

STATE OF MAINE
PUBLIC UTILITIES COMMISSION

Docket No. 2022-00322

July 12, 2024

MAINE PUBLIC UTILITIES COMMISSION
Proceeding to Identify Priorities for Grid Plan
Filings

ORDER

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I. SUMMARY

Pursuant to 35-A M.R.S. §§101, 103-A and 3147, the Maine Public Utilities Commission (Commission) identifies the priorities and other information to be contained in the investor-owned transmission and distribution utilities' initial grid plans. The three priorities are:

Priority: Reliability and resilience improvements:

- Make investments that cost-effectively maintain or improve reliability;
- Reduce barriers to promote cost-effective nonwires alternatives (NWA) solutions and identify any process improvements/efficiencies; and
- Build climate adaptation into the investment solution mix.

Priority: Improve data quality and integrity to maximize its use in distribution system planning:

- Leverage investments in Advanced Metering Infrastructure (AMI);
- Improve mapping of the distribution system and develop a governance policy or protocols for maintaining the integrity of the data on an ongoing basis;
- Develop initial roadmap for advancing time-series planning¹ models; and
- Enhance hosting capacity maps to benefit stakeholder decision making by standardizing them across utilities.

Priority: Promote flexible management of consumers' resources and energy consumption:

- Improve forecasting electric vehicle (EV) load, distributed energy resources (DER) adoption, and climate parameters;
- Support integration and utilization of DERs to enable load flexibility and resilience;
- Technologies or programs to shift load from system peak to reduce Maine's share of the Regional Network Service (RNS) charge.²

¹ Time series planning involves analyses and model simulations encompassing a specified duration of time (e.g., 8,760 hours), opposed to individual snapshots in time (e.g., summer peak).

² The RNS charge is a transmission service that customers purchase to serve their regional network load in New England.

Keeping costs affordable and facilitating the achievement of the State's climate action and greenhouse gas (GHG) emission reduction policies are overarching principles that apply to all of the priorities.

In addition to the identified priorities, this Order establishes requirements for the grid plans and the development of those plans by the utilities including:

- The expected content of the grid plans (Attachment C);
- Utility-led stakeholder meetings to be held during the 18-month development of the grid plans and documentation of stakeholder input from that process in the plans;
- The utilities' visions over the next 10 years and how the utilities' proposed investments and operations will achieve the priorities;
- The forecasts to be used in developing the plans;
- A scorecard for evaluating proposed investments and technologies and a narrative explanation of the scorecard contents (Attachment D);
- Detailed information regarding the utilities' progress related to technology integration, and system investments;
- Proposals to measure or evaluate and track environmental, equity, and environmental justice (EEEJ) impacts of the grid plans in the near and longer term; and
- Proposals to measure the effectiveness of the grid plans in making progress towards the priorities and in improving reliability and resiliency and enabling the cost-effective achievement of the State's climate and GHG reduction policies.

These grid plans will assist in the cost-effective transition to a clean, affordable, and reliable electric grid. The Commission appreciates the efforts of the many stakeholders that devoted substantial time and resources to this important effort. This is a pivotal time for Maine's electric distribution grid, which requires substantial investment to continue to serve customers safely and reliably, particularly in light of Maine's beneficial electrification³ goals.

³ Beneficial Electrification means electrification of a technology or process that results in reduction in the use of a fossil fuel, including electrification of a technology or process that would otherwise require energy from a fossil fuel, and that provides a benefit to a utility, a ratepayer or the environment, without causing harm to utilities, ratepayers or the environment, by improving the efficiency of the electricity grid or reducing consumer

II. BACKGROUND

A. Integrated Grid Planning Legislation

During the 2022 legislative session, An Act Regarding Utility Accountability and Grid Planning for Maine's Clean Energy Future (Act) was enacted. P.L. 2021, c. 702. Section 8, now codified at 35-A M.R.S. § 3147(2), requires the Commission to initiate a proceeding by November 1, 2022, and every five years thereafter, to identify the priorities to be addressed in filings by the utilities regarding a grid plan that will assist in the cost-effective transition to a clean, affordable, and reliable electric grid. The Act defines the grid plan as a 10-year integrated grid plan designed to improve system reliability and resiliency and enable the cost-effective achievement of the State's GHG reduction obligations and climate policies. 35-A M.R.S. § 3147(1)(C).

The Act specifies that the Commission is required to hold technical conferences or stakeholder workshops to identify priorities, assumptions, goals, methods, and tools that will assist the utilities in developing the grid plans. Upon conclusion of the technical conferences and/or stakeholder workshops, the Commission must issue an order directing the utilities to submit a filing within 18 months of the issuance of the order that addresses the identified priorities. The Act further requires that the grid plans include certain specific information outlined in 35-A M.R.S. § 3147(4). For example, the grid plans must "assess the electric system of the covered utility and its relationship to the regional grid." The information required by subsection 4 is contained in Attachment A.

B. Goals of Integrated Grid Planning and Jurisdictional Issues

1. Integrated Grid Planning

Throughout this proceeding, stakeholders commented on the potential benefits of integrated grid planning (IGP). The benefits include: enabling a more accessible and transparent planning process; engaging in holistic long-term planning; prioritizing and targeting investments; providing information to the Commission and stakeholders to understand the utilities' near and long-term distribution system plans and costs and value to ratepayers from those investments; and ensuring that the utilities are investing in the grid Maine will need for the future while keeping rates affordable.

2. Jurisdiction

In addition to the specific statutory language contained in the Act pertaining to IGP, the Commission is charged by statute "to ensure safe, reasonable and adequate service, to assist in minimizing the cost of energy available to the State's consumers, to ensure that the rates of public utilities subject to rate regulation are

costs or emissions, including carbon emissions. 35-A M.R.S. § 10102(3-A).

just and reasonable to customers and public utilities and to reduce greenhouse gas emissions to meet the greenhouse gas emissions reduction levels set forth in Title 38, section 576-A.” 35-A M.R.S. § 101. Also “[i]n executing its duties, powers and regulatory functions under [Title35-A], the commission, while ensuring system reliability and resource adequacy, shall facilitate the achievement by the State of the greenhouse gas emissions reduction levels set forth in Title 38, section 576-A.” 35-A M.R.S. § 103-A.

Although the Commission has relatively broad jurisdiction, it does not have jurisdiction over energy generation or electric transmission rates. Further, with limited exceptions, Maine’s investor-owned electric transmission and distribution utilities are prohibited from owning, having a financial interest in, or otherwise controlling generation or generation related assets. 35-A M.R.S. § 3502(4). With these jurisdictional limitations in mind, this grid planning effort is focused on distribution grid planning.

Moreover, the Commission emphasizes that the costs of investments that may result from IGP have not been evaluated at this time. The appropriate time to evaluate the costs of investments associated with the grid plans is when those costs are known and a utility seeks to recover those costs in either distribution or transmission rates. Thus, in establishing the priorities for IGP, the Commission strives to provide utilities and stakeholders guidance with respect to potential near and long-term investments. It is important to emphasize, however, that the Commission’s work in this docket, and the issuance of this Order, does not constitute pre-approval of cost recovery of utility investments. This Order also does not address the prudence of utility investments or how those investments are implemented.

Affordability is a key component of the transition to a clean and reliable grid. If electricity is not affordable, consumers will be reluctant to adopt beneficial electrification technologies, e.g. heat pumps and EVs. The Commission seeks to balance the often competing goals of a clean, reliable electric grid with affordable electric rates. However, the costs of any particular investment and its effect on rates are often challenging to quantify until a project is fully scoped and budgeted. More often costs and benefits are not known with precision until the investment is completed and put in service to ratepayers. As utilities, with input from stakeholders, develop the grid plans, both the costs and benefits of implementing those plans should be carefully considered.

C. Process

On September 12, 2022, the Commission initiated an inquiry⁴ into the process to identify the priorities to be addressed in the utilities’ grid plans (the

⁴ *Maine Public Utilities Commission Inquiry Into the Process to Identify Priorities for Grid Plan Filings*, Docket No. 2022-00290.

Inquiry). The Commission sought to encourage participation, especially by those stakeholders that do not frequently participate in Commission proceedings. On November 1, 2022, the Commission opened this proceeding,⁵ and on January 6, 2023, the Commission Staff issued a procedural order establishing the initial process, noting that it incorporated many suggestions from the Inquiry commenters, and setting the Commission's goal to have a transparent and robust process that is collaborative and accessible to all interested stakeholders.

The Commission took many steps to ensure stakeholder engagement. The Commission engaged an expert consultant, Electric Power Engineers (EPE),⁶ to facilitate the meetings and provide technical engineering support.⁷ The Commission created a direct link to the docket on its homepage under "Recent Orders and Cases of Note" to make information in the docket easily accessible to individuals not familiar with the Commission's online case management system and conducted outreach efforts to identify interested stakeholders, including environmental justice and equity groups, who may not regularly participate in Commission proceedings. In addition, the Commission contacted Maine's tribal representatives, municipal contacts, the Chamber of Commerce, and the National Association of Nonprofits. Finally, the Commission had discussions with ISO-New England regarding this docket and met with representatives of the United States Department of Energy (U.S. DOE) and Lawrence Berkeley National Laboratory (Berkeley Lab). In these meetings, Staff discussed the work that the U.S. DOE and Berkeley Lab have done on IGP in other states and the potential for additional technical or other assistance that they could provide to the Commission in this effort.

