Versant Power

Integrated Grid Planning (IGP)

Milestone 3.0 Stakeholder Meeting

November 6, 2025

Agenda

- Introductions & Safety Message
- Overview of Versant Power
- Integrated Grid Planning Background
- Milestone 3.0 – Identifying Grid Solutions
  - Process
  - Key Findings
- Next Steps

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Introductions

Tyler Stanley, Program Manager, T&D System Planning

Judy Long, Senior Manager, Communications

Eric Feigenbaum, Director, Public Affairs

Steve Bye, Senior Engineering Manager, EPE

Safety: Home and office lighting

Inadequate lighting

- Can conceal hazards, leading to accident or injury
- Can contribute to eyestrain or headaches

Excessive lighting or glare

- Your eye adjusts to the brightest level of light in most cases, making it harder to see detail in darker areas of your workspace even if they are sufficiently lit.

What you can do

- Test for glare
- Use task lighting instead of bright overhead lights
- Place computer monitor slightly below eye level and about 2 feet from your face
- Take a 10-minute break for every hour of work

Test for glare: In your normal working position, look at a distant object. Block the light "path" from fixtures with a book. If the distant object is easier to see, your light fixtures are probably producing glare.

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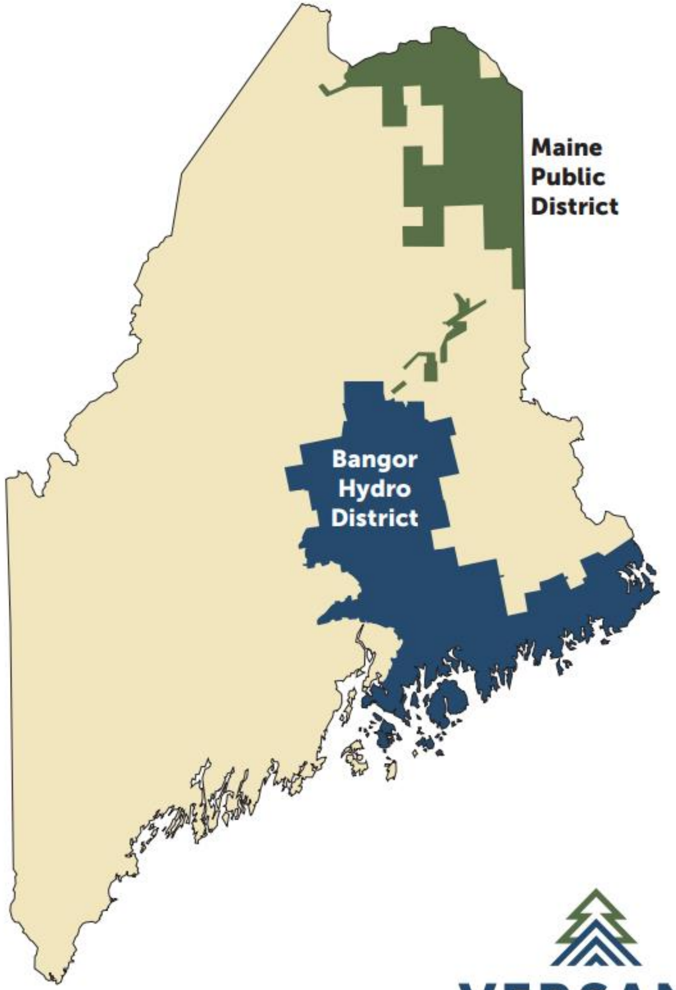
Overview of Versant Power

- 10,400 square miles in geographically diverse areas of northern and eastern Maine
- 165,000 customers
- 44% are in small Disadvantaged Communities
- 375 transmission and distribution circuits
- 1,400 transmission and distribution protection and switching devices
- Maine is the most forested state in the nation (90%)
- Maine is the most rural state in the nation



