Northern Maine Reliability and Rate Stability Stakeholder Group

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Governor's Energy Office

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Agenda

- Background
- Renewable energy
- Energy efficiency
- Transportation
- Stakeholder feedback
- Recommendations

Background: LD 1796

Resolve, to Study Transmission Grid Reliability and Rate Stability in Northern Maine

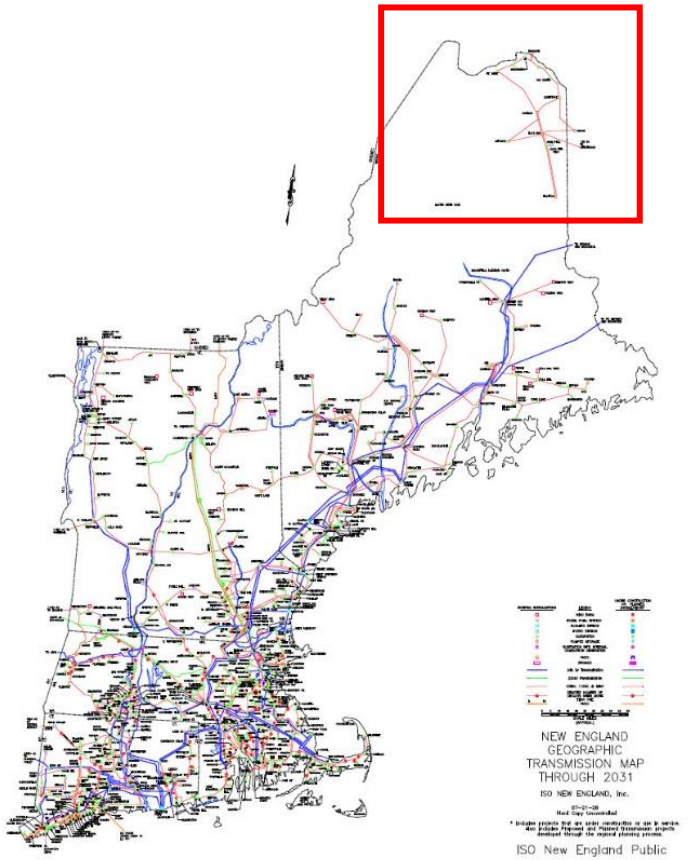
- The continued need to assess reliability in the northern Maine service territory
- The shutdown of the biomass plants in the region, such as those in Fort Fairfield and Ashland, that have been in the past been essential to addressing reliability concerns
- The region's fuel security, competitive supply and rate volatility resulting from its reliance on generation sources in the region
- Opportunities for transmission and non-transmission alternatives to address the current and projected reliability and rate stability needs of the region

Background: Stakeholder group

- GEO
- PUC
- OPA
- NMISA
- A municipal government in northern Maine
- A large industrial electric utility customer located in northern Maine
- A trade association representing businesses located in northern Maine
- A trade association representing the forest products industry
- An investor-owned transmission and distribution utility serving northern Maine
- Two different consumer-owned transmission and distribution utilities located in northern Maine
- An energy generator located in northern Maine
- Members of the public

Background: NMISA

- Northern Maine Independent System Administrator was created in 1999
- Facilitate the development and implementation of retail electric competition and foster regional reliability efforts in the electrically isolated area of the state in portions of Aroostook, Washington, and Penobscot Counties