The Commission held 13 meetings and workshops with stakeholders and solicited input on several topics through written comments. The stakeholder notification list in the docket contains approximately 100 people and many of the stakeholder workshops have been attended by more than 50 people, including Commission Staff and Commissioners. The Commission and stakeholders initially received presentations over the course of three stakeholder meetings from:

- The utilities regarding their current grid planning processes;
- the Efficiency Maine Trust (Trust) related to its Triennial Plan⁸ and EV adoption;

⁵ *Maine Public Utilities Commission Proceeding To Identify Priorities for Grid Plan Filings*, Docket No. 2022-00322.

⁶ <https://epeconsulting.com/>

⁷ Many commenters recommended that the Commission hire a facilitator and EPE had recently done extensive work related to Maine's distribution system.

⁸ The Trust is the independent, quasi-state agency established to plan and implement energy efficiency programs in Maine and the Triennial Plan describes the Trust's programs over a specific three-year period.

- EPE regarding its “roadmap reports,” which provided recommendations for preparing Maine’s distribution system for the needs of the future;⁹
- The Governor’s Energy Office (GEO) regarding the Governor’s energy initiatives that may impact or relate to the grid planning process and the State’s climate goals as they relate to the electric grid;
- the Maine Utility/Regulatory Reform and Decarbonization Initiative (MURRDI) regarding its recommendations on how to plan, build, and operate the electric grid that is needed to meet Maine’s climate and energy requirements;
- Berkeley Lab on IGP efforts across the country; and
- Portland General Electric on the IGP process in Oregon.

A panel discussion with the Office of the Public Advocate (OPA), the Trust, the GEO, and the utilities on potential topics for a deeper stakeholder discussion led to the creation of technical working groups related to: (1) forecasting; (2) solutions evaluation criteria; and (3) data availability/collection. The Commission held three workshop meetings and sought comment from stakeholders by September 1, 2023 (September comments) regarding potential priorities and other topics discussed in the stakeholder and technical workshop meetings and issued various information requests.

The Commission and its consultant prepared a straw proposal and on November 13, 2023, and December 21, 2023, issued an outline of expected content for the grid plan filings (the Outline) and a series of memos outlining issues for further stakeholder feedback. The memos focused on topics related to: (1) EEEJ impacts; (2) forecasting and scenario planning; (3) hosting capacity maps; (4) solutions evaluation; (5) a potential future stakeholder engagement process; and (6) IGP priorities. The Commission held seven additional workshops with stakeholders on these topics between November 21, 2023, and January 12, 2024. The

⁹ A prior Commission proceeding (the Grid Modernization Case) involved a comprehensive examination of the design and operation of the electric distribution system in Maine to accommodate the increasing integration and operation of DER and the potential for a substantial increase in load resulting from climate change policies and initiatives that seek to encourage electrification in the heating and transportation sectors. EPE completed its work in three phases, culminating in the following reports: (1) the Distribution System Examinations; (2) the Gap Analysis, which identified gaps between the current state of the distribution system and the needs or desired system of the future; and (3) the roadmap reports. *Maine Public Utilities Commission Investigation of the Design and Operation of Maine’s Electric Distribution System*, Docket No. 2021-00039.

Commission solicited stakeholder comments on all issues discussed by January 31, 2024 (January comments). The Commission received written comments from: Peter Evans, New Power Technologies; AARP Maine; OPA; Versant Power (Versant); Acadia Center, Conservation Law Foundation, Maine Climate Action Now, Maine Conservation Voters, Natural Resources Council of Maine, Sierra Club, and the Union of Concerned Scientists (Joint Commenters); Central Maine Power Company (CMP); A Climate to Thrive (ACTT), the Trust; Coalition for Community Solar Access (CCSA); Onward Energy; Greg Robie; the Island Institute; Edgeli, Inc. (Edgeli), GEO and the Maine Distributed Generation Interconnection Working Group (DG Interconnection Working Group).¹⁰ A summary of the January comments prepared by EPE is attached as Attachment B.

Upon review of the comments, and the discussions at the stakeholder meetings, the Commission modified the priorities and the Outline, which are discussed below.

III. GRID PLAN FILING REQUIREMENTS

A. Procedural Requirements

1. Grid Plan Filings, Public Comment, and Commission Review

Utilities will file their grid plans within 18 months of the date of this Order, *i.e.* by January 12, 2026. Pursuant to the Act, upon receipt of the filings by the utilities, the Commission will make those filings available for public comment for a period of no less than 60 days. The Act provides the Commission with the authority to order a utility to revise its filing to address any deficiencies. The Commission interprets “deficiencies” to mean any material failures of the plans to meet the substantive requirements of this Order, including the Outline, Attachment C, which describes the minimum content of the grid plans, and 35-A M.R.S. § 3147. As set forth above, neither this Order nor the Commission’s future review of the plans constitute a prudency determination of any proposed investments and operations described in the grid plans. Review of proposed investments and cost recovery will occur in separate Commission proceedings, such as rate cases and transmission project

¹⁰ The comments were submitted by Great Plains Institute (GPI), the third-party facilitator for the DG Interconnection Working Group, established in accordance with Docket No. 2021-00035, which identifies barriers and potential solutions for interconnecting DER in Maine. *See Maine Public Utilities Commission Maine Renewable Energy Association and Coalition for Community Solar Access Request For Commission Investigation Into Interconnection Practices Pertaining to Central Maine Power*, Docket No. 2021-00035. GPI submitted the comments on behalf of the working group which included CMP, Versant, CCSA, Novel Energy Solutions, BlueWave Solar, GEO; and New Leaf Energy. GPI noted that suggestions in the comments should not be interpreted as being universally supported by all members of the working group.

approval proceedings.¹¹

2. Stakeholder Engagement

Although not required by Section 3147, there has been discussion in this proceeding about having the Commission establish specific stakeholder engagement or input opportunities during the 18-month period in which the utilities are developing their grid plans. Berkeley Lab noted during its presentation that stakeholder engagement, although varied among states, can provide a venue for an open discussion, improve the quality of proceedings and their outcomes, develop solutions with broad support, and build trust among parties. The Commission sought stakeholder comment on the appropriate balance of such a stakeholder process taking time constraints and resources into account and whether it would make sense, for example, to have stakeholder meetings at the following milestones: (1) when the utilities have the inputs to run the models, (2) when the needs assessment is complete, and (3) when potential solutions have been identified. The Commission also sought information on what stakeholder engagement the utilities envisioned during the 18-month period including whether they intend to have dedicated IGP websites, and document both stakeholder feedback, and how that feedback may impact the grid plans.

a. Stakeholder Meetings

Some stakeholders supported the utilities documenting stakeholder input received during the 18-month period and whether it was or was not incorporated into the grid plans and why.

The OPA commented that the utilities' foundational data on the communities they serve and the feedback contained in this docket can provide the initial input for developing the grid plans. The OPA recommended at least two stakeholder meetings during the 18-month period, but stated that the initial grid plans should not be delayed while more expansive community engagement opportunities are

¹¹ This is consistent with other states' work in IGP (see, e.g., *Minnesota Public Utilities Commission, In the Matter of Distribution System Planning for Xcel Energy*, Docket No. E-002/CI-18-251, Order Approving Integrated Distribution Planning Filing Requirements for Xcel Energy (Aug. 30, 2018) (Minnesota Order), *Minnesota Integrated Distribution Planning Filing Requirements at 1* ("Commission review of annual distribution system plans are not meant to preclude flexibility for [the utility] to respond to dynamic changes and on-going necessary system improvements to the distribution system; nor is it a prudency determination of any proposed system modifications or investments."); *Public Utilities Commission of Oregon, Consideration for Adoption of Staff Proposed Guidelines for Distribution System Planning*, Docket No. 20-485, Order at 10 (Dec 23, 2020) (Oregon Order) ("[A] 'acceptance' means the Commission finds that the Plan meets the criteria and requirements of these Guidelines and does not constitute a determination on the prudency of any individual actions discussed in the plan.")

implemented. The OPA noted that more extensive stakeholder engagement protocols can be incorporated into subsequent grid plans. The OPA also suggested that tying meetings to specific milestones runs the risk of delaying input and recommended utilities make significant milestone data publicly available as it is developed.

AARP Maine recommended the Commission allow the utilities to conduct their planning and public engagement processes in a manner that reflects utility specific needs and assessments. AARP Maine observed that once the utilities submit their required grid plans, additional public review and comment will occur.

The Joint Commenters and ACTT recommended the Commission incorporate a robust process during the 18-month period to incorporate input and feedback. The Joint Commenters recommended public education sessions at regular intervals for utilities to share information and suggested that both the utilities and the Commission consider, at a minimum, creating a website to share resources on IGP and consider a process to respond to public input. The Joint Commenters and ACTT also suggested that the Commission include detailed requirements for tribal stakeholder engagement for Versant.