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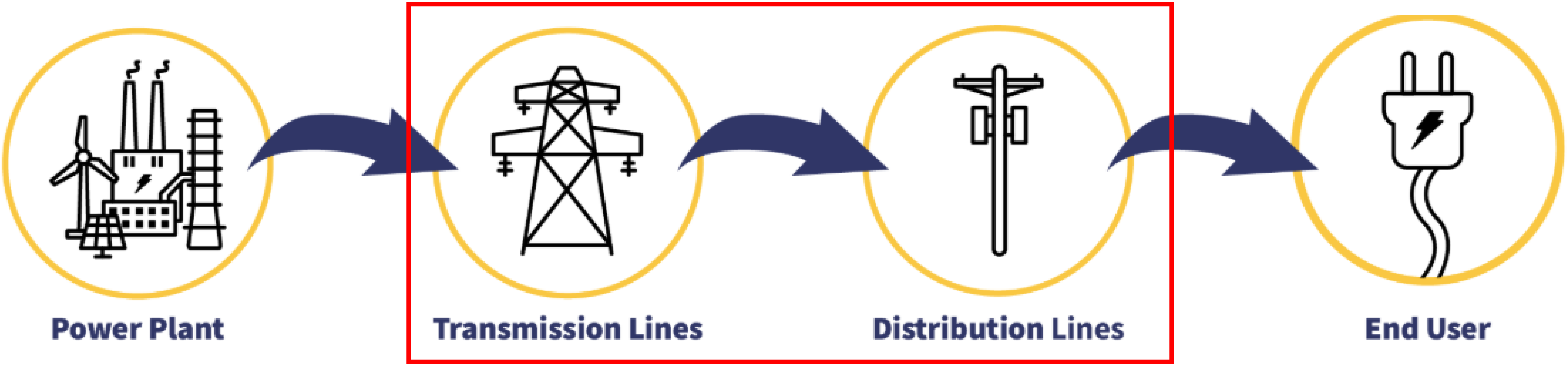
Versant Power: Transmission & Distribution Utility