Background: NMISA

Characteristics

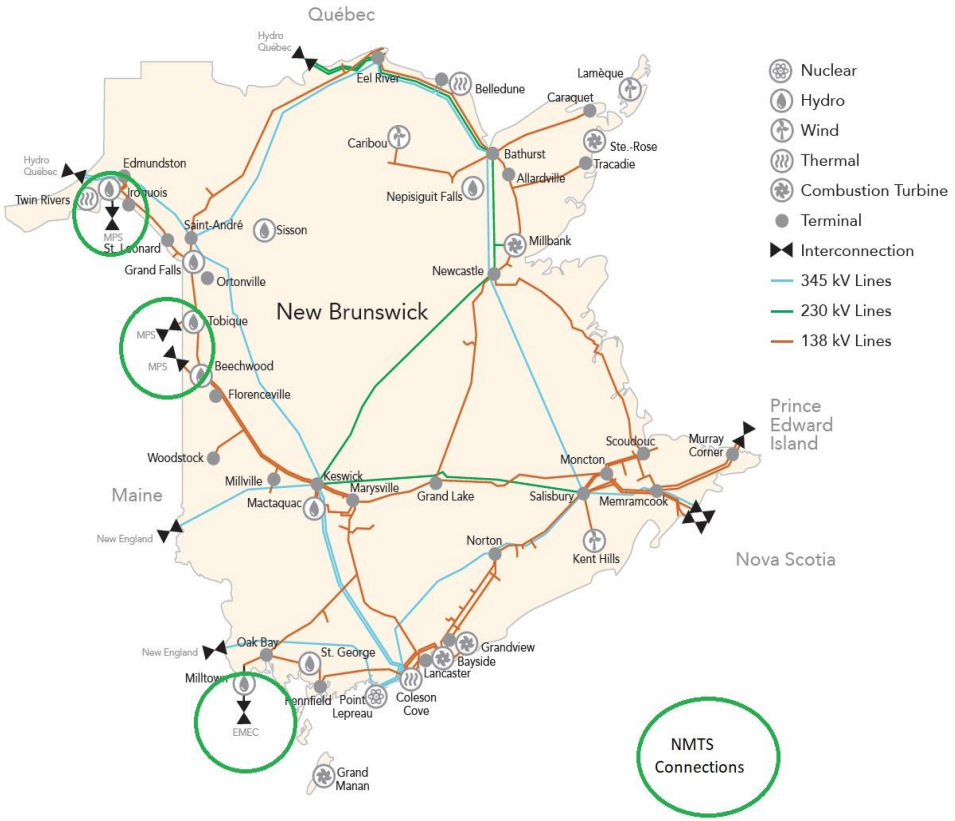
- Large geographic size
- Small electric demand
  - 42,000 electric accounts
- Modest population
  - 90,000 residents

Utilities

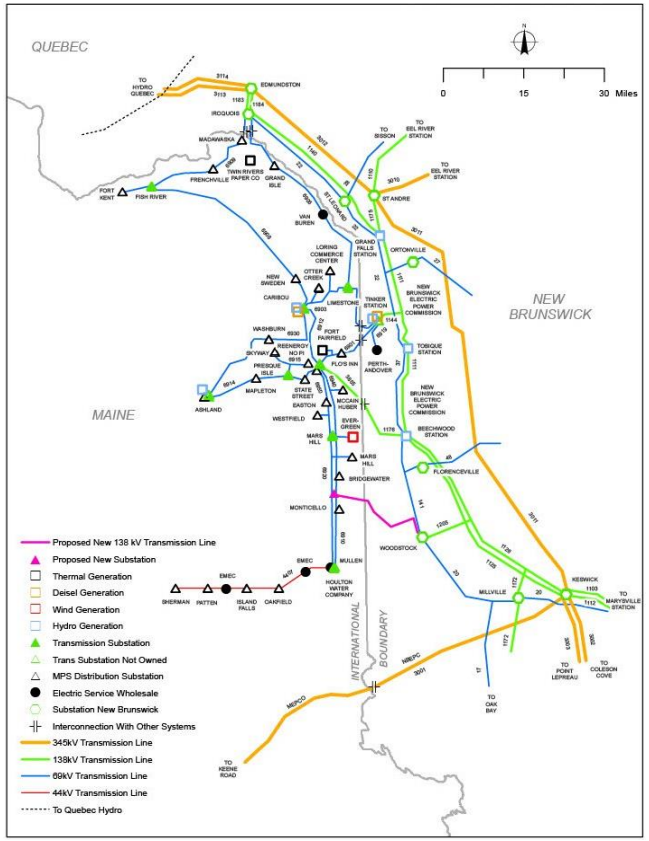
- Versant – Maine Public District
- Consumer owned utilities
  - Van Buren Light & Power District
  - Houlton Water Company
  - Eastern Maine Electric Cooperative

