Observations and Recommendations of the Grid Modernization Advisory Council

Regarding Electric-Sector Modernization Plans

November 3, 2023

Pursuant to G.L. c. 164, §§ 92B-92C

**Draft**

Contents

1. Introduction 3

Background 3

Process …………………………………………………………………………………………………………………………………….4

2. Observations of the GMAC 8

Overarching Observations 8

Missing Information 9

Compliance with the Climate Act 9

Stakeholder engagement and equity goals 11

Load forecasting (short- and long-term) 12

Solution sets (short- and long-term) 12

Infrastructure/investment proposals (short- and long-term) 13

3. GMAC Recommendations to the EDCs 14

Overarching Recommendations 14

Section 2: Compliance with the Climate Act 16

Section 3: Stakeholder Engagement and Equity goals 16

Section 4: Current State of the Distribution System 17

Section 5: 5- and 10-Year Electric Demand Forecast 18

Section 6: 5- and 10-Year Planning Solutions 19

Section 7: 5-Year Electric Sector Plan 20

Section 8: 2035 – 2050 Policy Drivers: Electric Demand Assessment 21

Section 9: 2035 – 2050 Solution Set – Building a Decarbonized Future 21

Section 10: Reliable and Resilient Distribution System 22

Section 11: Integrated Gas-Electric Planning 22

Section 12: Workforce, Economic, and Health Benefits 23

Section 13: Conclusion 23

4. Process for the Next ESMPs 25

Appendix: ESMP Compliance with the Climate Act 26

## Acknowledgements

While preparations began as early as March 2023, the Grid Modernization Advisory Council’s (GMAC) formal review of the electric distribution companies’ (EDCs) Electric-Sector Modernization Plans (ESMPs) began on September 1, 2023 and was an intensive 80-day process. Many stakeholders supported the GMAC ESMP review process and deserve acknowledgement, including GMAC members and their designees, members of the public who attended meetings and provided public comment, staff of the EDCs who provided presentations and responded to questions, staff of the Department of Energy Resources (DOER), and the GMAC Consultant Team (*Synapse Energy Economics, the Wired Group, and GreenerU*).

The GMAC is comprised of the following members:

|  |  |  |  |
| --- | --- | --- | --- |
| GMAC Member | Affiliation | Representing | Voting Status |
| Commissioner Elizabeth Mahony | Massachusetts Department of Energy Resources  | Massachusetts Department of Energy Resources  | GMAC Chairperson;Voting |
| Kelly Caiazzo | Massachusetts Office of the Attorney General  | Massachusetts Office of the Attorney General  | Voting |
| Sarah Cullinan | Massachusetts Clean Energy Center  | Massachusetts Clean Energy Center  | Voting |
| Larry Chretien | Green Energy Consumers Alliance | Low- and middle-income residential consumers | Voting |
| Marybeth Campbell | Worcester Community Action Council | A local agency administering the low-income weatherization program | Voting |
| Kyle Murray | Acadia Center | The environmental advocacy community | Voting |
| Kathryn Wright | Barr Foundation | The environmental justice community | Voting |
| Alex Worsley | Enel North America | The transmission-scale renewable energy industry | Voting |
| Kathryn Cox-Arslan | New Leaf Energy | The distributed generation renewable energy industry | Voting |
| Sarah Bresolin Silver | ENGIE North America | The energy storage industry | Voting |
| Amy McGuire | Highland Electric Fleets | The electric vehicle industry | Voting |
| JS Rancourt | DXS - Direct Expansion Solutions | The building electrification industry | Voting |
| Andy Sun | Massachusetts Institute of Technology | Representing engineering expertise in interconnecting clean energy | Voting |
| Julie Curti | Metropolitan Area Planning Council | Municipal or regional interests | Voting |
| Jonathan Stout | Dana-Farber Cancer Institute | Large commercial and industrial end-use customers | Voting |
| Digaunto Chatterjee | Eversource Energy | Massachusetts EDCs | Non-Voting |
| Carol Sedewitz | National Grid | Massachusetts EDCs | Non-Voting |
| Kevin Sprague | Unitil | Massachusetts EDCs | Non-Voting |