Transmission System Planning: ISO-NE (CELT) and Utilities

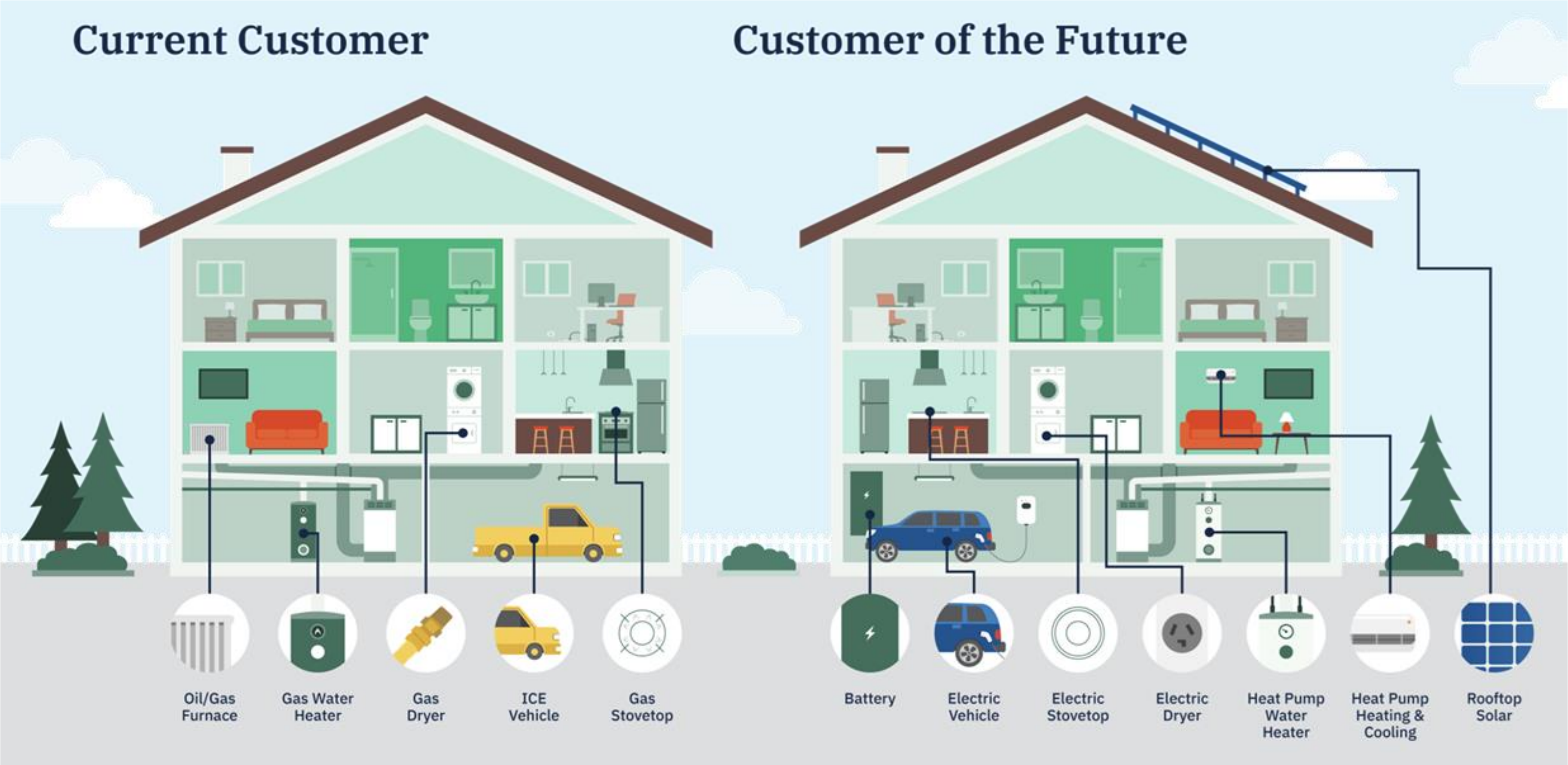


Distribution System Planning: Versant IGP

Courtesy of FERC

What causes grid needs?

- **Load growth**
  from new homes, electrification (EVs, heat pumps, etc.), and economic development
- **Adoption of distributed energy resources (DER)**
  from customer-owned generation (rooftop PV, community solar, etc.)



Versant will develop a 10-year integrated grid plan designed to improve system reliability and resiliency and enable the cost-effective achievement of the greenhouse gas reduction obligations and climate policies pursuant to Title 38, section 576-A and section 577, subsection 1.

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Versant Power: Recent Trends & Technologies

Solar
- Significant increase in distribution solar since 2019 through net energy billing expansion
- State goal of 100% clean energy by 2040

Heating Electrification
- Heat pumps and heat pump water heaters
- State goal of 100,000 by 2025 was surpassed, goal of additional 175,000 by 2027

Electric Vehicles
- Increased adoption through federal and state incentives
- State goal of 150,000 electric vehicles on the road by 2030

Battery Storage
- Residential and commercial Battery Energy Storage Systems
- State goal of 300MW by 2025 and 400MW by 2030

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What is Integrated Grid Planning?

To meet the changing expectations of customers and stakeholders, Versant must ensure the grid is ready to handle a significant increase in load and distributed energy resources.

It must be <u>clean, affordable, resilient and safe.</u>

We also are committed to evaluating and tracking environmental and equity impacts of grid plans using available data and continuing community conversations.

Versant Power's 10-year Integrated Grid Plans will assess what it will take to allow Maine to meet its energy goals on time.

Versant Power’s Vision

Versant envisions a future electric grid that operates safely and reliably, enables a fully decarbonized energy supply, facilitates the deployment of significant distributed energy resources and beneficial electrification technologies, leverages cost-effective solutions, and does all this while maintaining affordability for our customers.

Our goal for grid planning is to identify opportunities for “no regrets” investments that empower customer choice of modern, low-carbon technologies and are aligned with Maine's state policy goals. We are committed to collaborating with the communities we serve and other stakeholders to ensure Maine's electric grid is resilient, reliable and capable of meeting the challenges of a fully electrified future.

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  - Methodology
  - Key Findings
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IGP Progress

Milestone 1.0
Meeting: 2/28/2025

Determine Model Inputs

Milestone 2.0
Meeting: 7/10/2025

System Modeling and Grid Needs Identification

Milestone 3.0
Meeting: 11/6/2025

Identify System Solutions

1/12/2026

IGP Filing

Remaining IGP Timeline

Integrated Grid Planning: Public Engagement

- Versant Power hosted 17 community meetings, including an online option, to provide opportunities for customers to learn and provide feedback on the integrated grid planning process.
- We also scheduled or participated in numerous meetings with interested stakeholder groups, including AARP Maine, Efficiency Maine Trust, Department of Energy Resources and Natural Resources Council of Maine.
- More than 300 customers and stakeholders were directly engaged in this process.
- This is our fifth formal public meeting on our planning process.
- More than 200 interested stakeholders receive Grid & Climate Planning emails.