Background: Electric system

NB Power

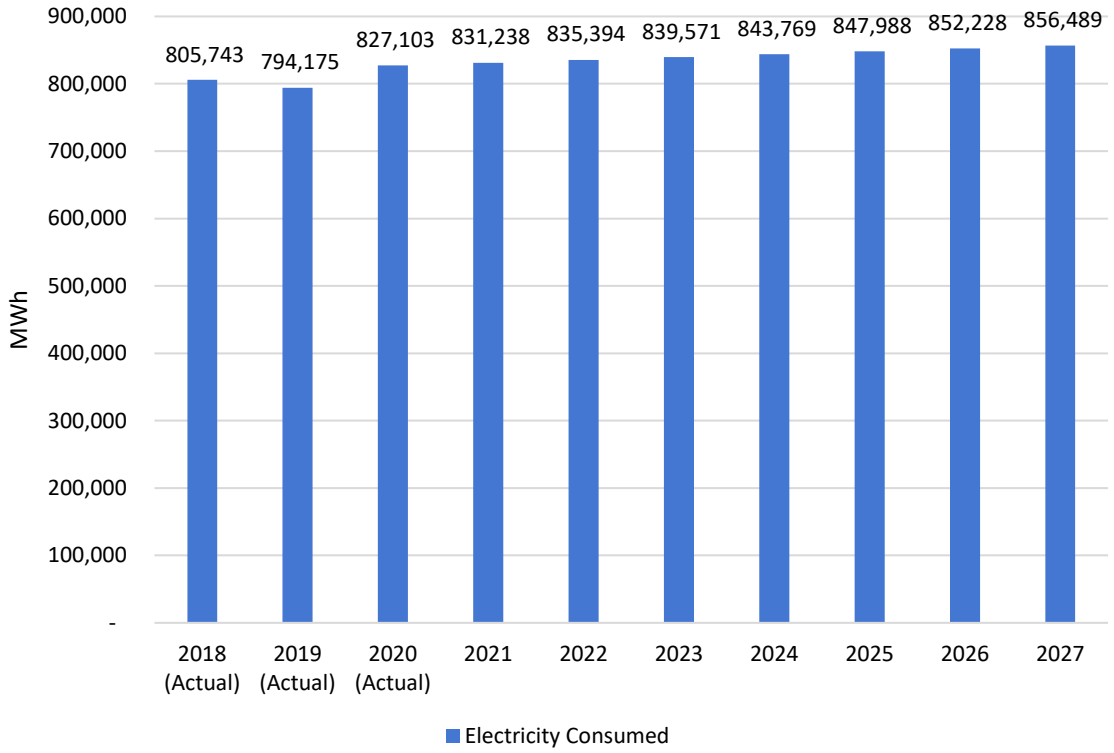


Versant Power – MPD

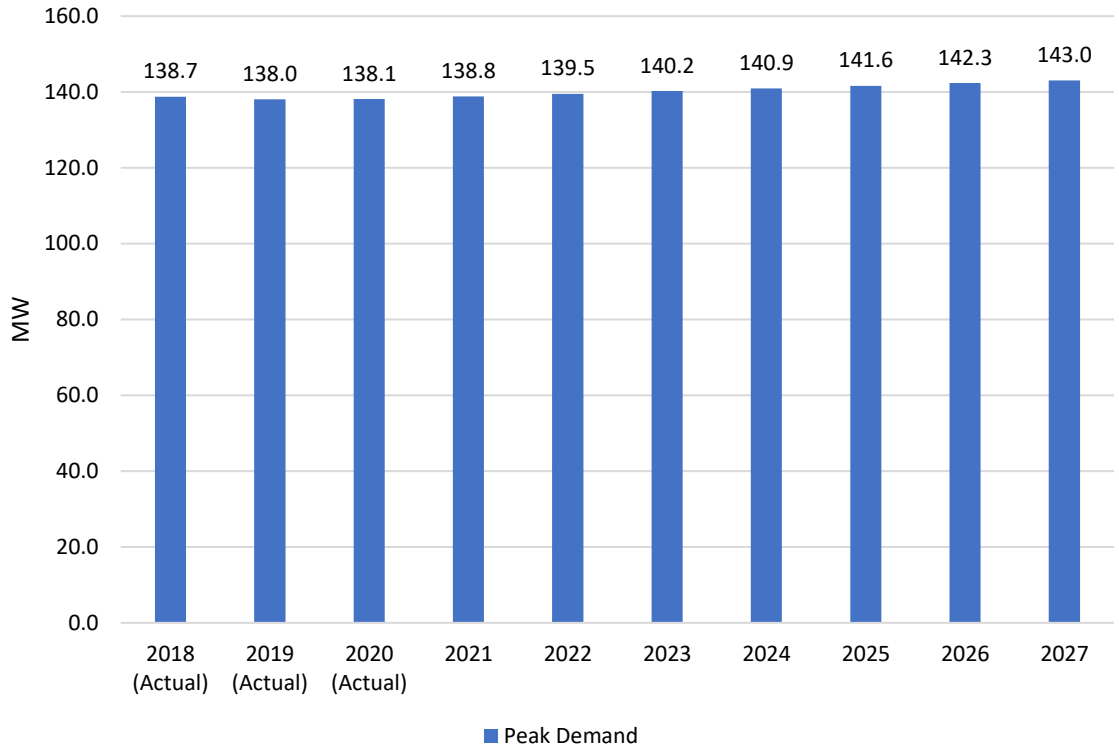


Background: Electricity use and projections

Electricity consumed

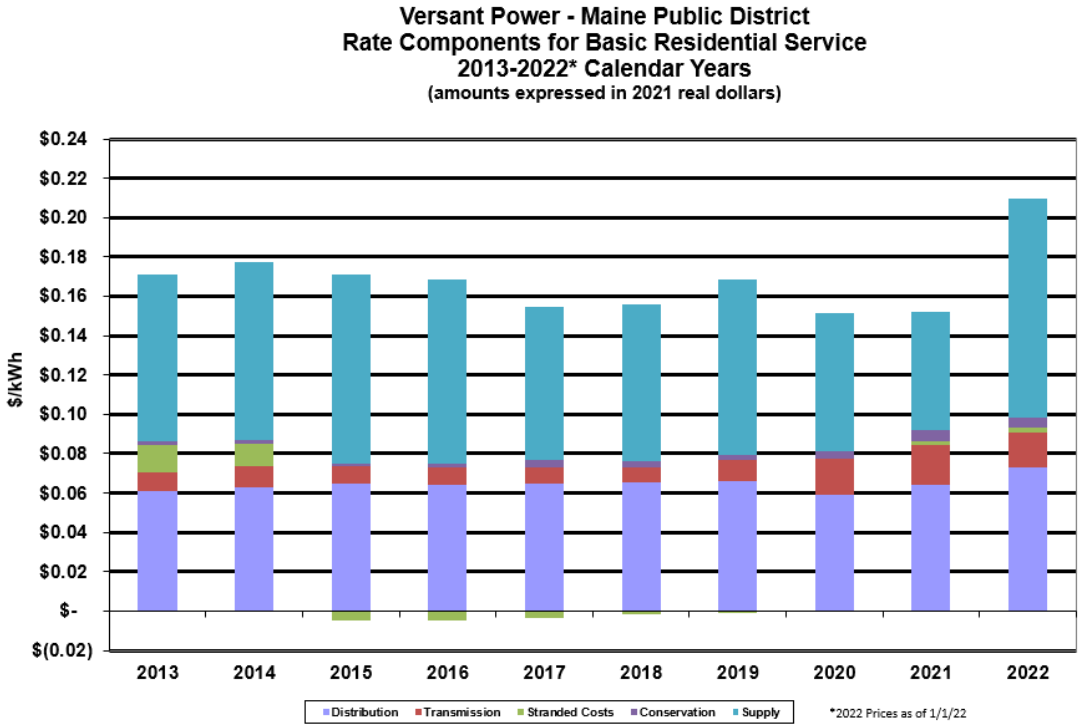


Electricity peak demand



Source: NMISA, Seven Year Adequacy Report (2019, 2020, 2021)

Background: NMISA rates and generation



Plant	Capacity (MW)	Capacity (%)	Source	Status
Tinker Station	4.00	4%	Hydro #1	Existing
	1.80	2%	Hydro #2	Existing
	1.80	2%	Hydro #3	Existing
	4.00	4%	Hydro #4	Existing
	23.00	23%	Hydro #5	Existing
Caribou Station	0.50	1%	Hydro #1	Mothballed
	0.50	1%	Hydro #2	Mothballed
Scopan Hydro	1.40	1%	Hydro	Existing
Other Resources	42.00	42%	Wind	Existing
	20.00	20%	BLQ, Biomass, NG	Existing
	0.65	1%	Solar	Existing
Total	99.65	100%		