CMP agreed with the Commission Staff's suggestion that stakeholder meetings occur following the completion of the major study milestones outlined above. CMP stated this was appropriate to formally establish as part of this process but noted it intends to do more. CMP stated that it envisions holding in person and virtual online community forums to provide information and solicit feedback from the public and that these forums would have a specific focus on establishing a dialogue with disadvantaged communities and community groups. CMP commented it plans to solicit feedback from communities about their priorities and objectives. For example, local emergency response procedures could help prioritize investments that would improve safety and resilience in extreme weather events. CMP also plans on convening a working group of technical stakeholders, including environmental non-governmental organizations, government agencies, quasi-governmental organizations, trade associations, and others, to provide feedback and inform the technical aspects of the IGP process. CMP plans to share feedback received during the community forums and provide updates on the IGP process to the working group and receive feedback from the working group on the process. CMP further stated that at the conclusion of the 18-month planning window and the 60-day public comment period, it intends to continue community engagement efforts and provide updated information on needs and potential solutions as more data becomes available and solutions become further refined.

Both CMP and Versant stated their plans for developing web pages for outreach. CMP stated it plans to develop a web page aggregating information and reports related to IGP, which would include information regarding upcoming stakeholder engagement opportunities, current and previous grid plans, documentation and meeting minutes from prior stakeholder engagement events, and

contact information for submitting comments. Versant similarly stated that it intends to hold stakeholder meetings and technical workshops, provide IGP information, progress reports, and opportunities for comment through a website and ongoing public communications and engagement during IGP implementation.

b. Advisory Group

The Joint Commenters recommended establishing a technical advisory group consisting of industry expert volunteers to meet regularly over the 18-month planning period which could provide independent peer review of planning methodologies, tools, and modeling results throughout the process. They state that while such a group could be facilitated by the utilities, the Commission should set clear protocols for participation. They noted topics such as grid needs assessments and solutions development would be scheduled at relevant decision points to allow input to be incorporated into the planning work and analysis. The GEO also suggested an advisory group be convened to discuss the evolving grid plans, ensure priorities are incorporated, and facilitate public engagement which could elevate concerns to the Commission for resolution. The GEO further recommended that the group include an independent technical expert that would review final models that inform the grid plans.

CMP commented that independent technical review would not be reasonable to require within the 18-month planning period. CMP stated that the 18-month period for a study of this magnitude will be challenging on its own and that requiring study assumptions and models also be reviewed and approved by a third party could have a severe negative impact on the schedule. CMP also stated that independent third-party review of solutions is more appropriate for consideration of formal project proposals that are accompanied by sufficient data and analysis. With respect to some stakeholder suggestions for independent technical expert review of the planning models, CMP commented that it may be advantageous for the utilities to document and share for comment their modeling data and study scope prior to the initiation of the 18-month period to maximize the opportunity to achieve stakeholder consensus while improving the efficiency of the study process during the 18-month period.

c. Decision

During the 18-month development of the grid plans, the utilities must hold at least three meetings with stakeholders to obtain input and ensure a range of stakeholder perspectives are heard and considered. The three stakeholder meetings shall occur at these milestones: (1) when the utilities have the inputs to run the models, (2) when the needs assessment is complete and (3) when potential solutions have been identified. Based on discussions with stakeholders and the comments, the Commission finds that these are key steps in the process where stakeholder engagement can influence the filed plans. The utilities must also document all stakeholder input received during the utility led stakeholder process, including tribal and EEEJ input, in their grid plans and document whether the feedback was

incorporated, and if not, why it was not. The Commission does not require the formation of an Advisory Group recommended by some stakeholders. The utilities have a significant task ahead of them during the 18-month period. The Commission concludes that additional process might delay the initial grid plans. The Commission believes the utilities require flexibility in developing their initial plans. The Commission appreciates and approves of the plan by both utilities to hold technical working group meetings with stakeholders as part of this process.

In short, after the issuance of this Order, the grid-planning process will be led by the utilities without direct involvement by the Commission. This approach is consistent with the IGP processes occurring in other states. Nevertheless, the Commission will be reviewing the grid plans, stakeholder comments on the plans, and after that review will, if necessary, order the utilities to address any deficiencies in the grid plans. Further, as many of the investments will come to the Commission for approval through various adjudicatory proceedings, such as rate cases, it is important for the Commission and its Staff to maintain appropriate distance in the planning process to ensure impartiality in any future adjudicatory proceedings.

B. Substantive Requirements

1. Grid Plan Priorities

a. Background

To meet the requirements of Section 3147 to identify the priorities to be addressed in the grid plans filed by the utilities, the Commission sought comment from stakeholders on the priorities at workshop meetings and through written comments. In issuing its proposed priorities on December 21, 2023, Staff referred to the presentation received from Berkeley Lab regarding IGP work done in other states. Berkeley Lab explained that:

- States set goals, objectives, and priorities that define long-term, high-level outcomes for grid planning and steps to achieve them;
- These include traditional regulatory aims (e.g., safety, reliability, and affordability) as well as newer policy goals (e.g. transportation electrification, more renewable resources, and GHG emissions reductions) and related outcomes such as greater asset utilization and improved integration and utilization of DERs; and
- Common and overlapping themes from 20 other states and the District of Columbia include:
 - Improve grid reliability and resilience;
 - Increase customer choice and engagement in energy services;

- Support DER integration and utilization for grid services;
- Reduce GHG emissions and support the clean energy transition; and
- Accelerate deployment of new technologies and services to optimize grid performance and minimize electricity system costs.

Many stakeholders in this proceeding pointed to the Minnesota Order as an example that could help guide the Commission in this proceeding. The Minnesota Order established the following planning objectives:

- Maintain and enhance the safety, security, reliability, and resilience of the electricity grid at fair and reasonable costs, consistent with the state's energy policies;
- Enable greater customer engagement, empowerment, and options for energy services;
- Move toward the creation of efficient, cost-effective, accessible grid platforms for new products and services, with opportunities for adoption of new distributed technologies;
- Ensure optimized use of electricity grid assets and resources to minimize total system costs; and
- Provide the Commission with the information necessary to understand [the utility's] short-term and long-term distribution system plans, the costs and benefits of specific investments, and a comprehensive analysis of ratepayer cost and value.

Minnesota Order, Minnesota Integrated Distribution Planning Requirements at 1.

Themes in the September comments regarding potential priorities in this docket include:

- Reliability at an affordable cost;
- Near-term foundational information technology (IT) and data system investments/technologies that could unlock potential solutions, such as rate design, shifting load off peak, and automation and switching schemes, which would help manage costs and lessen the need for more traditional investments; and
- Increasing data granularity and advancing the shift to time-series analysis/planning.

Based on the September comments and discussions at the prior stakeholder workshops, Staff outlined the following potential priorities for further

discussion with stakeholders and potential steps or actions to achieve those priorities, noting that Section 3147 requires the grid plan filings identify cost-effective near-term grid investments and operations needed to achieve the identified priorities. 35-A M.R.S. § 3147(4)(D)(6).

Priority 1: Reliability and resilience improvements while keeping costs affordable and facilitating the achievement of the State's climate action and GHG emission reduction policies:

- Make investments that cost-effectively maintain or improve reliability;
- Reduce barriers to promote cost-effective NWA solutions and identify any process improvements/efficiencies; and
- Build climate adaptation into the investment solution mix.

Priority 2: Improve data quality and integrity to maximize its use in distribution system planning:

- Leverage investments in AMI;
- Improve mapping of the distribution system and develop a governance policy or protocols for maintaining the integrity of the data on an ongoing basis;
- Move towards time-series planning models; and
- Enhance hosting capacity maps to benefit stakeholder decision making by standardizing them across utilities.

Priority 3: Promote flexible management of consumers' resources and energy consumption as a cost-effective tool in the safe, reliable, clean operation of the grid:

- Improve forecasting EV load, DER adoption, and climate parameters;
- Utilize DERs to enable load flexibility and resilience;
- Technologies or programs to shift load from system peak to reduce Maine's share of the RNS charge; and
- Rate design options to promote affordable adoption of EVs.

b. Comments

Stakeholders generally agreed on the priorities. For example, the OPA stated that it largely supported the proposed priorities because they capture the importance of combining traditional reliability investments with advanced technology and innovation to meet climate change and related goals. The Trust, the Island Institute, and CCSA largely agreed with the proposed priorities. CMP stated that the priorities were appropriate and reasonable and noted that the way the priorities are structured – with an overarching objective (priority) accompanied by potential actions to advance the priority -- is well suited to the grid plan envisioned by CMP (*i.e.*, a roadmap to Maine’s climate and decarbonization goals).

AARP Maine urged the Commission to set high level objectives and commented that the primary principles that should guide the utility grid plans include affordability; development of improved and more granular data on grid operations and customer purchases and usage profiles; and the identification of cost effective and targeted grid investments that reflect real time data and evaluation of integrated solutions that reflect price responsive programs as well as traditional infrastructure.

The Joint Commenters generally recommended more specificity, mainly in the potential ways to achieve the identified priorities. Some stakeholders, including the Joint Commenters, also recommended that the shift to time-series data and analysis be a priority.