Milestone 1.0 Forecasting Summary

Versant developed the following forecasts:

- Top/down Baseline Forecast:
  - As required by the MPUC, we used the 2024 CELT 50/50.
- Top/down High Adoption Forecast:
  - As required by the MPUC, we used the 2024 CELT 90/10.
- Bottom/up forecast:
  - Developed distribution level substation and circuit forecasts using localized data, ISO-NE forecasts, and state policy targets accounting for base load, heating electrification, transportation electrification, DER adoption, and energy efficiency.
- Scenarios:
  - As required by the MPUC, we will develop the 6 required snapshots for each of the top/down forecasts.
  - Additionally, we developed scenarios that vary the level of adoption for each of the bottom/up forecasts and include those within the same 6 snapshots.
- This comprehensive approach enabled us to create the most granular and insightful forecasting scenarios and identify the boundary cases for modeling analysis.

Six Seasonal Load Snapshots:

- Summer Daytime Peak Load; Summer Evening Peak Load; Winter Evening Peak Load; Daytime Minimum Load; Evening Minimum Load; Spring Minimum Load

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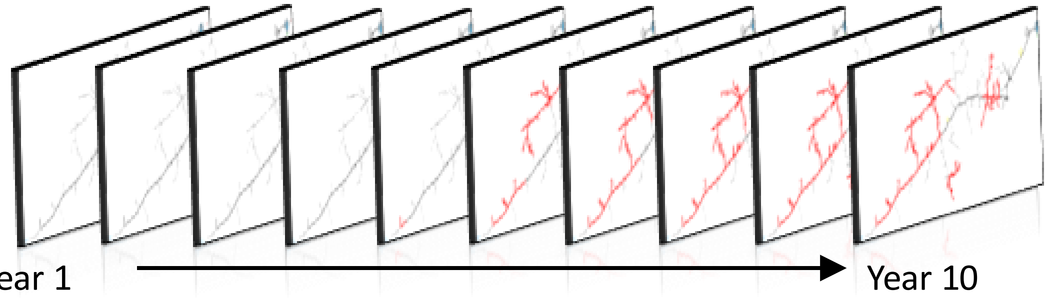
Milestone 2.0: 10-Year Distribution Grid Needs Summary

Most of the system can accommodate rapid growth from electrification and DER adoption over the next 10 years. However, some substantial assets – such as substation transformers, voltage regulators and conductors – would be affected.

- ✓ Electrification growth will have greater impact in the Bangor Hydro District
  - ✓ Affects the system during peak load
  - ✓ Increased low voltage violations
  - ✓ Increased loading of substation & line equipment
- ✓ Penetration of distributed energy resources will have greater impact in the Maine Public District
  - ✓ Affects the system during minimum load
  - ✓ Increased high voltage violations
  - ✓ Increased loading of substation transformers, switches & conductors



Overloaded Device Type	Peak Load # Overloaded	Min Load # Overloaded
Breaker	2	5
Fuse	656	69
Recloser	18	16
Regulator	77	56
Sectionalizer	15	0
Switch	14	26
Substation Transformers	22	36
Step-down Transformers	23	3

Distribution Line Violations	Peak Load # circuit miles	Min Load # circuit miles
Voltage violations	925	615
Thermal violations	21	30

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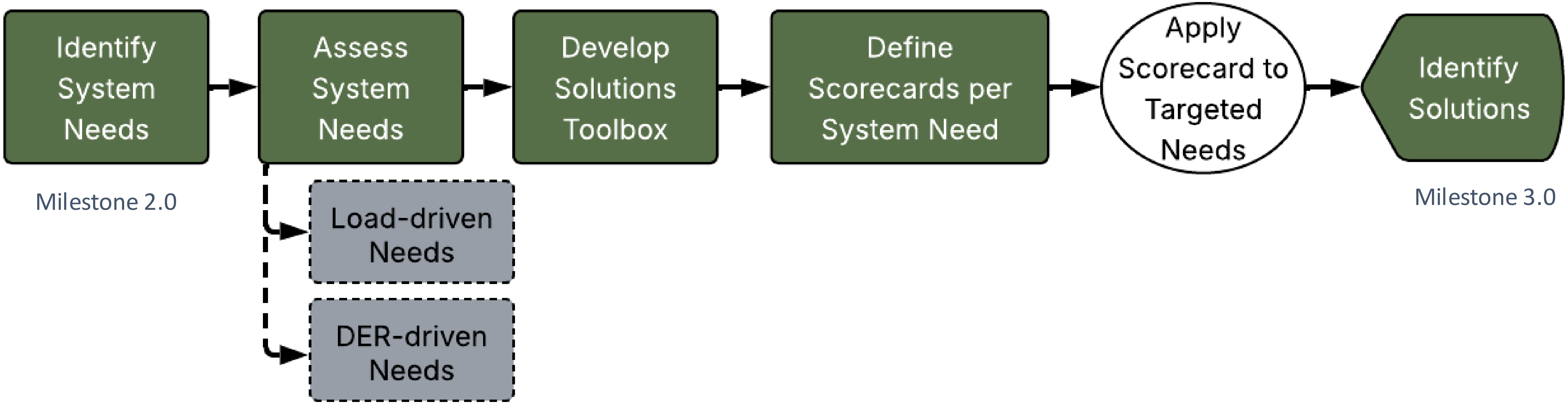
Solutions Identification Process