Renewable energy

Renewable portfolio standard

- In 2021, 45% of retail sales of electricity were provided by renewable resource
- P.L. 2019 Ch. 477: 80% by 2030 and set a goal of 100% by 2050

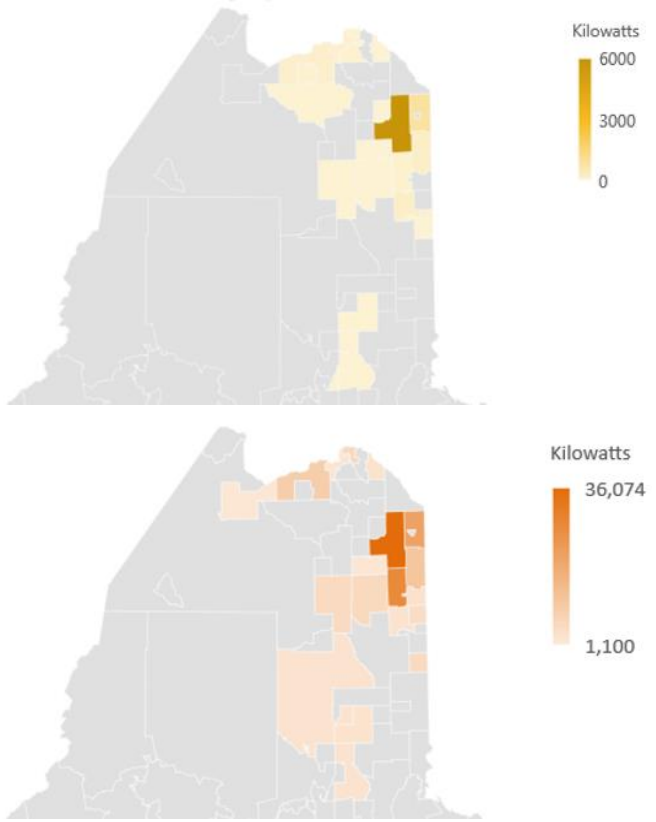
Solar

- 162 MW of solar generation facilities in the MPD distribution interconnection queue, with projects in Northern Maine being given additional development time per LD 936

Storage

- In 2021, approximately 50 MW of energy storage was operational with 450 MW in the development queue
- P.L. 2021 Ch. 298: 300 MW operational by 2025 and 400 MW operational by 2030

Operational (Top) and proposed distributed (Bottom) solar capacity by zip code in MPD (2021)



Renewable energy

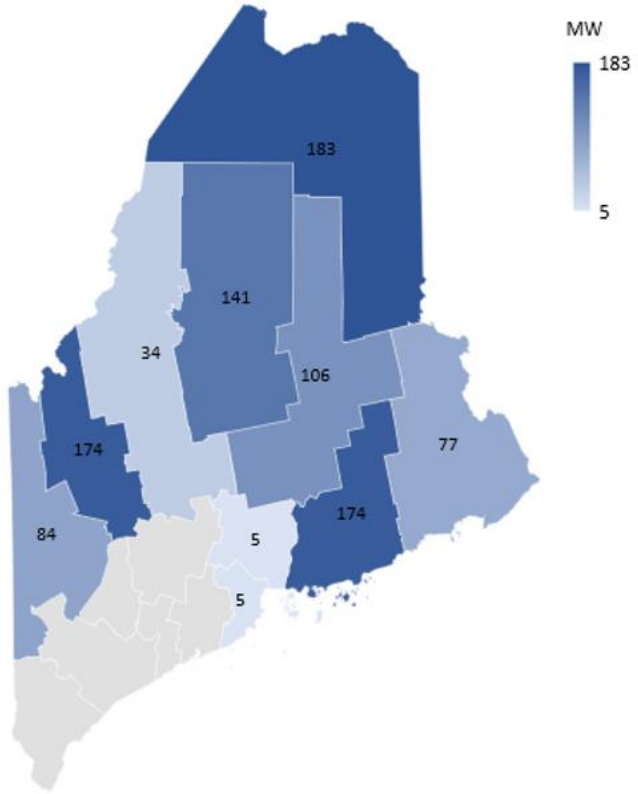
Onshore wind

- Maine has 983 MW of onshore wind, of which 366 MW (37%) is operational in counties within NMISA territory
- Only 42 MW – Evergreen Wind, located in Mars Hill – is interconnected to the NMISA system

LD 1710

- Procurement by the PUC for (1) a transmission line from Northern Maine connecting to the ISO-NE system and (2) renewable energy generation for at least 18% of the retail electric load in the state.