# Introduction

## Background

Massachusetts continues its leadership in reducing greenhouse gas (GHG) emissions with the commitment to achieve Net Zero emissions in 2050. The Clean Energy and Climate Plan for 2050 states that Massachusetts’ path to economy-wide decarbonization relies on an expanded role for the power system.[[1]](#footnote-2) Thus, power sector planning is essential, and the Grid Modernization Advisory Council (GMAC) is an integral part of improving transparency and stakeholder engagement in the distribution system planning process in the Commonwealth.

Established by An Act Driving Clean Energy and Offshore Wind (the Climate Act),[[2]](#footnote-3) the Grid Modernization Advisory Council (GMAC) is charged with reviewing and providing recommendations to the state investor-owned electric distribution companies (EDCs) regarding their electric-sector modernization plans (ESMPs). These plans were submitted to the GMAC on September 1, 2023.

The ESMPs are comprehensive documents that describe the current state of the distribution grid, the EDCs’ current and proposed investments in the electric grid, projections regarding future reliability needs of the grid, a forecast of the Commonwealth’s future power needs, strategies to support renewable energy resources, electric vehicles, and electrified buildings, and more. The EDCs ([Eversource](https://www.mass.gov/doc/gmacesmp-drafteversource/download?_gl=1%2Ako8zfs%2A_ga%2ANzUwNDI5MDE3LjE2NTA5ODEyMjQ.%2A_ga_SW2TVH2WBY%2AMTY5MzkyMDE2OS4zNi4xLjE2OTM5MjM1NzQuMC4wLjA.),[[3]](#footnote-4) [National Grid](https://www.mass.gov/doc/gmacesmp-draftnational-grid/download?_gl=1%2Adfgptb%2A_ga%2ANzUwNDI5MDE3LjE2NTA5ODEyMjQ.%2A_ga_SW2TVH2WBY%2AMTY5MzkyMDE2OS4zNi4xLjE2OTM5MjM1OTcuMC4wLjA.),[[4]](#footnote-5) and [Unitil](https://www.mass.gov/doc/gmacesmp-draftunitil/download?_gl=1%2A3rigaj%2A_ga%2ANzUwNDI5MDE3LjE2NTA5ODEyMjQ.%2A_ga_SW2TVH2WBY%2AMTY5MzkyMDE2OS4zNi4xLjE2OTM5MjM2MTQuMC4wLjA.),[[5]](#footnote-6)) each submitted their ESMP utilizing a standardized outline that was jointly developed by the EDCs and GMAC.

The ESMPs are required to set out how the EDCs will proactively improve grid reliability, communications and resiliency; enable increased, timely adoption of renewable energy and distributed energy resources; promote energy storage and electrification technologies necessary to decarbonize the environment and economy; prepare for future climate-driven impacts on the transmission and distribution systems; accommodate increased transportation electrification, increased building electrification and other potential future demands on distribution and, where applicable, transmission systems; and minimize or mitigate impacts on the ratepayers of the commonwealth, thereby helping the commonwealth realize its statewide greenhouse gas emissions limits and sublimits under chapter 21N.[[6]](#footnote-7)

This document describes the GMAC’s observations and recommendations. The Climate Act directs the GMAC to provide recommendations to the EDCs following review of the ESMPs; in addition to these statutorily required recommendations, the GMAC chose to also provide additional observations regarding the ESMPs and the review process. In reviewing and providing recommendations on the ESMPs, the GMAC is mindful of its requirement to “seek to encourage least-cost investments in the electric distribution systems, alternatives to the investments or alternative approaches to financing investments that will facilitate the achievement of the statewide greenhouse gas emission limits and sub-limits under chapter 21N and increase transparency and stakeholder engagement in the grid planning process.”[[7]](#footnote-8) The observations and recommendations below seek to further these objectives; however, we note that in several key areas, the information provided by the EDCs in the ESMPs was inadequate to fully assess them as envisioned by the statute. Further discussion on this observation can be found in the *Missing Information* section of the *Observations of the GMAC*. It is important to note that this is the first time the Commonwealth of Massachusetts has gone through this process to create and review large electric-sector modernization plans and all-encompassing integrated distribution system planning. The Massachusetts EDCs’ and GMAC’s substantial effort on this undertaking is commendable and greatly contributed to this review.