The main themes of the comments are outlined below.

i. Reliability and Resiliency Improvements/Keeping Costs Affordable/Facilitating Achievement of the State’s Climate Action and GHG Emission Reduction Policies

Several stakeholders commented on affordability and exploring the use of federal and State funds when possible. The OPA, in its September comments, stated that reliability at an affordable cost is a top priority for grid planning. Later, in its January comments, the OPA noted that accelerating distribution level investments to meet both traditional reliability needs and grid modernization requirements is straining ratepayer ability to absorb rising costs. AARP Maine urged the Commission to focus on the obligation to ensure that the operations and investments in the distribution grid emphasize the need to reliably serve customers at an affordable cost and stated that while Maine’s climate change goals should be clearly identified and linked to proposed grid investments, the allocation of those costs must consider the affordability for essential electric service. During the priorities workshop, Industrial Energy Consumer Group (IECG) also questioned whether costs or minimizing the cost of electricity to consumers could be an overarching priority noting that affordability or cost-effectiveness appeared in the first and third proposed priorities.

AARP Maine commented that it may be possible to achieve some goals and needed investments with general fund taxes (State or federal) and federal infrastructure dollars and that it would support the obligation to explore and rely on those resources where available. For example, AARP Maine suggested in its September comments that utilities should be required to demonstrate they have applied to the U.S. DOE for loans and grants for eligible programs to keep rate impacts to a minimum. The OPA in its September comments also stated that the utilities are not required on their own to meet all State policy objectives and that some of these can be met through federal and State funding programs. The Joint Commenters also recommended that when evaluating solutions, the utilities should clearly explain how federal funds may impact or offset proposed investments that would have otherwise been borne by ratepayers.

The GEO commented that effective IGP must be a powerful tool to ensure affordable, reliable electric service for all Maine households and businesses as technological advances, economic changes, and policy objectives drive significant transformation across the energy landscape. The Joint Commenters urged the Commission to view IGP as a critical tool for vetting and carefully staging utility investments and to use this process to bring to light information and perspectives that can assist the Commission in this and other proceedings, stating that IGP can help build the equitable, participatory, and affordable grid that Maine needs for a decarbonized future.

CMP noted that affordability must always be a key consideration when developing its investment plan and that it expects one of the major challenges of Maine's energy transition will be ensuring that electricity is not pushed out of reach of disadvantaged or vulnerable populations. CMP stated that while it will be a challenge to cost-effectively balance near-term reliability needs with longer term electrification driven needs, a key objective of the grid plan will be to highlight opportunities for multi-value projects and right-sizing that can enhance the overall efficiency of the grid plan. CMP emphasized that one of the key tools available to it is to ensure solutions in the grid plans are designed and prioritized as cost-effectively as possible.

The Joint Commenters commented that the first proposed priority aligns too closely with the fundamental obligations of the utilities to offer additional guidance and recommended that the priority be more specific and actionable. They suggested that the first priority focus on how the utilities should achieve competing objectives of reliability and resilience improvements while keeping costs affordable and facilitating the achievement of the State's climate action and GHG emission reduction policies. They suggested for example that the priority could be to control ratepayer costs while balancing reliability, resilience, and GHG reduction requirements through:

- (1) Improved deployment of NWA by implementing process efficiencies, standardizing data quality and filing requirements, and improving transparency and participation. (For example, this could be measured by

- number of completed projects, ratepayer savings, or number of third-party participants in selected NWA projects);
- (2) Deriving system benefits from the utilization of DERs or third-party and customer-cited resources (in the form of avoided distribution system upgrades, reliability benefits, avoided transmission costs, shifted loads);
 - (3) Load shifting through rates to delay, defray, or reduce investments in utility infrastructure. (This could be measured by peak load reduction, load shifted and shaped); and
 - (4) Other areas of focus for the next 5-10 year periods.

ii. Improving Data Quality

Many commenters discussed the importance of improving data quality and, more specifically, moving toward time-series analysis. The Joint Commenters stated that, while there has been consensus that this shift is a necessary evolution in distribution system operations and planning, there has been less agreement on how and when this shift should happen. The Joint Commenters and Mr. Evans recommended that improving data quality be a priority. The Trust commented that if there were room for improvement in the proposed priorities, it would be to elevate the shift to system planning based on time series analysis to an organizing principle.

The Trust states that this transition is essential to the design and operation of a grid that can grow to meet customer demand for electrified heating and transportation at the least cost. However, the Trust also noted that this shift is a substantial undertaking, requiring significant investments and affecting many levels of utility operations. Mr. Evans commented that considering different time series profiles of renewable generation and beneficial electrification loads in identifying grid needs captures the most limiting conditions while avoiding overbuilding and asserts that this shift can be implemented right away, at least in some form. The Joint Commenters stated that challenges or priorities identified in this proceeding, such as reliability, resilience, cost control, interconnection, NWA, demand flexibility, DER utilization and equity-centered grid solution will all be better served by having a more granular understanding of dynamic conditions across the system and internalizing that information into utility practices. The Joint Commenters stated that the Commission can help force this difficult issue and require the utilities to begin to develop a roadmap to guide this complex transition in planning and operations.

CMP commented that it views access to high quality and granular data as a critical factor in expanding its system planning capabilities to meet the requirements of a modernized, dynamic, and flexible grid. CMP noted that it has already implemented some of the foundational technologies and capabilities to achieve this (e.g., AMI, geographic information system (GIS) enhancements) and that the grid plan will be a good opportunity for CMP to outline additional investments that will advance the priority to improve data quality. CMP earlier explained that increasing AMI data utilization and functionality is a prerequisite to performing time-series

studies. This includes building integration capabilities between AMI and CMP's distribution planning software platform, CYME, as well as enabling data quality controls. CMP stated that it plans to integrate AMI with CYME in a two- to three-year timeframe and that it will also need to transition to performing time-series utilizing the "Steady State Analysis with Load Profiles" module in CYME. CMP stated that these are critical steps to improving model quality and enabling time-series based studies. CMP's September comments also noted that the EPE Roadmap report stated:

Time-series analysis is still in the relatively early stages of adoption (outside of demonstration analyses or for specific, less common use cases) and has not been widely utilized in the industry at scale. Consequently, a three to five year adoption timeline is reasonable in order to capture lessons-learned, and develop the foundational tools, engineering capabilities, and standards.

CMP Comments at 4 (Sept. 1, 2023); see also EPE CMP Roadmap Report at 19, EPE Versant Roadmap Report at 22.

The utilities also stated that they believe it would be beneficial to have a targeted approach to employing time-series planning. CMP commented that most of the value will be in evaluating circuits that have very high penetrations of DER or in parts of the system where dynamic mitigation strategies, such as energy storage, active demand response, or distributed energy resource management systems (DERMS) are contemplated as an alternative to a passive upgrade such as a transformer replacement. CMP stated that in the near term, it will continue to explore AMI functionality and determine costs associated with this implementation. CMP further stated that it will explore use cases, applications and tools used for time-series planning, as well as targeted pilot studies to develop expertise on this issue.

Versant similarly commented that time-series analysis may require new tools and modeling techniques and that utilities in other states have developed approaches that leverage existing tools to focus analyses on critical periods or conditions. Versant noted that the industry is still evaluating new tools that could be used to process time-series data and conduct analyses that account for forecast uncertainty and joint optimization. Versant stated that it plans to implement methodologies for time-series analysis over the next five years. Versant also noted that other states have narrowed the scope of time-series planning to focus on the conditions that will likely reveal grid needs, which reduces the time and associated cost of time-series data collection, processing, and analysis. Versant stated that it anticipates proposing a combination of granular (*e.g.*, hourly) data for load, renewables, and distributed generation to evaluate grid needs on its transmission and distribution systems and that this data could be obtained from supervisory control and data acquisition (SCADA), photovoltaic (PV) systems, EV chargers, and smart meters and be used to develop time-series profiles for hourly, daily or seasonal conditions.

The Trust and the Joint Commenters encouraged the Commission to direct the utilities to address various issues related to time-series planning in their grid plan filings. These commenters suggested the grid plans include, for example, updates to planning standards required to transition; hardware and software upgrades necessary to integrate time-series data into the planning and modeling of projects; updates to systems and equipment necessary for operations centers; and necessary training and changes to interconnection procedures. Mr. Evans also commented that the Commission should provide direction to the utilities to adopt time-series planning now. Mr. Evans agreed with suggestions that this could begin with snapshots of selected hourly cases representing conditions of interest and could be targeted to certain distribution feeders initially. He also agreed that feeder-level load data could be obtained from SCADA and where feeders lack hourly load data, line sensors can be installed quickly and at low cost.

The OPA commented that investments to address the lack of time-series load data is a priority, stating solutions with both reliability and modernization improvements are derived from high quality data and will reduce rate impacts for consumers. Possible solutions cited by the OPA include engaging customers with storage to discharge during system peak, and customers with responsive load reducing demand for peak reduction in times of need. The OPA stated that investments to improve data quality will support these joint solutions and that the grid plans can include a timeline for meeting these advanced levels of interaction between customers, providers, and utilities. Onward Energy's comments also included the need for cooperation and sharing more detailed information on potential system needs.

iii. Flexible Management of Consumers' Resources and Energy Consumption

CMP stated that it embraces and encourages increased customer awareness and empowerment when it comes to managing customers' energy use and that programs and technologies can be designed/implemented that can create both statewide and customer specific benefits in a cost-effective manner. CMP states that the grid plan is an appropriate means of discussing the potential ways that the management of customer resources and energy consumption can be implemented and that it envisions this to consist of a review of feasible programs and how such programs can be designed in a way that maintains or improves system reliability and supports achievement of state objectives.