The solutions identification process involved multiple steps to systematically assess and classify system needs, identify potential solutions, and evaluate solutions via the scorecard approved by the Maine Public Utilities Commission.



Assessing Load-Driven System Needs

Versant assessed distribution system needs for the solution identification process by using a simple screening methodology that focuses on higher consequence violations that may occur in the next few years.

Evaluate System Needs

992 system needs

Screening Criteria

- Consequence
- Timing
- Severity

105 system needs

Targeted System Needs (Solution Scorecards)

887 system needs

Other System Needs (Monitor & Re-evaluate)

Identify all system needs and classify them by:

- Type (thermal or voltage)
- Consequence (# customers impact)
- Timing (urgency/year of first occurrence)
- Severity (degree to which planning criteria is exceeded)

Targeted system needs that:

- Affect a larger relative area
- Occur in the near-to-mid term
- Significantly exceed planning criteria

Develop solution scorecards for targeted system needs.

Track other system needs for re-evaluation in future IGPs and which may be addressed through routine operational upgrade processes.

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Assessing Load-Driven System Needs

After assessing system needs, we developed scorecards to compare potential solutions.

Overloaded Device Type	# Scorecards
Breaker	2
Fuse	N/A*
Recloser	5
Regulator	40
Sectionalizer	5
Switch	8
Substation Transformers	16
Step-down Transformers	13

Distribution Line Violations	
Voltage violations	12
Thermal violations	4
Total:	**105**

**Fuse needs were excluded from scorecards, as they are addressed through the routine operational processes.*

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Solution Toolbox for Load-driven System Needs

The System Needs Assessment identified overloaded assets, capacity-constrained lines, and voltage violations primarily associated with load-driven growth (electrification). We evaluated how we could meet those needs by comparing a targeted portfolio of grid and non-wires alternatives:

Solution Type	Typical Grid Need Driver
Settings upgrades for voltage support	Load growth on the system causing excessive voltage drop across system equipment (transformers, power lines, etc.) and resulting in lower voltages – causing customer equipment to malfunction or become damaged
Line & line device upgrades for load capacity	Increases in load that exceed device capacity causing rising temperatures within equipment, leading to overheating and potential failures
Major equipment upgrades to increase load capacity	Increases in load growth on distribution feeders or substations that exceed the thermal ratings of equipment and overloads a station transformer
Minor equipment upgrades for load capacity	Localized increase in load that overloads a minor distribution component such as a switch, service transformer or fuse.
BESS / storage / DER / NWA	Localized increases in load that could trigger major system upgrades, but could be addressed with targeted solutions
Demand response programs	Increases in load across multiple locations or customers that collectively exceed the capability of one or more portions of the system, where load reduction can be coordinated to reduce system stress
Protection device upgrades	Injection of power from distributed energy resource(s) causes mis-coordination or misoperation of outage mitigation/system protection devices

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Assessing DER-driven System Needs