## Process

After the passing of the Climate Act in 2022, the GMAC convened for the first time in March 2023. Throughout the next five months, the GMAC hosted presentations from GMAC members, external experts, and EDC representatives on topics such as distributed energy resources (DER), interconnection key challenges, cost allocation and investment alternatives, stakeholder engagement, and relevant proceedings at the Department of Public Utilities (DPU). This time allowed for engagement with subject matters pertinent to the ESMPs for GMAC members to inform their ESMP review. The Executive Committee led much of the strategic planning for reviewing the draft ESMPs. The Executive Committee consists of six voting members and one non-voting EDC member. This subcommittee of the GMAC focused on strategizing the ESMP review, determining the frequency of GMAC meetings, and overseeing the role and responsibilities of the GMAC consultants.

*Timeline*

After receiving the draft ESMPs on September 1, 2023, the GMAC met on a biweekly basis to perform a rigorous and comprehensive review of the draft plans. The Climate Act requires that the EDCs provide the GMAC at least 80 days to conduct its review of the draft ESMPs, and that the GMAC provide written feedback to the EDCs not later than 70 days before the EDCs file with the DPU in January 2024. Each GMAC meeting was structured to allow for consultant-led presentations and GMAC discussion on ESMP sections. Figure 1, shown below, illustrates the GMAC ESMP review process timeline, which also highlights additional meetings outside of the biweekly GMAC meeting schedule. Feedback to the EDCs was due on November 20, 2023.

**Figure 1.** GMAC ESMP Review Process: September – November 2023



*Aggregating Recommendations*

To track and manage GMAC members’ feedback and recommendations on ESMP chapters, an Excel spreadsheet template was developed and utilized, with additional refinements along the way. GMAC members submitted recommendations in the spreadsheet format on the sections reviewed at each GMAC meeting. The sheet allowed for members to indicate a specific EDC, subsection, and page number their recommendation or question referenced. Additionally, guiding questions were established by the GMAC, which encapsulated the statutory requirements of the GMAC’s review. Members had the ability to indicate how their recommendation fit within the guiding questions. Additionally, members could provide broad recommendations for all EDCs. Submitted spreadsheets were aggregated by the DOER staff and consultant team, and summary takeaways from GMAC member and consultant recommendations were produced. GMAC members then had the opportunity to review all submitted recommendations and indicate any strong agreement or disagreement with specific recommendations. The EDCs also had the opportunity to submit responses to recommendations. A newly aggregated spreadsheet consisting of GMAC member and EDC reactions was published for each block of reviewed sections.[[8]](#footnote-9)

*Additional Meetings of the GMAC*

As noted previously, an Executive Committee of the GMAC was established. This group held monthly meetings to provide direction for the GMAC review and develop processes to develop final recommendations to the EDCs. Information on the Executive Committee, including meeting presentation slides and minutes, can be found on the GMAC website.[[9]](#footnote-10)

At the September 14, 2023 meeting, the GMAC approved an Equity Working Group Charter[[10]](#footnote-11) and Equity Working Group membership. This subcommittee of seven voting members and one non-voting EDC representative met four times over the course of the GMAC review period. The GMAC charged the Equity Working Group with the responsibility to:

* Provide input and feedback to the GMAC on how to consider equity through its review of the ESMPs, and suggestions for addressing specific equity issues in the ESMPs;
* Provide feedback and specific suggestions on how to reduce impacts on low-income ratepayers;
* Provide feedback and recommendations relating to Environmental Justice Populations;
* Advise and assist the GMAC on equity matters; and
* Make recommendations and report to the GMAC on actions and activities of the Equity Working Group.[[11]](#footnote-12)

The GMAC also convened a joint meeting with the Clean Energy Transmission Working Group (CETWG)[[12]](#footnote-13) on October 13, 2023 to discuss related distribution and transmission challenges and strategies with grid modernization. This coordination was required by the statute.[[13]](#footnote-14) GMAC members had the opportunity to submit transmission system related recommendations on their recommendations spreadsheets to provide the EDCs feedback on distribution impacts.