The Island Institute suggested adding language that specifically identifies customer choice and customer engagement in energy services and supported the other proposed priorities.

AARP Maine supported grid planning technologies that will identify where increased usage associated with electrification trends will require investments and programs, including rate designs, particularly those that will provide incentives to

use electricity at lower cost times of day, and NWAs to either avoid unnecessary capital expenditures or limit their costs so as to target grid investments only where necessary or when other non-traditional options are not cost effective. AARP further stated that research has consistently documented that incentive-based rate options and demand response programs result in a higher level of peak load reduction and customer satisfaction than more traditional time-of-use rates.

The Joint Commenters strongly supported demand flexibility incorporated in the third proposed priority and supported comments made by other stakeholders at the priorities workshop that the potential ways to achieve the priority were too detailed and directive at this stage and needed to be higher level. In addition, stakeholders commented that given the complexity of rate design it was not a great fit for IGP, was not limited to promoting adoption of EVs, and that some of this could be reframed.

CCSA and the DG Interconnection Working Group focused on how DERs can be safely, reliably, and affordably interconnected in Maine as the State pursues grid planning more broadly. CCSA commented that proactive planning helps ensure that the grid can accommodate DERs in a way to maintain grid stability and reliability and improves affordability by allowing utilities to make informed decisions about where to invest in grid infrastructure in a least-cost manner.

c. Decision

i. Reliability and Resiliency Improvements/Keeping Costs Affordable/Facilitating Achievement of the State's Climate Action and GHG Emission Reduction Policies

Part of the challenge of the clean energy transition is finding the appropriate balance between necessary reliability and resilience improvements and keeping costs manageable for ratepayers while facilitating the achievement of the State's climate action and GHG emission reduction policies. The Joint Commenters' comments and this priority are both attempting to get at this issue. Concerns about reliability, cost and climate are increasingly front of mind for customers. As the GEO noted in its January comments, Maine recently endured significant extreme weather events and effective IGP must enable increased resilience and reliability in the face of these growing challenges. The Commission further believes that most of the Joint Commenters' suggestions in terms of potential actions to achieve this priority are already captured in the potential actions outlined in this priority (e.g., process efficiencies to improve deployment of NWAs and load shifting through rates).

Stakeholders discussed cost concerns at length as well as whether affordability or minimizing the cost of electricity should be an additional priority. The Commission's statutory charge includes assisting in minimizing the cost of energy available to the State's consumers, ensuring that rates are just and reasonable to customers and public utilities, and reducing GHG emissions. Therefore, keeping

costs affordable and facilitating the achievement of the State's climate action and GHG emission reduction policies are overarching principles that apply to all the priorities. On this point, the Commission agrees that the grid plans must include representations from the utilities regarding their efforts to seek alternative sources of funding, such as U.S. DOE loans and grants, to reduce ratepayer impacts. This is reflected in the Outline (see Section 5(b)).¹²

ii. Improving Data Quality

With respect to the second priority of improving data quality, the lack of time-series load data was an identified gap in EPE's roadmap reports and, as a number of stakeholders noted, this is a substantial undertaking requiring significant investments and affecting many levels of utility operations. In addition, at present time-series data is not a standard industry practice. The Commission agrees with the Joint Commenters that the utilities should begin developing a roadmap in the grid plans for the transition to time series planning. In the Commission's view, it is appropriate to focus on the foundational investments and steps to make this shift in the initial grid plans. As discussed above, the utilities have taken initial steps in implementing some of the foundational technologies and capabilities needed to achieve this transition. The grid plans present an opportunity for the utilities to further describe proposed investments to achieve this transition.

The Commission agrees with the Trust and Joint Commenters' suggestion to direct the utilities to present information in their initial grid plans on the following: updates to planning standards required for this transition; hardware and software upgrades necessary to integrate time series data into the planning and modeling of projects; updates to systems and equipment necessary for operations centers; and, necessary training and changes to interconnection procedures. The utilities are directed to include a narrative and a proposed roadmap, identifying the near-term actions and investments, timeframes and costs needed to make this shift to time series analysis.¹³

The Commission understands that this may not go as far as some

¹² The Commission notes that it is receiving information on the utility efforts to obtain federal funding in another docket. See *Maine Public Utilities Commission Inquiry Regarding Utility Progress in Securing Federal Funding for the Benefit of Ratepayers*, Docket No. 2023-00157. The Commission agrees, however, that it is important for the utilities to include information relating to their efforts to obtain alternative funding in their grid plans.

¹³ With respect to CMP's statement that in the near term it will continue to explore AMI functionality and determine costs associated with this implementation and explore use cases, applications and tools used for time-series planning as well as targeted pilot studies to develop expertise on this issue, the Commission looks forward to seeing the results from these types of efforts in the grid plans.

stakeholders would like but the Commission seeks to provide some flexibility to the utilities in developing their initial grid plans. The Commission is also mindful that this is an ongoing and evolving process. The Commission is conducting these proceedings every five years and building upon the priorities and content requirements established in this docket and lessons learned in developing the initial grid plans. The Commission will continue to work with stakeholders and the utilities to further develop the priorities and other content for future grid plans.

iii. Flexible Management of Consumers' Resources and Energy Consumption

With respect to the third priority, the Commission modifies the potential actions to achieve this priority based on stakeholder comments that they, as proposed, were too detailed and directive for this stage of IGP and needed to be at a higher level. For example, with respect to rate design, a number of stakeholders stated that given the complexity of rate design it is not a great fit for IGP or should be viewed at a high level as a tool for potentially unlocking solutions. As a result, the Commission removed the rate design bullet as a potential action to achieve this priority. The Commission notes that the grid plans will include information regarding emerging rate design concepts being considered for pilot projects (see Outline Section 6(b)) and rate design issues are being explored in other Commission proceedings. Stakeholders also suggested that potential actions to achieve this priority better reflect the roles of the utilities (*i.e.*, Maine is a deregulated state and utilities do not own generation). The Commission modified the potential action in this priority to better reflect the utilities' role in terms of supporting integration of DERs. The Island Institute also suggested adding customer choice and customer engagement in energy services to this priority. Customer choice, engagement, and empowerment are captured in the existing priority. The Commission also agrees with stakeholder comments regarding the importance of shifting load from system peak, which can minimize the need for infrastructure upgrades, and notes that it did not intend to rank the priorities in any particular order of importance.

iv. Priorities

As a result, the three priorities to be addressed in the utilities initial grid plan filings, as modified by the discussion above, are outlined below. Keeping costs affordable and facilitating the achievement of the State's climate action and GHG emission reduction policies are overarching principles that apply to all the priorities.

Priority: Reliability and resilience improvements:

- Make investments that cost-effectively maintain or improve reliability;
- Reduce barriers to promote cost-effective NWA solutions and identify any process improvements/efficiencies; and

- Build climate adaptation into the investment solution mix.

Priority: Improve data quality and integrity to maximize its use in distribution system planning:

- Leverage investments in AMI;
- Improve mapping of the distribution system and develop a governance policy or protocols for maintaining the integrity of the data on an ongoing basis;
- Develop initial roadmap for advancing time-series planning models; and
- Enhance hosting capacity maps to benefit stakeholder decision making by standardizing them across utilities.

Priority: Promote flexible management of consumers' resources and energy consumption:

- Improve forecasting EV load, DER adoption, and climate parameters;
- Support integration and utilization of DERs to enable load flexibility and resilience;
- Technologies or programs to shift load from system peak to reduce Maine's share of the RNS charge.

2. Content of the Grid Plans

As discussed above, the Outline lays out the minimum content of the grid plans. There was general agreement or support from stakeholders and the utilities on the Outline, with a number of stakeholders having specific requests for additions. The statute lists several specific components that are required to be included in the plans. 35-A M.R.S. § 3147(4). The Outline further details the expectations related to these statutory requirements.

a. Vision for the Evolving Grid

In this section of their plans the utilities must include their vision over the next 10 years and a discussion of how their grid plans and proposed investments and operations will achieve the priorities identified in this proceeding. The grid plans must include a roadmap of the utility's near-term and long-term proposed investments and operations. They must also include a discussion of how the utility's grid plan, proposed investments, and operations will improve reliability and resiliency; enable the cost-effective achievement of the State's climate policies and GHG emission reduction obligations; and keep costs manageable.

b. System Overview

The utilities must provide baseline information on their current systems, recent investments in those systems and projected investments, and the level of DERs currently integrated into those systems. The Joint Commenters, CCSA, and DG Interconnection Working Group suggested that the utilities include a description of their preliminary cost recovery plans and how regulatory approval will be sought. These suggestions have been added to the Outline (see Outline Section 2(b)). The Commission agrees with Versant that this information should be presented as consistently as possible with the information already provided as part of other regulatory filings.