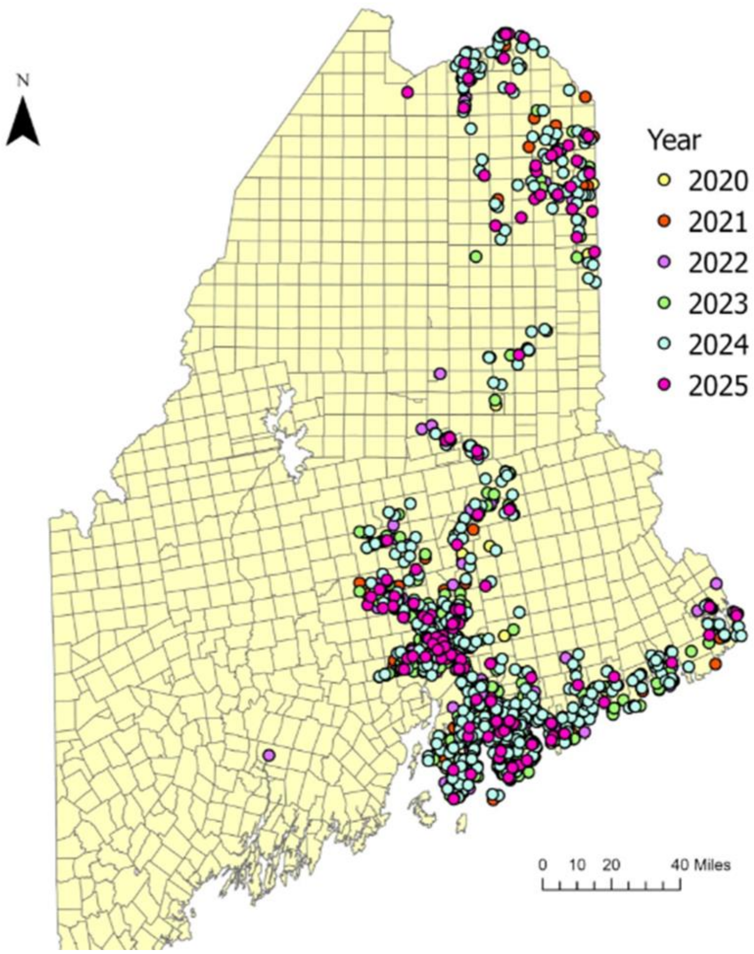
System needs driven by distributed energy resources were assessed to account for the existing interconnection frameworks and processes prescribed by existing MPUC rules and requirements.

DER-related system needs are addressed through:

- Established system impact study and cluster study processes
- Comprehensive violation screenings and analyses beyond those in integrated grid plans
- The "cost-causer pays" mechanisms for system upgrades/solutions identified through the DER interconnection studies

Integrated grid planning does forecast the size, type and location of potential DERs and leverages needs identified to inform system-level planning.

DER-driven needs are currently funded by interconnecting customers and are inherently uncertain in location, size, and timing.



Growth of distributed energy resources:
2020 to 2025

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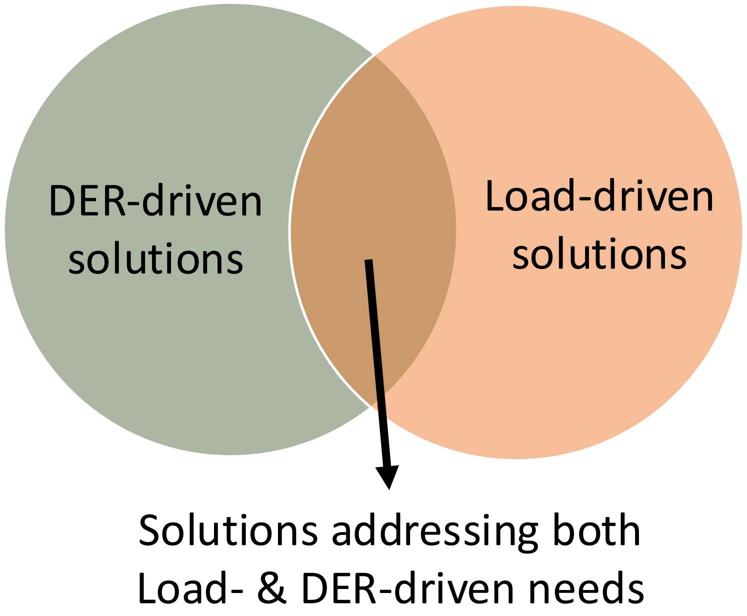
Assessing Solutions for DER-driven System Needs

After the system needs assessment, scorecards are developed to identify potential solutions.

Scorecard Type	Applicable Occurrences
Breaker/Recloser Overload	21
Line/Sub Regulator Overload	56
Switch/Sectionalizer Overload	26
Line Voltage Violation	36
Conductor Overload	30
Substation Transformer Overload	36
Step-down Transformer Overload	3
Total:	**208**

Solutions for load-driven system needs may also address DER-driven system needs, thereby improving capacity for both electrification and DER adoption.