*Stakeholder Engagement*

The GMAC’s stakeholder engagement process consisted of multiple opportunities for the general public to provide oral or written feedback to the GMAC throughout its review of the ESMPs. During the summer, the GMAC reserved meeting time for public comment. Written public comment was accepted at any time to MA-GMAC@mass.gov, and submitted comments were posted on the GMAC website. Emails with information on the GMAC review process and public comment opportunities were sent out to a 1000+ listserv of interested stakeholders on multiple occasions during the review period.

Additionally, the GMAC hosted two public listening sessions, the first on October 30, 2023 in the evening and the second on November 1, 2023 during the day. Members of the public were invited to address the GMAC with any comments or concerns on the ESMPs. A brief presentation on the GMAC process and overview of the ESMPs was provided at the listening sessions. Language interpretation services, for Spanish, Portuguese, Mandarin, Cape Verdean Creole, Haitian Creole, Vietnamese, and American Sign Language (ASL), were offered to stakeholders who requested these accommodations in advance. Over the course of the GMAC review period, the GMAC received 33 written public comments, and many oral public comments at GMAC meetings. All submitted written comments are available on the GMAC website. The GMAC website serves as a repository for all documents of the GMAC, including meeting agendas, presentations, minutes.[[14]](#footnote-15) To improve meeting material accessibility, agendas and minutes from GMAC meetings, including Executive Committee and Equity Working Group meetings, were translated to Spanish and posted on the GMAC website.

# Observations of the GMAC

The GMAC reviewed the ESMPs during the legislatively mandated 80-day review period between September 1, 2023 and November 20, 2023. Through the aggregation of individual GMAC member comments, GMAC meeting discussions, and GMAC consultant comments, the GMAC makes the following observations of the ESMPs. These observations are provided in addition to formal recommendations in order to provide feedback on the overall process of reviewing the ESMPs. These observations are grouped by general topic area which include overarching observations, missing information, compliance with the Climate Act, stakeholder engagement and equity goals, load forecasting, solution sets, and infrastructure/investment proposals. Where possible, the GMAC has included references to the sections of the ESMPs that most generally apply to the topic areas.

## Overarching Observations

The following observations apply in an overarching manner to the ESMPs.

1. The EDCs used the same outline across their ESMPs and coordinated some proposals, such as the Community Engagement Stakeholder Advisory Group (Section 3), the Joint Utility Planning Working Group (Section 11), and the Grid Service and Equitable Transaction Energy Studies (Section 6). Some sections were also coordinated across the EDCs, including Section 2: Compliance with the 2022 Climate Act, Section 3: Stakeholder Engagement, Section 11: Integrated Gas-Electric Planning, and Section 13: Conclusion. However, there is still a significant lack of standardization between the EDC ESMPs in terms of underlying forecasting methodologies, terminology, and presentation approaches that confounds clear comparison between these filings and makes it difficult for stakeholders to evaluate the plans.
2. The ESMPs are detailed and contain much relevant information. However, the ESMPs are difficult technical documents for stakeholders unfamiliar with distribution system planning processes to review, and the organization of these plans can make it difficult to digest what each EDC is proposing and whether each ESMP has met statutory requirements. Some ESMPs do not include simple summary tables and/or do not clearly and transparently identify which investments and infrastructure proposals are being made, the corresponding implementation plans, and timelines for proposed and existing investments or programs.
3. The ESMPs do not include summaries or meeting timelines of existing stakeholder working groups that are relevant to distribution system planning, including but not limited to the Energy Storage Interconnection Review Group (ESIRG), the Technical Standards Review Group (TSRG), the Interconnection Implementation Review Group (IIRG), the advanced metering infrastructure stakeholder working group, or the clean energy transmission working group (CETWG).
4. The ESMPs lack a cogent strategic vision that identifies how the many investment and infrastructure proposals are coordinated, what investment and implementation timelines are, or how stakeholder engagement and working groups will support the distribution system planning process. Sections of the ESMPs provide detail but sometimes lack incorporation into the broader planning construct, such as Section 10: Reliable and Resilient Distribution System and Section 11: Integrated Gas-Electric Planning.
5. The GMAC’s review is challenged by a lack of clarity about the role of the ESMPs with respect to the ultimate review by the DPU of proposed investments for cost recovery. The ESMPs would benefit from greater clarity within the plans themselves regarding what new investments are being proposed for cost recovery for the first time.