The Joint Commenters suggested that historical system spending for the past five years in the Outline be increased to 10 years and projected system spending for five years into the future be similarly increased to 10 years noting that the grid plans are 10-year plans. The Commission notes that the Commission's Outline in this respect is similar to other states with 10-year plans. See, e.g., Minnesota Order, Minnesota Integrated Distribution Planning Requirements at 3-4 (requiring historical distribution system spending for the past five years and projected distribution system spending for five years into the future). See also Oregon Order, Distribution System Planning Guideline at 5 (requiring historical spending for the past five years). The five year projected spending timeframe reflects the near-term plan and will have more specificity than later years in terms of potential costs, timelines, etc. in the 10-year planning horizon. The Commission also notes that Section 3147 requires that the grid plans identify cost-effective near-term grid investments and operations needed to achieve the identified priorities in this proceeding. 35-A M.R.S. § 3147(4)(D)(6). Other parts of the Outline reflect the utilities' longer-term vision and plan for the system (5-10 years), which is more speculative and therefore will have less detail.

c. Forecasting and Scenario Development

i. Background

Load forecasting is a crucial part of grid planning, as expectations of how load will change in the future drive investment in the grid. A useful load forecast must include historical trends and the effects of policies that might alter trends, as well as covering a range of potential outcomes.

Historically, Maine utilities have used econometric methods to forecast load growth on the electric distribution system. Maine is pursuing a goal of 100% clean electricity and broad decarbonization by 2040, and achieving these goals is expected to require significant load growth from the widespread electrification of heating and transportation. This will decouple the pace of load growth from economic growth rates, meaning straightforward econometric forecasting approaches will underestimate actual load growth. Shifting the utilities to a more

comprehensive forecast that accounts for increasing electrification is important to ensuring that the future grid is reliable and can support the achievement of the State's climate action and GHG emission reduction policies.

The Act requires that the grid plans include forecasts of projected load, including forecasts of end-use electrification, energy efficiency and DER, and at least two potential planning scenarios, at a minimum, a baseline scenario and a scenario of high-penetration DER and end-use electrification. ISO-New England produces the Capacity, Energy, Loads, and Transmission (CELT) forecast for New England each year, including 10-year state-level forecasts of heating and transport electrification. The CELT also includes a forecast of the growth of DER such as behind-the-meter solar. Because the CELT is a transmission-level forecast, the utilities preparing their grid plans must develop a method to disaggregate the CELT forecast to the level of the distribution system.

ii. Comments

Many stakeholders commented that the planning scenarios should be determined before the 18-month period that utilities will be developing the grid plans and agreed on using the ISO New England's CELT forecasts, although some stakeholders had different views on how to use it.

In soliciting stakeholder input on forecasting issues, Staff noted that the value of considering additional forecast scenarios comes through the identification of grid investments that provide robust benefits across a broad set of circumstances. Staff explained that in its view, exceeding these requirements is justified only if the value of considering additional scenarios exceeds the cost of preparing those scenarios. Staff also noted that the more recent iterations of the CELT forecast reflect accelerated levels of EV adoption from historic growth levels and suggested one approach to forecasting for the grid plans could be to use an older version of the CELT load forecast as a baseline scenario while the most recent CELT forecast could form a basis for the high DER and electrification scenario.

CMP supported this approach stating it would allow utilities to plan and develop conceptual solutions for a scenario that aligns with Maine's clean energy and decarbonization goals while also accounting for a scenario with a slower rate of beneficial electrification. CMP also proposed using snapshots within the scenarios to evaluate the system under "bookend" seasonal and/or time-of-day conditions (e.g., winter peak load, spring daytime minimum load) that represent relative edge cases of credible system conditions. CMP commented that this methodology, based on ISO New England's regional transmission planning methodology, is a well-established industry practice which ensures that the system is robust and flexible enough to withstand a wide array of potential system conditions.

The Joint Commenters do not believe modeling only two scenarios is sufficient, asserting that multiple scenarios would help reveal the varying impacts

over time of factors such as fuel and technology costs, load flexibility, and rate design, which may have an effect on load projections and solution evaluation. CMP stated that including additional scenarios would require that significant additional time and resources be dedicated to building models, analyzing system needs, and developing and evaluating solutions.

The GEO proposed using the Maine Energy Plan: Pathway to 2040 high DER deployment scenario for the high DER forecast which assumes high end-use electrification, high end-use flexibility, high customer-sited resources. The GEO has retained the Brattle Group and Evolved Energy Research to conduct modeling and technical analyses to inform the Governor's planning effort for achieving the use of 100 percent clean energy by 2040. The Commission understands that the study is expected to be released in the near future. The Joint Commenters recommended the baseline scenario be aligned with existing climate and clean energy requirements, which are consistent with the high electrification forecast in the CELT as well as the Pathway to 2040 study assumptions.

The OPA stated that the Commission proposed categories of data for forecasting and scenario development provide a reasonable foundation for grid planning scenarios and noted that principles of rate stability and affordability must be recognized during the transition to beneficial electrification. The GEO also agreed with other stakeholders that the load forecasts utilized must balance actual load growth with longer term projections in order to minimize any unnecessary overbuilding in the short term while preparing for expected grid needs. The Trust also recommended that conservative assumptions be made when incorporating policy goals into the baseline planning scenario and stated that the Maine Climate Council's 2020 Climate Action Plan goals are ambitious, exceeding both regional and national trends, and perhaps better suited to the high penetration scenario.

iii. Decision

Already required for use in planning the bulk transmission system and incorporating the elements required for an integrated grid plan forecast, the CELT forecast is a logical choice to use in the IGP process. Using the CELT ensures that increased electrification will be accounted for, but fluctuations in the CELT's load forecast between vintages demonstrate the uncertainty inherent in forecasting. By considering more than one possible future, this uncertainty can be reduced. Grid planners can identify high-priority investments by finding needs that must be addressed in forecasts that use different input assumptions. In producing the grid plans, the utilities must use two different forecasts, each derived from the most recent CELT (*i.e.*, the 2024 CELT released May 1, 2024), the 50/50 weather year and the 90/10 weather year, and consider six different seasonal load snapshots of each forecast as described in the Outline (see Outline Section 3). This will ensure that a broad range of load levels and seasonal conditions are considered.¹⁴

¹⁴ The Commission notes that Federal Energy Regulatory Commission (FERC) Order 1920 was recently issued. Order 1920 requires that regional transmission operators,

While the first grid plans will not reach 2040, the Commission also directs the utilities to include a narrative explanation in the grid plans of how they intend to support the achievement of the State's climate goals in subsequent planning periods. The Commission looks forward to reviewing the information from the Pathway to 2040 study and expects that information from the study will be incorporated into future CELT forecasts. Using the most recent CELT forecasts in the utilities' initial grid plans moves Maine toward the 2040 policy objectives/directives. The Commission emphasizes that these initial grid plans are the first step in this IGP process and additional scenarios may be part of future grid plan requirements.

The Commission also notes that Section 3147(4)(E) requires that the grid plans reference and incorporate, as appropriate, all relevant analysis conducted as part of the State's climate action plan under Title 38, section 577 and relevant information from reports and analysis completed by other state agencies and quasi-independent state entities. The Commission sought stakeholder comment on the scope of what the utilities should be referencing in accordance with this requirement and a number of stakeholders pointed to the Pathway to 2040 as one of the reports and analyses that should be included. The Commission expects that the utilities will be referencing and incorporating the Pathway to 2040 as appropriate in preparing their grid plans. The Commission notes that stakeholders, and the utilities, cited numerous reports in their September comments that may be helpful including but not limited to various Maine Climate Action Plan materials, the Trust's Triennial Plan, the Trust's Beneficial Electrification: Barriers and Opportunities report, Maine's Renewable Energy Goals Market Assessment, Maine's Clean Transportation Roadmap, Maine's Offshore Wind Roadmap and Maine's Energy Storage Market Assessment.

d. System Modeling and Needs Identification

The utilities must provide information on current practices and a summary of system needs. This includes information available that relates to the utilities' initial Climate Change Protection Plans completed pursuant to Section 7 of the Act (now codified at 35-A M.R.S. § 3146¹⁵), time-series modeling progress and utilization, and a discussion of the utilities current practices' alignment with achieving the State's GHG emissions reduction and climate goals.

such as ISO-NE, are not allowed to model scenarios with future resource mixes or load growth that do not align with state law when conducting long-term transmission planning.

¹⁵ *Maine Public Utilities Commission Inquiry Regarding Climate Change Protection Plans*, Docket No. 2023-00282.

e. Solutions Identification and Evaluation

i. Background

The Act provides that the grid plans must include “analysis of available and emerging technologies necessary to enable load management and flexibility” as well as “an identification of cost-effective near-term grid investments and operations needed to achieve the priorities identified” in this proceeding. Stakeholders have discussed several methods for evaluating proposed investments and technologies in the utilities’ grid plans. These include scorecards, benefit-cost analyses (BCA), and engineering analyses. Most stakeholders, including the utilities, were supportive of using scorecards as a key component of the solutions evaluation framework within the grid plans.

ii. Scorecard

CMP proposed a scorecard intended to serve as an illustrative assessment tool for stakeholders to get a high-level sense of how solution alternatives compare across key categories (e.g., cost, technical performance (reliability and resiliency), execution complexity and community impact (environmental and equity), and decarbonization support (electrification readiness and DER and renewables integration).

