North Area Reliability Study	Line work	Re-rate/rebuild portions of 34.5 kV line Section 180A	Thermal violations under normal operating conditions	2027	Canceled
	Freeport Substation	Two new 2.7 MVAR 34.5 kV capacitor banks	Voltage violations under contingent system conditions	2029	Canceled
	Elm Street Substation	Bring S164 in/out of Elm St, re-rate S164A	Thermal violations under contingent system conditions (Not needed if Raven Farm 115 kV is built)	2026	Canceled
	East Deering Substation	115/34.5 kV substation with 115 kV line from Raven Farm.	Voltage collapse, additional source needed in the area	2029	Canceled
	North Yarmouth Substation	New 115/34.5 kV substation tapped from Sect. 166, and 14.8 mi 34.5 kV line to Gray & Freeport with breakers	Voltage violations under contingent system conditions	2030	Canceled

## LSP Projects – Greater Portland Area

Project Origin	Major Project	Project Description	Needs Assessment	Projected In-Service Date	Status
Greater Portland Area Reliability Study	Raven Farms Substation	Bring 34.5kV Elm Street Substation into new 115 kV Raven Farms Substation	N-1 and N-1-1 violations	2030	Concept
		Second 115/34.5 Transformer at New Raven Farms Substation	N-1 and N-1-1 violations	2030	Concept
	East Deering Substation	New 115/34.5 kV Transformer at East Deering	N-1 and N-1-1 violations	2030	Concept
	Bayside Substation	New 115/12.47 kV Substation fed from 115 kV Raven Farms & 115 Cape Substations	N-1 and N-1-1 violations due to load growth	2030	Concept
	Line Work	Section 180A Rebuild	N-1 and N-1-1 violations	2030	Concept

## LSP Projects – Detroit Guilford Area

Project Origin	Major Project	Project Description	Needs Assessment	Projected In-Service Date	Status
Detroit Guilford Area Reliability Study	Guilford Substation	Two 12 MVAR DRDs at Guilford	High & Low Voltage	2026	Planned
	Detroit Substation	2 <sup>nd</sup> 115/34.5 kV Transformer at Detroit	Thermal Violations / Voltage Violations & LOL	2026	Planned
	Sections 5 & 35	Bifurcation of Section 5 and 35	Thermal and Low Voltage Violations & LOL	2027	Planned

## LSP Projects – Asset Condition

Project Origin	Major Project	Project Description	Needs Assessment	Projected In-Service Date	Status
Asset Condition	Warren 34.5 kV Substation	New Warren Substation at a new location	Asset condition, maintenance, reliability, and safety concerns	2026	Planned
	South Berwick 34.5 kV Substation	New South Berwick Substation at a new location	Asset condition, reliability, and safety concerns	2026	Planned
	Forest Ave 34.5 kV Substation	New Forest Ave Substation at the same location	Asset condition, maintenance, reliability, and safety concerns	March 2024	Under Construction



## LSP Projects – Asset Condition

Project Origin	Major Project	Project Description	Needs Assessment	Projected In-Service Date	Status
Asset Condition	Great Falls 34.5 kV Substation	Partial Rebuild of Great Falls Substation	Asset condition, reliability, and maintenance concerns	2025	Planned
	Butlers Corner 34.5 kV Substation	Partial Rebuild of Butlers Corner Substation	Asset condition, and several safety concerns	2026	Planned
	Fryeburg 34.5 kV Substation	Upgrade Fryeburg Substation	Asset condition, and reliability concerns	2026	Concept
	Deer Rips 34.5 kV Substation	Greenfield rebuild of Deer Rips Substation	Asset condition, and problems with joint ownership of facilities within hydro station	2030	Proposed

## LSP Projects – Misc. Projects

Project Origin	Major Project	Project Description	Needs Assessment	Projected In-Service Date	Status
Asset Condition	Partial Section 1 Rebuild	34.5 kV Rebuild from Augusta Eastside to McCoy's	Asset condition, and several safety concerns	2025	Planned
	Section 53	Structure Replacements	138 "Reject" Structures, making up 23% of the line	2026	Planned
	Bond Brook Substation	Bring Section 39 in and out of Bond Brook	Failure of Section 38B created the need for a second source into Bond Brook	Q4 2024	Proposed
Line Work	Section 146	Section 146 Re-Rate	Re-Rating to 140F will allow full utilization of the Distribution Transformer	2024	Planned

## LSP Projects – Misc. Projects

Project Origin	Major Project	Project Description	Needs Assessment	Projected In-Service Date	Status
Line Work	Section 151A	New Underground Cable and Duct Bank	Asset Condition of the underground line	Q4 2024	Planned
	Section 185	Partial Rebuild	Asset Condition & Overloaded N-0	Q3 2023	Planned