## Missing Information

The GMAC makes the following observations on missing information. These observations are closely related to the GMAC’s observations in the following subsection on *Compliance with the Climate Act*.

1. There is insufficient information for the GMAC to evaluate the net benefits of the proposed investments because there is a lack of detail on costs and benefits (in monetized values).
2. The ESMPs do not present information regarding rate impacts or means of mitigating rate impacts, particularly for low-income customers.
3. There is a general lack of detailed assessment of alternatives, including assessment of both alternative investments and alternatives to investment.
4. The ESMPs lack detailed consideration of alternative financing.
5. The ESMPs lack critical information regarding gas-electric planning, which impedes the GMAC’s ability to provide meaningful comments.
6. The EDCs’ metrics lack detail, including how certain metrics are defined, how they will be measured, and how they directly relate to utility investments.

## Compliance with the Climate Act

The GMAC makes the following observations related to compliance with the Climate Act. These observations are most applicable to Section 2: Compliance with the EDC Requirements Outlined in the 2022 Climate Act.

Appendix A to this report includes a detailed list of the requirements of the Climate Act, with a high-level assessment of whether each of the ESMPs complies with each requirement. As indicated in Appendix A, the Climate Act contains multiple requirements, some of which are general objectives, while others are specific informational and methodological requirements. In order to summarize the GMAC observations regarding compliance with the Climate Act, the multiple requirements in the Act are summarized into five general categories. The following subsections describe these categories and present the GMAC’s observations about compliance with each category.

##### Propose relevant grid modernization investments

1. The requirement to propose relevant gid mod investments is contained in the following subsections: G.L. c. 164, §§ 92B(b).i, 92B(b),iv, 92B(b).v, and 92B(b).vi. The ESMPs appear to have met these requirements.

##### Describe alternatives to proposed investments and alternative financing and list the benefits of each

1. The requirement to consider alternatives and evaluate benefits is included in several subsections: G.L. c. 164, §§ 92B(b).viii, 92B(b).ix, 92B(c).ii, and 92(B)e. The GMAC observes that there is a general lack of discussion about alternatives in the ESMPs. Moreover, to the extent that benefits are discussed, they are generally not quantified or monetized, and are not used as criteria for assessing which of multiple alternatives should be selected.

To the extent that alternatives are discussed, it is often in a general fashion. In some cases, there is discussion about the *process* of considering alternatives without any specific alternatives analysis. The ESMPs lack a detailed evaluation of alternative investment options for meeting future needs.

The plans do include some discussion of alternatives, but not enough to demonstrate that the alternatives were properly considered for meeting future needs. For example, Unitil discusses a historical NWA but does not seriously consider NWAs in its discussion of future needs in Section 9. National Grid’s discussion of NWAs in Section 6 is a strong initial step, but like Eversource’s discussion of the same, it could be significantly more detailed and specific to individual system needs. The mere assertion that alternatives have been considered is not sufficient to demonstrate that the best options have been selected and proposed. The GMAC observes that greater transparency and detail are required.