The scorecard format proposed by the GEO expands upon the scorecard proposed by CMP. In particular, GEO's proposed scorecard introduced several new evaluation categories, including optimizing existing infrastructure, flexibly managing load and generation, peak load reduction, and alignment with state energy and climate goals. Additionally, GEO's proposed scorecard includes an overall prioritization ranking, and provides for a low/medium/high assessment for each category as opposed to the binary "checkmark/x-mark" in CMP's proposal. CMP noted that it had considered a quantitative scoring method but decided against it as this involves a significant degree of subjectivity that could result in a false sense of precision and noted communities may have different views on what factors are most important to them.

iii. BCA and Engineering Analysis

The Joint Commenters recommended requiring the utilities to perform a BCA that would include all relevant costs and benefits, for example, as outlined in the National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources (NSPM), a 300-page guide for developing cost-effectiveness tests for conducting BCA of DERs. They note this was used by the Michigan Public Service Commission to develop its distribution planning BCA over a six-month period. They suggest that Maine could follow a similar process using information from the manual and other sources to determine whether the existing BCA methodology used by the Trust and others is sufficient or whether additional elements should be addressed

that are important to meet state policy goals.

CMP stated that many of the solutions and alternatives included in the grid plan will be preliminary in nature and therefore developing a quantitative scorecard or detailed BCA project evaluation process will not be feasible or appropriate because key data points will not be available at that time. In addition, some of the solutions may not be required within the next five years, before the next grid plan, and thus do not warrant the significant allocation of resources to support a highly detailed quantitative evaluation. CMP, as a result, proposed utilizing a narrative description of the planning engineering analysis that was performed, preliminary cost estimates and developing a qualitative comparative scorecard to highlight the relative strengths and weaknesses of a set of solution alternatives. The detailed planning engineering analysis would be available as a resource for stakeholders who want a more thorough description than the scorecard presents. CMP noted that this was consistent with its vision of the grid plan as a roadmap that will assist in the cost-effective transition to a clean affordable and reliable electric grid rather than as a mechanism to formally propose projects for development. CMP further stated that when, or if, the preliminary investments outlined in the grid plan are formally proposed and under review in appropriate venues (e.g. rate cases, transmission project approval proceedings), more granular and detailed evaluation methodologies can be explored. For example, CMP noted that the NWA investigation includes a BCA but is only used to evaluate projects that have been formally proposed and can be supported with sufficient data and higher accuracy cost estimates. CMP also commented that having an IGP BCA that was different from the NWA BCA could create confusion and conflicting findings.

Versant also raised concerns about the potential use of a BCA in the context of IGP and believes planning engineering analysis supported by scorecards will provide a robust evaluation of solution options. Versant also commented that a BCA would require specific guidance and likely Commission rules on how to apply quantitative analysis to specified values such as reliability, resilience, equity, and environmental justice values. Versant further stated that the complex set of benefits envisioned for the solution evaluation process may be difficult, if not impossible, to accurately quantify to engage in a BCA within the IGP process. Versant also noted that it intends to provide information about its engineering and planning analysis process as part of its stakeholder engagement efforts.

Similarly, the OPA stated that the grid plans will be a high-level assessment of multiple streams of information to assess the array of solutions to meet projected system needs and while a BCA, or engineering analysis, will provide more detailed information, there is a cost to developing greater detail. The OPA asserted that where the NWA statute lays out specific investments comparisons on a circuit-by-circuit basis, this level of detail for mapping overall grid system investments is likely to be too late in the grid planning process, time consuming and expensive to be of value for a system wide integrated grid investment plan. The OPA suggested a mid-level engineering analysis combined with a high-level BCA and noted that it may

not be possible to identify the best specific grid development option during grid planning as specific costs may not be known.

The Joint Commenters also recommended that when evaluating solutions, the utilities should clearly explain how federal funds may impact or offset proposed investments that would have otherwise been borne by ratepayers and describe if proposed federally funded projects are in addition to or incremental to what would have been planned through IGP.

iv. Decision

The Commission agrees that a scorecard approach makes sense for the initial grid plans. The scorecard format adopted in this Order, outlined in Attachment D, was derived from the scorecard proposed by GEO and slightly revised by Staff for clarity. The scorecard adopted in this Order does not include the "Total Project Score" table proposed by GEO, because several stakeholders expressed concerns that assigning quantitative scores to potential solutions could result in false precision.

The utilities are directed to complete this scorecard template, plus a narrative explanation of the scorecard contents, as the "minimum requirements" for the solutions evaluation portion of their grid plans. This scorecard will serve as a common format for solutions evaluation to be shared across utilities, projects, and grid plans. Beyond the scorecard format as provided, the utilities will retain substantial flexibility to provide more detail, justification, and transparency to the solutions evaluation process in their grid plans. For example, both utilities intend to also share more detailed engineering analysis with stakeholders. Utilities and stakeholders will have additional opportunities to quantify and analyze the costs and benefits of proposed solutions throughout the IGP process and explore more detailed costs and benefits once, or if, proposed solutions in the grid plans are formally proposed and reviewed in separate Commission proceedings (e.g., rate cases and transmission project approval proceedings). The Commission also shares CMP's concern that attempting to create a separate BCA now as part of the IGP may cause confusion and other unintended consequences with the NWA process.

f. Technology, Integration, System Investments and Pilot Programs

The grid plans will include information regarding technology, integration, and systems investments that support state climate and clean energy goals. Such investments should seek to promote IGP, beneficial electrification, and interconnection of DER efficiently and effectively.

Stakeholders generally agree to prioritize technology investments that promote and enable demand response, load management, and flexibility; communications and automated grid management; and an advanced level of interaction between customers, providers, and utilities. Several stakeholders

expressed interest in understanding the utilities' near-term and long-term technology investment plans related to distribution planning and operations that support state climate and clean energy goals and the Outline reflects this (see Outline, Section 6(a)).

EPE in the roadmap reports identified immediate and short-term recommendations, medium-term recommendations, and long-term recommendations to accommodate both the integration and operation of increasing amounts of DER and the potential for substantial load growth resulting from electrification efforts to meet climate change initiatives and objectives. Several stakeholders expressed interest in the utilities each providing roadmaps in their grid plans that are essentially a sub-roadmap of one (or more) of the recommendations identified in the Grid Modernization Case (e.g., time-series planning/analysis). The Commission believes that requiring both utilities to provide detailed information regarding their progress adopting recommendations related to technology, integration, and system investments set forth in their respective roadmap report from the Grid Modernization Case is appropriate for the grid plans and the Outline reflects this (*id.*). The grid plans will also include information regarding existing and potential pilot projects related to a variety of topics including emerging technologies and emerging rate design and/or demand response concepts (see Outline Section 6(b)). The Commission notes that advanced conductors and ground level distribution systems may make for useful pilot programs.

Hosting capacity maps were discussed several times throughout stakeholder workshops because they would benefit both DER and load customers seeking to interconnect to the grid. The consensus among stakeholders with regards to hosting capacity maps is that they are not viewed as a top priority at this time and that the efforts required to significantly enhance them or standardize them would be better served elsewhere (e.g., improving the interconnection process). Hosting capacity maps are an iterative tool, thus the utilities are expected to revise their hosting capacity maps as necessary to ensure they remain accurate in reflecting the grid's available capacity for new DER and load customers.

g. Environmental, Equity, and Environmental Justice

i. Background

The Act requires the grid plans include an assessment of the EEEJ impacts. Staff proposed in the Outline that utilities describe how these impacts were taken into consideration and weighed against other considerations in the planning process. Staff also suggested that the plans include information on EEEJ outreach efforts, examples of how EEEJ impacted the grid plans, and any additional planned outreach to address these issues. As discussed in Section III(B)(2)(e) of this Order, EEEJ impacts will also be a part of the solutions evaluation criteria.

ii. Comments

The Joint Commenters and ACTT stated that the Commission should require the utilities to develop a framework to assess both positive and negative environmental and equity impacts of grid plans on environmental justice, frontline, low-income, and disadvantaged communities with quantifiable metrics to track and report progress.¹⁶ They assert that key elements of the framework for transparency and accountability should include (1) identifying and defining what specific benefits and costs are being created by the grid plans, (2) quantifying how much benefits are resulting from grid plan investments, and (3) tracking and reporting who is receiving the benefits to evaluate progress. They maintain that the grid plans need to allow stakeholders to determine how well the utilities' investments are working, not just how much they are spending.