**Fuse overloads were excluded from scorecards, as they are addressed through the routine operational processes.*

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Solution Toolbox for DER-driven System Needs

The System Needs Assessment identified overloaded assets, capacity-constrained lines, and voltage violations primarily associated with DER-driven growth. We evaluated how we could meet those needs by comparing a targeted portfolio of grid and non-wires alternatives:

Solution Type	Typical Grid Need Driver
Settings upgrades for voltage support	Injection or fluctuation of power into the system from a DER introduces a new voltage/current source and reduced feeder losses, causing voltage to rise – which can damage equipment and disrupt customer loads.
Line & line device upgrades for hosting capacity	Increases in DER output or fluctuation that exceed device hosting capacity due to high reverse powerflow.
Major equipment upgrades to increase hosting capacity	Increases in DER penetration on distribution feeders or substations that push power flow above the nameplate rating of equipment and overloads a station transformer.
Minor equipment upgrades for hosting capacity	Localized increase in DER output that overloads a minor distribution component such as a switch, service transformer or fuse.
BESS / storage	Localized increases in DER output or fluctuation that could trigger major system upgrades, but could be addressed with targeted solution
DER management System (e.g. DERMS)	Increases in DER output or fluctuation across multiple locations or customers that collectively exceed the capability of one or more portions of the system, where the DER output can be coordinated to reduce system stress and optimally serve the system as a whole
Protection Device upgrades	Injection of power from DER causes miscoordination or misoperation of outage mitigation / system protection devices

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Solution Scorecards

For each type of load-driven system need, Versant selected potential solutions from its Solutions Toolbox and evaluated them using the MPUC Solution Scorecard.

Eight (8) types of scorecards were used, each with their own unique solution alternatives:

- ✓ Breaker/Recloser Overload Scorecard
- ✓ Conductor Overload Scorecard
- ✓ Line Regulator Overload Scorecard
- ✓ Switch/Sectionalizer Overload Scorecard
- ✓ Line Voltage Violation Scorecard
- ✓ Step-down Transformer Overload Scorecard
- ✓ Substation Regulator Overload Scorecard
- ✓ Substation Transformer Overload Scorecard

Standard IGP Scorecard

Description of System Need:		*[1-3 sentences summarizing need]*			
	Evaluation Category	**Comparative Assessment Scorecard**			
		Alternative A	Alternative B	Alternative C	Alternative D
Cost	Capital costs	*high*	high	low	medium
	Operations & maintenance costs				
	Avoided costs				
Technical Performance	Efficacy				
	Execution and schedule risk				
	Existing infrastructure optimization				
	Reliability & resiliency impact				
	Flexible management of customers' load and generation				
EJ	Equity				
	Emissions impact				
	Local environmental impact				
Policy Alignment	Peak load reduction				
	Electrification readiness				
	DER and renewables integration				
	Advances state energy and climate goals				
	Overall prioritization ranking	*[1st, 2nd, 3rd, 4th]*			
Scorecard Narrative:		*[longer text describing scoring process & results, with any necessary supporting data]*			

Source: Docket No. 2022-00322, Order, Proceeding to Identify Priorities for Grid Plan Filings, Maine Public Utilities Commission, Attachment D (Scorecard), July 12, 2024.

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Solution Scorecard – Cost

Costs				
Evaluation Category	Definitions	Comparative Assessment Scorecard		
		Most Preferred	Middle	Least Preferred
Capital costs	What is the cost to implement the proposed solution?	Low minimal utility investment	Medium moderate utility investment	High major capital investment
Operations & maintenance costs	How much O&M does the proposed solution require?	Low minimal ongoing maintenance costs	Medium Some recurring maintenance costs	High Requires regular maintenance costs
Avoided costs	What costs can be avoided down the line by implementing the proposed solution?	High Significant cost savings opportunities	Medium Some deferral value or operational efficiency	Low Limited/no meaningful deferral

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Solution Scorecard – Technical Performance

Technical Performance				
Evaluation Category	Definitions	Comparative Assessment Scorecard		
		Most Preferred	Middle	Least Preferred
Efficacy	How well does the proposed solution allow system operation within thermal and voltage limits?	High Fully resolves the system need over multiple years	Medium Relatively effective for resolving violation over multiple years	Low Limited ability to consistently resolve need over multiple years
Execution and schedule risk	What execution and schedule risks can be expected from the proposed solution?	Low Mature technology, straightforward construction, and lead times	Medium Moderate complexity & dependency on permitting, procurement, etc.	High Long-lead times & high implementation uncertainty
Existing infrastructure optimization	How well are we using existing equipment? Can existing infrastructure be leveraged?	High Maximizes current asset utilization or capacity	Medium Some reuse or efficiency gain from existing facilities.	Low Replaces existing assets without improving utilization.
Reliability & resiliency impact	Does the proposed solution improve system reliability and resiliency?	High Significantly reduces risk of outage frequency & duration	Medium Some reliability improvement	Low Minimal/no improvement for outage risks
Flexible management of customers' load and generation	Does the proposed solution use control of customer power input/output?	High Actively enables dynamic management	Medium Some interaction with flexible load or DERs	Low No enablement of customer-side flexibility