##### Consider specific technologies for specific objectives

The Climate Act includes two separate requirements to consider specific technologies to achieve specific objectives: Smart inverters, energy storage, and advanced meters for reliability and resiliency (Section 92B(b).ii), and energy storage to improve renewable energy utilization and avoid curtailment (Section 92B(b).vii).

1. The GMAC observes that Eversource has addressed all of the specific technologies noted by the Climate Act (smart inverters, energy storage, and advanced meters), whereas National Grid and Unitil do not appear to address smart inverters.
2. The GMAC observes that each of the EDCs lack a thorough analysis of potential *future* opportunities to deploy energy storage for various purposes.

##### Provide required load forecast information

Informational requirements related to load forecasts are provided in two subparts: Sections 92B(b).iii, and 92B(c).i.

1. The GMAC observes that the ESMPs have met this requirement related to load forecasts, however further observe that the EDCs could improve the quality, transparency, and integration of their respective load forecasts, as described throughout this report.

##### Provide information necessary for the GMAC to evaluate the ESMPs

Section 92C(b) of the Climate Act requires the GMAC to review and provide recommendations on the ESMPs and lists multiple items for the GMAC to review.

1. The GMAC observes that the ESMPs do not provide sufficient information necessary for its review of some of these items listed in Section 92C(b). Specifically, the ESMPs do not provide sufficient information to determine whether the ESMPs (a) encourage least-cost investments in the electric distribution systems, alternatives to the investments, or alternative approaches to financing investments; (b) maximize net customer benefits; (c) minimize or mitigate impacts on ratepayers throughout the commonwealth; and (d) reduce impacts on and provide benefits to low-income ratepayers throughout the Commonwealth.

The main reason that the information was insufficient for the GMAC’s review is that the ESMPs do not provide a net benefits analysis or a rate or bill impact analysis. (Section 13 of the ESMPs notes that a net benefits analysis will be provided when the ESMPs are provided to the DPU in January 2024.) While the ESMPs assert that the proposals reflect least-cost solutions, this assertion is not substantiated. The ESMPs do not describe in detail how alternative investment options were evaluated and compared in order to demonstrate that proposed solutions are at least cost, that these solutions maximize customer net benefits, and that the solutions minimize or mitigate ratepayer impacts. Further, the issue of benefits to and rate impacts on low-income customers is not addressed in the ESMPs.

## Stakeholder engagement and equity goals

The GMAC makes the following observations related to stakeholder engagement and equity goals. These observations are most applicable to Section 3: Stakeholder Engagement.

1. The proposed Community Engagement Stakeholder Advisory Group (CESAG) may be duplicative with other efforts and result in “working group fatigue.”
2. The GMAC has concerns with the proposed CESAG relating to its governance, objectives, staffing, time constraints, accountability, and connections to developer customers. Further the GMAC has concerns about the CESAG regarding measurement of success for the proposed group, how metrics will be determined to measure benefits, and reporting of the metrics.
3. Communication with customers is challenging. There may be communication overload for customers with multiple consumer-facing engagement efforts happening simultaneously among state agencies, utilities, third-parties, and more. The technical content of these plans must be translated into multiple non-English languages; it is also necessary to translate plan contents into plain English for native speakers so that technical material is made digestible for laypersons.

## Load forecasting (short- and long-term)

Transparency regarding forecasted load growth and distributed energy resources is fundamental for assessing the need for the EDCs’ proposed investments. The GMAC makes the following observations related to load forecasting in the short- and long-term. These observations are most applicable to ESMP Section 5: Five- and Ten-Year Electric Demand Forecast and Section 8: 2035-2050 Policy Drivers: Electric Demand Assessment.

1. The data and assumptions behind the ESMPs’ load forecasts and sensitivity analyses are not sufficiently transparent. Greater informational transparency is required regarding assumptions for future alternative fuel sources, technological advances, impacts of the adoption of new building codes, impacts of electric vehicles and heat pumps, and impacts of potential battery storage.
2. The ESMPs do not use consistent forecasting metrics and baseline data, particularly when using benchmarks set forth by the Clean Energy and Climate Plans.
3. The 5- to 10-year forecasts are not connected to the long-term forecasts in a clear or logical manner.
4. The ESMPs do not use consistent metrics for evaluating forecasts.
5. The ESMP investment proposals are determined through technical evaluations that involve circuit and substation level analysis. Generally, the ESMPs do not include any level of uncertainty in the 5- and 10-year demand forecasts.