Operational wind generation in Maine by county (2021)



Energy efficiency

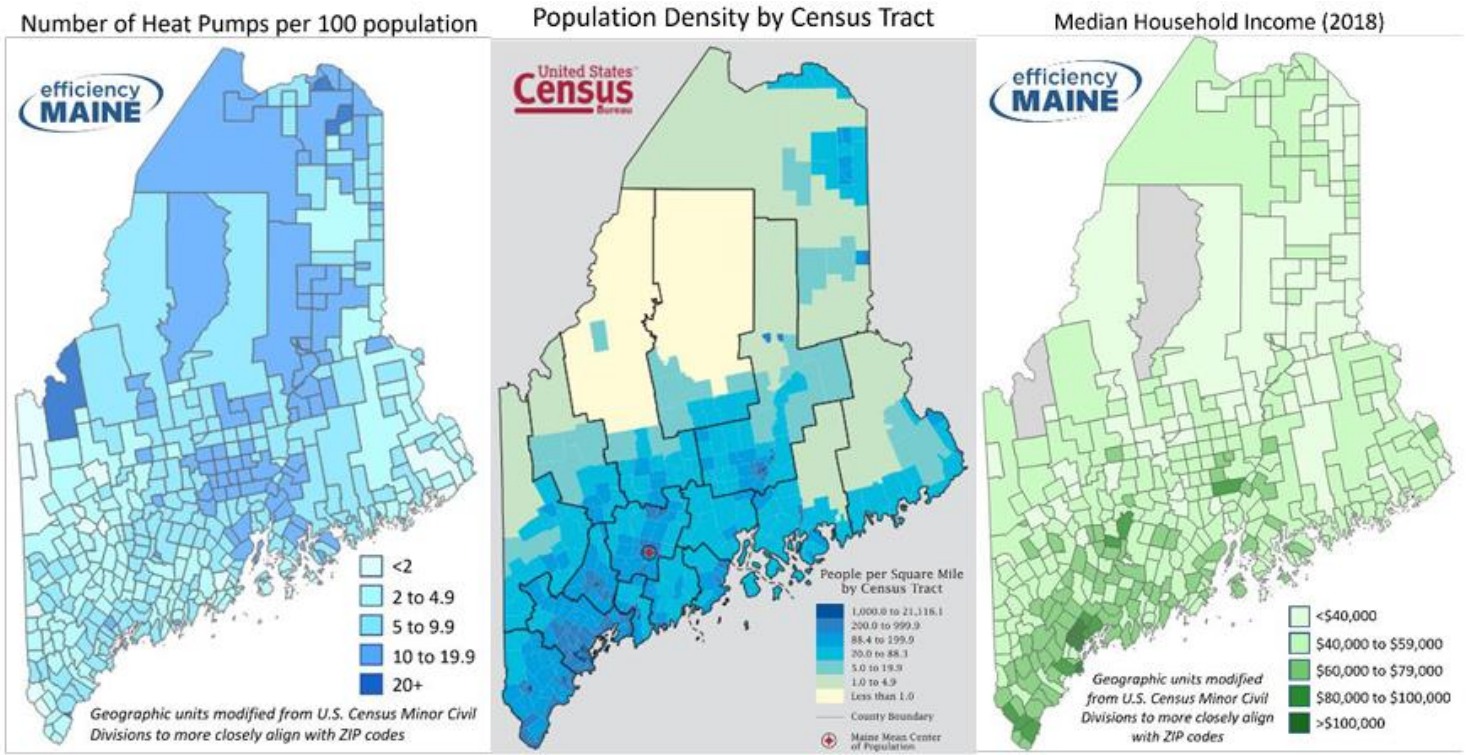
Heat pumps

- Over 40,000 new heat pumps have been installed with 28,000 occurring between July 2020 – June 2021
- EMEC introduced a program offering an additional $250 per heat pump for residential and commercial customers