Stakeholders cited various resources at the federal and state levels to assist in identifying target populations and potential tracking metrics. The GEO, CMP and the Joint Commenters pointed to the Climate and Economic Justice Screening Tool (CEJST) as a multiple issue screening tool that could be used to look at the EEEJ impacts across communities and identify disadvantaged communities. The GEO stated that the federal government has adopted this tool across federal agencies in the areas of climate, environmental, and clean energy spending and notes that this could be supplemented where appropriate with other tools. CMP also stated that this would allow utilities and stakeholders to use publicly accessible tools, such as the

¹⁶ The Joint Commenters note that the Commission has defined "environmental justice population" in its rulemaking proceeding for Chapter 840, the Commission's rule governing intervenor and participant funding. *Maine Public Utilities Commission Amendments to Intervenor Funding Rule (Chapter 840)*, Docket 2022-00299, Order Amending Rule and Statement of Factual and Policy Analysis (May 29, 2024). They suggested that the utilities could use the Federal Justice40 definition for environmental justice populations for the grid plans. Federal Justice40 is the federal government's goal that 40 percent of overall benefits of certain federal climate, clean energy, affordable and sustainable housing and other investments flow to disadvantaged communities that are marginalized by underinvestment and overburdened by pollution. The Joint Commenters state that they do not believe a State specific definition will conflict with the federal definition as the federal program serves as a floor that states can build upon and a State-specific definition will allow Maine to target supplemental funding for populations not covered by the federal definition. The Commission notes that creating a definition, in consultation with the Maine Department of Environmental Protection, was necessary pursuant to the statute governing intervenor and participant funding given that the Commission prioritized these groups for funding if funding is limited. See 35-A M.R.S. § 1310-A(3)(B). There is also flexibility in the definition to accommodate future developments on this issue. Finally, the Commission notes that it used the definition of "environmental justice" contained in the IGP statute, 35-A M.R.S. § 3147(1)(B), in the rulemaking.

CEJST Map, to evaluate the grid plans and that CEJST's disadvantaged communities metric considers a range of socioeconomic and environmental factors while other categories, such as low- to medium-income communities or frontline communities may be too narrow in their focus for use in the grid plans. Versant stated that screening tools for identifying disadvantaged communities and EEEJ impacts are becoming available but are still in development and suggested that further work is necessary to determine which and what EEEJ tracking method can be ordered in Maine.

CMP stated that it is important that the methodologies, definitions, and metrics for evaluating the EEEJ impacts of the grid plans be well-established and collaboratively selected. As discussed above, CMP intends to do outreach to EEEJ communities and establish a dialogue with disadvantaged communities and community groups. The Joint Commenters also recommend the Commission or the utilities conduct a stakeholder engagement process to get input on the metrics and methodology from low-income, environmental justice and disadvantaged communities early in the process of developing the grid plans to help ensure buy-in of final results and future investment decisions as the grid plans are implemented.

Versant stated that it expected that Maine's IGP would be focused on ensuring disadvantaged communities are treated equitably in and receive benefits from the grid investments and modernization projects that result from the grid plans. Versant supports identifying potential EEEJ impacts associated with projects identified in the first grid plans and then using what is learned to revisit tracking once the scope and scale of those impacts are determined.

CMP stated that it is not clear what performance or tracking metrics are considered for the grid plans but noted that given that the grid plans are a roadmap for how Maine's electric system may need to evolve to meet state policy requirements and customer expectations, the existing formal investment proposal and approval processes, performance and tracking metrics, to the extent they provide value to stakeholders, should be focused on specific documented requirements and deliverables of the grid plan and the IGP process not on the execution of any particular projects.

OPA commented that the tension between affordability and reliability and achieving climate change goals will exist for many years and both the OPA and AARP Maine noted the regressive nature of electricity rates as low- and moderate-income residential customers devote a large percentage of their incomes to energy related costs. The OPA suggested that the utilities include a rate impact assessment based on income as part of the EEEJ assessment. The Island Institute also raised the energy burden issue and the threat of sea-level rise as criteria for disadvantaged communities, stating that coastal and island communities are often not considered disadvantaged when utilizing typical screening criteria and noting higher energy costs in these areas.

iii. Decision

Section 3147 directs the utilities to include an assessment of the EEEJ impacts of the grid plans in their filings and the Outline directs the utilities to include additional information regarding how they did this assessment, outreach to EEEJ communities, and how input from these communities affected the grid plans. Numerous stakeholders stated that it will be important to get input on any metrics and methodology from these communities early in the process of developing the grid plans to help ensure buy-in from stakeholders of future investment decisions as the grid plans are implemented. The utilities must include in their grid plans a proposal, informed by their stakeholder discussions and outreach to EEEJ communities, of how to evaluate and measure these impacts including possible metrics or other ways to measure or evaluate and track EEEJ impacts in the near and longer term (see Outline Section 7). Again, the Commission notes that these are the initial grid plans and expects this process to be refined as it evolves.

h. Assessment

Staff proposed that the grid plans include proposed metrics to measure grid plan success and solutions performance as well as lessons learned, proposed changes to future planning assumptions and methodologies and load forecast verses actual information.

The OPA commented that to hold utilities accountable to the grid plans, the utilities should document how their investments have met the grid planning priorities. The Joint Commenters also suggested metrics to track the priorities and including performance-based metrics used in implementing minimum service standards pursuant to 35-A M.R.S. § 301 and other applications of performance-based regulation.

Versant suggested the Commission create high-level methods to measure the first grid plans and revisit them in subsequent updates to assess if those are the right measures, whether they should be adjusted to capture more meaningful or actionable information, and if the measures should be further refined or detailed with experience.

The Commission notes that comprehensive service reliability metrics became law in 2022 and the Commission has been working to implement them by establishing new reliability benchmarks, a customer survey, and a utility report card.¹⁷ The benchmarks will help ensure that minimum standards are met, and the new customer survey and utility report card will improve transparency and solicit customer input. In addition, in the recent rate cases for CMP and Versant, the Commission approved strict service quality standards, with the provision for

¹⁷ *Maine Public Utilities Commission Amendments to Electric Transmission and Distribution Utility Service Standards (Chapter 320)*, Docket No. 2022-00052.

penalties if they are not met.¹⁸ These efforts are designed to better enable customers to see tangible benefits when utilities make investments in the electric grid. As customers increase reliance on electricity, including for heating and transportation, and significant investments are needed to transition to clean energy, it is imperative that customers see the value for the rates they pay. Performance metrics and accountability for meeting them are a regular part of rate cases on investments formally proposed and the grid plans, as noted in the Outline, will include information on the utilities' alignment with these requirements. (See Outline, Section 4).

In the grid plans, the utilities must propose how to measure the effectiveness of their grid plans in making progress toward the priorities established in this Order and in improving reliability and resiliency and enabling the cost-effective achievement of the State's climate and GHG reduction policies. This includes lessons learned and proposed changes to future planning assumptions and methodologies.

¹⁸ *Central Maine Power Company Request for Approval of Distribution Rate Increase and Rate Design Changes*, Docket No. 2022-00152, Order Approving Stipulation (June 6, 2023) and *Versant Power Request for Approval of a Rate Change*, Docket No. 2022-00255, Order Approving Stipulation (June 5, 2023).

IV. CONCLUSION

This is the first IGP proceeding in Maine and the Commission appreciates the active and thoughtful participation, including the submission of detailed comments, from the utilities as well as a broad range of stakeholders in this proceeding. Stakeholders provided valuable input and information to the Commission as it worked to develop this initial process, learn from and build on the experience of other states, and identify the priorities that must be addressed in the utilities' initial grid plans. This Order is the culmination of the first step in an evolving process. The initial priorities established in this Order will provide the foundation for future stages. The grid plans will inform future proceedings and grid plan requirements and will be an important tool in developing a more holistic planning process to meet Maine's future needs. The Commission looks forward to continuing to work collaboratively with the utilities and the stakeholders as the IGP process evolves as one means of assisting in the cost-effective transition to a clean, affordable and reliable electric grid.

Accordingly, the Commission

O R D E R S

1. That CMP and Versant file their grid plan filings within 18 months of this Order i.e., by January 12, 2026; and
2. The filing requirements contained in Attachment C are adopted and incorporated with this Order.

Dated at Hallowell, Maine, this 12th day of July, 2024

BY ORDER OF THE COMMISSION

/s/ Amy Dumeny
Administrative Director

COMMISSIONERS VOTING FOR: Bartlett
 Scully
 Gilbert

NOTICE OF RIGHTS TO REVIEW OR APPEAL

5 M.R.S. § 9061 requires the Public Utilities Commission to give each party at the conclusion of an adjudicatory proceeding written notice of the party's rights to seek review of or to appeal the Commission's decision. The methods of review or appeal of Commission decisions at the conclusion of an adjudicatory proceeding are as follows:

1. Reconsideration of the Commission's Order may be requested under Section 11(D) of the Commission's Rules of Practice and Procedure (65-407 C.M.R. ch. 110) within **20** days of the date of the Order by filing a petition with the Commission stating the grounds upon which reconsideration is sought. Any petition not granted within **20** days from the date of filing is denied.
2. Appeal of a final decision of the Commission may be taken to the Law Court by filing, within **21** days of the date of the Order, a Notice of Appeal with the Administrative Director of the Commission, pursuant to 35-A M.R.S. § 1320(1)-(4) and the Maine Rules of Appellate Procedure.
3. Additional court review of constitutional issues or issues involving the justness or reasonableness of rates may be had by the filing of an appeal with the Law Court, pursuant to 35-A M.R.S. § 1320(5).

Pursuant to 5 M.R.S. § 8058 and 35-A M.R.S. § 1320(6), review of Commission Rules is subject to the jurisdiction of the Superior Court.

Note: The attachment of this Notice to a document does not indicate the Commission's view that the particular document may be subject to review or appeal. Similarly, the failure of the Commission to attach a copy of this Notice to a document does not indicate the Commission's view that the document is not subject to review or appeal.