# LSP Projects – Distribution Projects

Project Origin	Major Project	Project Description	Needs Assessment	In-Service Date	Status
Distribution Reliability	Goosefare Substation	New 115/12.47 kV Transformer and Distribution bay	Upgrade needed to support load growth	Q4 2023	Under Construction
	Biddeford Pump Substation	New greenfield 34.5/12.47 kV Substation	N-0 Distribution Overload	Q3 2024	Under Construction
	Rock Row Substation	New greenfield 34.5kV Substation with line breakers	Upgrade needed to support load growth	Q3 2024	Planned
	Hinckley Pond Substation	Brownfield Rebuild Hinckley Pond Substation and add a Parallel 115/12.37 kV Transformer	Distribution Criteria Violations and Asset Condition	2025	Planned

## LSP Projects - FERC Projects

Project Origin	Major Project	Project Description	Needs Assessment	Projected In-Service Date	Status
Generator Interconnection	QP910 (20 MW Solar)	New 34.5kV breaker and bay position at Sanford	Interconnection Request	2027	Planned
	QP786 (20 MW Solar)	New three Breaker Ring bus on section 185A	Interconnection Request	2026	Proposed
		Rebuild 1.88-miles of Section 185	Interconnection Request	2026	Proposed
	QP953 (20 MW Solar)	New 34.5kV breaker and bay position at Augusta East	Interconnection Request	2024	Planned
	QP928 (20 MW Solar)	New 34.5kV breaker at the Lakewood Substation	Interconnection Request	2024	Planned
		Rebuild 34.5 kV line Section 10	Interconnection Request	2024	Planned

# LSP Projects - FERC Projects

Project Origin	Major Project	Project Description	Needs Assessment	Projected In-Service Date	Status
Generator Interconnection	QP1013 (17.2 MW Solar)	New three ring bus	Interconnection Request	2026	Planned
		Upgrade section 43	Interconnection Request	2026	Planned
	QP1021 (16.425 MW Solar)	Rerate Section 182	Interconnection Request	2025	Planned
		New three ring bus	Interconnection Request	2025	Planned

## LSP Projects - FERC Projects

Project Origin	Major Project	Project Description	Needs Assessment	Projected In-Service Date	Status
Generator Interconnection	QP1087 (18.1 MW Solar)	New 34.5 kV Breaker at County Road	Interconnection Request	2025	Planned
		Upgrade Section 56 between Winslow and County Road	Interconnection Request	2025	Planned
	QP1139 (19.1 MW Solar)	Three beaker ring bus	Interconnection Request	Q3 2024	Planned

## LSP Projects - FERC Projects

Project Origin	Major Project	Project Description	Needs Assessment	Projected In-Service Date	Status
Generator Interconnections	QP1241 (Sanford/Quaker Hill Cluster)	New 34.5 kV 10 MVAR DRD at Bragdon Commons	Interconnection Request	2027	Proposed
	QP1242 (Lewiston Cluster)	Rebuild 34.5 kV line section 149	Interconnection Request	2027	Cancel
		Rebuild 34.5 kV line section 50	Interconnection Request	2028	Proposed
		Re-rate 34.5 kV Section 76	Interconnection Request	2025	Proposed
	QP1255 (Detroit Guilford Belfast Cluster)	Two 10 MVAR Capacitor Banks at Dogtown	Interconnection Request	2025	Proposed



## LSP Projects - FERC Projects

Project Origin	Major Project	Project Description	Needs Assessment	Projected In-Service Date	Status
Generator Interconnection	QP1254 (Kimball Road)	Upgrade Section 170 34.5 kV	N-0/N-1 Overloads	2028	Proposed
		4 MVAR DRD at North Limington	N-1 Voltage Violations	2026	Proposed
		Upgrade Section 91 34.5 kV	N-1 Overloads	2029	Proposed
		Relay Upgrade on Section 92 34.5 kV	N-1 Overloads	Q3 2024	Proposed
		Rebuild Section 143 34.5 kV	N-0/N-1 Overloads	2028	Proposed

## LSP Projects - FERC Projects

Project Origin	Major Project	Project Description	Needs Assessment	Projected In-Service Date	Status
Generator Interconnection	QP1254 (Kimball Road)	Relay/Switch Upgrade on Section 172 34.5 kV	N-1-1 Maintenance Overloads	Q3 2024	Proposed
		Relay Upgrade Section 182 34.5 kV	N-1-1 Maintenance Overloads	Q3 2024	Proposed
		Bifurcate Section 145 34.5 kV	N-1-1 Overloads	2028	Proposed
		New North Bridgton Substation 115/34.5 kV	N-1-1 Overloads and Voltage Violations	2028	Proposed
		Second Lovell 115/34.5 kV Transformer	N-1 Overloads	2028	Proposed

## In-Service LSP Projects – CMP

Project Origin	Major Project	Project Description	Needs Assessment	Projected In-Service Date	Status
Asset Condition	North Anson 34.5 kV Substation	Partial rebuild of North Anson Substation	Asset condition, and several safety concerns	Q2 2023	In-Service
Generator Interconnection	QP1094-96 (Winslow/Lake wood Cluster)	Rerate 34.5 kV line section 38	Interconnection Request	Q4 2023	In-Service

# Discussion / Q&A

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