## Solution sets (short- and long-term)

The GMAC makes the following observations related to solution sets proposed and described in the ESMPs. These observations are most applicable to Section 6: Stakeholder Engagement and Section 9: 2035-2050 Solution Set – Building a Decarbonized Future.

1. The ESMPs do not clearly quantify the impacts of the proposed solutions on system capacity, hosting capacity, and reliability/resilience.
2. The ESMPs do not clearly distinguish which operating and capital costs are business-as-usual costs and which are incremental investment costs.
3. The ESMPs submitted by National Grid and Eversource assume that currently pending Provisional System Program investment proposals in front of the DPU are approved. The proposed solutions in the Eversource ESMP depend on the continuation of the Provisional System Program.
4. The ESMPs do not explicitly consider alternatives to EDC capital spending, such as energy efficiency and distributed generation/storage.
5. The GMAC questions the affordability and equity of the proposed solutions.
	1. GMAC members expressed concerns about the impacts of rate hikes and some types of rate designs, particularly on low- to moderate-income households with poor weatherization. Rebate programs, low-income rates, and bill assistance programs should not be considered “silver bullets” to affordability and equity issues.
	2. Lower-cost alternatives to help defer capacity expansion capital spending should be considered to help address affordability and equity issues.
6. The GMAC questions the viability of natural gas as a backup for heat pumps, particularly given the ongoing maintenance costs of gas pipelines. There is a balance between the cost of gas pipeline maintenance and the increased cost of electric capacity required for full electrification of heating, particularly on the coldest days (which represent a disproportionate electric capacity expansion requirement).

## Infrastructure/investment proposals (short- and long-term)

The GMAC makes the following observations related to infrastructure and investment proposals in the ESMPs. These observations are most applicable to Section 4: Current State of the Distribution System, Section 7: Five-year Electric Sector Modernization Plan.

1. The ESMPs do not present the capabilities and deficiencies of the current system in a clear and transparent manner. A transparent assessment of current grid capabilities and the grid’s ability to accommodate future load growth and DERs is critical to determining the investments required to advance the goals of the Commonwealth, and the required timing of those investments. Without such information, it is difficult to assess the need and timing for proposed investments.
2. It is not clear which investments proposed in the ESMPs are necessary to yield net benefits, given statutory requirements.
3. The ESMPs do not make clear which specific policy goals of the Commonwealth are advanced by the different infrastructure proposals or type of proposals.
4. The ESMPs do not present the incremental impacts of their proposals on workforce, jobs, greenhouse gas emissions, and health that would occur due to the proposed investments in the ESMPs.
5. The ESMPs do not quantify the incremental impact of the EDCs’ proposed investments on meeting the state’s greenhouse gas emissions reductions targets.

# GMAC Recommendations to the EDCs

The GMAC reviewed the ESMPs during the legislatively mandated 80-day review period between September 1, 2023 and November 20, 2023. Through the review process, GMAC members developed a list of nearly 1000 informal recommendations across the sections of the EDC ESMPs, the GMAC consultant suggested recommendations for the GMAC to consider, and GMAC members raised questions and considerations during GMAC meetings. These informal recommendations and meeting materials and minutes can be reviewed on the GMAC website.[[15]](#footnote-16) The following recommendations are a synthesis of these efforts. The GMAC requests that the EDCs respond to each of the numbered recommendations listed in the following section.