Weatherization

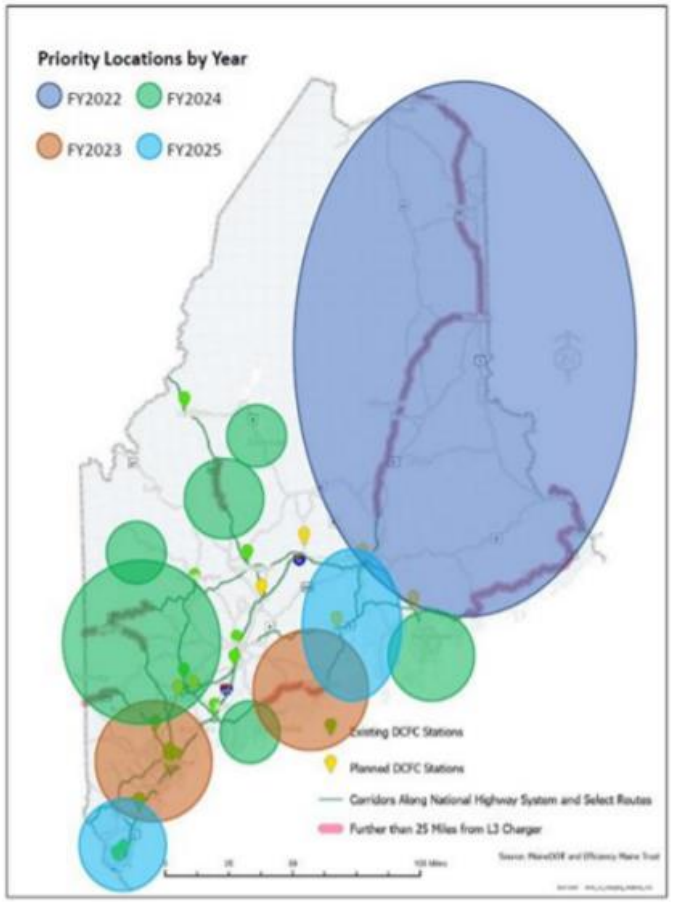
- In 2021, 2,043 homes were weatherized
- $25 million from the MJRP allocated to EMT for home weatherization for low to moderate income Mainers, serving both homeowners and renters

Energy efficiency: Heat pump distribution



Left: Geographic distribution of Efficiency Maine's heat pump program from 2013 to 2021, representing more than 75,000 heat pump rebates (cumulative heat pump rebates per 100 population, where each rebate is equivalent to a single-head, mini-split air source heat pump); **Center:** US Census 2010 - Population density of Maine.; **Right**: Median income in Maine.

Transportation



Stakeholder group

- The GEO worked with stakeholders
  - In-person meetings
  - Survey
  - One-on-one discussions
- Identified numerous issues, and proposed recommendations for addressing:
  - Reliability
  - Fuel security, competitive supply, and rate volatility
  - Transmission and non-transmission alternative

Stakeholder feedback

Reliability assessment	• Power quality • Rates • System planning • Demand management
Biomass generation	• Negative economic impact • Decrease in local generation
Impacts of Reliance and Rate Volatility	• Local generation • Policy and markets
Future Electric System	• General characteristics • Technologies • Planning and regulation

Recommendations

1. Evaluate the current and future energy grid needs at geographic locations in the NMISA territory to better understand the potential role and economic impacts of cogeneration, renewable energy, load management and energy inertia for residents and businesses in Northern Maine.
2. Further investigate power quality challenges which may exist at greater distances from load, including the benefits and costs of measuring nuisance trips in shorter intervals to better understand and mitigate the root cause of the power outage.
3. Continue to investigate economic, environmental, technical, and social effects of reliance on Canada for electricity as well as what the impacts of bridging the gap between the NMISA territory and ISO-NE would be.

Recommendations

- Pathways
  - State entity (GEO, OPA, PUC) could be provided with funding and direction to hire a consultant to conduct the detailed analysis, modeling and outreach needed
  - Versant Power utilize the existing planning mechanisms and authority contained within its Northern Maine transmission tariff , including engagement of key stakeholders through the Planning Advisory Group and NMISA, to complete this planning process to result in a multi-year plan for northern Maine
    - Technical and engineering phase conducted by the utility to understand the future needs of the transmission and distribution systems, compared to the current state of the system and interconnection queue
    - Broad array of relevant stakeholders would be engaged to provide guidance and feedback about the proposed solutions
- Other Funding
  - US DOE

Next steps