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Solution Scorecard – EEEJ

EEEJ				
Evaluation Category	Definitions	Comparative Assessment Scorecard		
		Most Preferred	Middle	Least Preferred
Equity	Does affected grid infrastructure serve disadvantaged customers?	High >= 2/3 (66.7%)	Medium >= 1/3 (33.3%)	Low < 1/3 (33.3%)
Emissions	Does solution increase or decrease emissions?	High Direct reduction of emissions	Medium Indirect reduction of emissions	Low Directly increases emissions
Environmental Justice	Does solution require development of new land?	Low No new land use or reduces land use	Medium Moderate increase in land-use	High Increases land use

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Solution Scorecard – Policy Alignment

Policy Alignment				
Evaluation Category	Definitions	Comparative Assessment Scorecard		
		Most Preferred	Middle	Least Preferred
Peak load reduction	Does the proposed solution reduce peak load?	High Achieves significant peak reduction across multiple years.	Medium Provides moderate, temporary, localized peak reduction	Low Negligible impact on system peak
Electrification readiness	Does the proposed solution allow for future increase in load?	High Substantially expands or future-proofs grid capacity	Medium Moderate additional capacity	Low Marginal-to-no improvement in grid capacity
DER and renewables integration	Does the proposed solution allow for DERs & renewable integration?	High Directly promotes DER adoption or is a DER installation	Medium Enables moderate additional capacity for DER	Low Marginal-to-no capacity increase or limits DER hosting capacity
Advances state energy and climate goals	Does the solution help advance state goals?	High Directly advances Maine's clean-energy and climate mandates	Medium Indirectly supports state goals	Low Neutral or misaligned with state goals

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IGP 10-Year Targeted Solution Summary

Solution Type	Bangor Hydro District (BHD)	Maine Public District (MPD)
	Subtotal	Subtotal
Breaker Upgrade	2	-
Recloser Upgrade	5	-
Regulator – Line Upgrade	33	12
Regulator – Substation Upgrade	1	2
Sectionalizer / Switch Upgrade	13	-
Substation Transformer Upgrade	11	5
Step-down Transformer Upgrade	6	-
Reconductoring	12 miles	4 miles
Re-phasing / Phase balancing	4	2
Substation LTC Upgrade	11	2
Circuit Voltage Cutovers	62 miles	73 miles

The Solutions Identification and Scorecard process identified:

- ✓ 109 device upgrades
- ✓ 16 miles of line upgrades
- ✓ 6 phase balancing opportunities
- ✓ 135 miles of voltage conversion upgrades

Through the IGP process, most targeted needs were high severity, high impact, and/or urgent thermal or voltage needs. Traditional utility solutions often were identified as the best-fit due to their long-life cycles, proven reliability, ease of execution, and lower operational complexity.

Versant is committed to evaluating NWAs where they can provide benefits or meet grid needs (e.g. for temporary capacity relief, as a capital deferral mechanism).

As Versant advances projects through rate filings or CPCN applications, relevant projects will still undergo Maine's NWA Review Process ensuring continued evaluation of non-wire alternatives where they may provide value.

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Solution Identification – Key Takeaways

Beneficial electrification — EVs, heat pumps, and new technologies — is forecast to drive significant load growth in the next decade and beyond.

- ✓ Versant's scorecard analysis identified ~105 load-driven distribution solutions, requiring grid investments over the next 10 years.
- ✓ Final project scopes, costs, and sequencing will be refined through the utility's capital review process, in coordination with reliability, maintenance, climate and resiliency programs.
- ✓ Advanced technologies (ADMS, DERMS, storage, demand response) may complement these upgrades over time. NWA reviews and further analysis will continue as projects advance into Versant's capital planning and regulatory processes.

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Next Steps

Milestone 1.0
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Determine Model Inputs

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Meeting: 7/10/2025

System Modeling and Grid Needs Identification

Milestone 3.0
Meeting: 11/6/2025

Identify System Solutions

1/12/2026

IGP Filing

Remaining IGP Timeline

Any comments or feedback are encouraged to be submitted within 30 days in order to be incorporated in our analysis.

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Thank you!

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