## Overarching Recommendations

1. The EDCs should include in their ESMPs more detail on whole-of-business strategic planning, program implementation and investment timelines, and plans for continued sector-specific stakeholder engagement through either existing or new working groups. The ESMPs should be the central distribution system planning document and any filing in which the EDCs have received or is requesting cost recovery should be clearly described and connected. The GMAC and ESMP process represent an opportunity to ensure that the EDC distribution system plans meet the objectives in the Climate Law, coordinate multiple investment streams totaling billions of ratepayer dollars, propose right-sized future investments, and ensure stakeholder engagement and input. At minimum, the EDCs should all provide summary figures that show the timelines of different investments and program periods that impact their distribution systems, such as the Figure ES-1 “Key Progress and Plans” included in National Grid’s New York Distribution System Implementation Plan.[[16]](#footnote-17)
2. The ESMPs should be more clear in identifying and describing the new ESMP investment proposals, which investments are already approved by the DPU, and which investments (and in what quantity) are either under review at a current proceeding, or about to be under review in a forthcoming proceeding. Furthermore, the solutions listed in Section 6: 5- and 10-Year Planning Solutions should clearly identify which regional projects are already funded (and if funded, which DPU Order has authorized the funding) and which are seeking to be funded through the ESMP proposal. Across the three EDC ESMPs, the EDCs should collaborate to streamline the terms they use to describe their investments and display the investments in a standardized manner.
3. The ESMPs should propose a long-term proactive distribution system planning process and long-term cost allocation methodology to succeed the investment approval process conducted through the Provisional System Program.[[17]](#footnote-18) If this is not possible before the January filing, then the EDCs should submit a detailed proposal and timeline for a stakeholder process that will develop a long-term, proactive distribution system planning process and long-term cost allocation methodology as a successor to the Provisional System Program. This proposal should include how the stakeholder engagement and discussion will occur in parallel to the ESMP proceedings and should propose a date by which the EDCs will file a long-term cost allocation proposal at the DPU. Proactive distribution system investments are critical to ensuring DERs can interconnect to the grid at a reasonable cost and expeditious manner to meet the Commonwealth’s goals.
4. The EDCs should be more transparent about the short- (5- to 10-year) and long-term (out to 2050) load forecasts in their ESMPs and better leverage the stakeholder community in Massachusetts to develop future forecasts. Current forecasts in the ESMPs are difficult to understand and are not always clear in describing underlying assumptions. The short-term load forecasts do not include sensitivities or uncertainties. The ESMPs do not analyze the impact of the adoption of new building energy codes or the impact of existing building weatherization programs on load nor is there detail on how the forecasts specifically translate to the investments proposed in the ESMP. More comprehensive stakeholder engagement in the forecasting process for future ESMPs is necessary across multiple sectors, including the transportation sector, buildings sector, and DER and DG sectors. Existing working groups across these sectors should be leveraged to provide additional information, diverse perspectives, and support in forecast assumptions, scenarios, and uncertainties. Where necessary, new working groups should also be established to support forecast development and understanding in advance of the next ESMP.
5. The EDCs should include more discussion of investment alternatives and alternative approaches to financing investments, and clearly communicate these alternatives to stakeholders. The Climate Law explicitly requires the EDCs to discuss investment alternatives (including ratemaking treatment changes, load management, flexible demand, dispatchable demand response) and alternative approaches to financing investments (including cost allocation between developers and ratepayers, and equitable allocation of costs across other states and populations).[[18]](#footnote-19) Given advancing technologies and ratemaking treatment methodologies, as well as challenges in siting and constructing infrastructure, the ESMPs should explore alternatives to traditional utility investment such as non-wires alternatives and load management and ensure that investments minimize or mitigate impacts on ratepayers.
6. The EDCs should review and respond to the recommendations included in the Memorandum of the GMAC Equity Working Group, *which is adopted by the GMAC* (*editorial note to GMAC members: this recommendation is subject to the vote scheduled for the 11/16 GMAC Meeting*). The Memorandum of the GMAC Equity Working Group is included as an Appendix of this document.

## Section 2: Compliance with the Climate Act

1. The GMAC recommendations listed within this document regarding the other sections of the ESMPs should be adopted to help improve the ESMPs and make them more compliant with the Climate Act.
2. Section 2 should be expanded to provide more detail about how the ESMPs comply with the Climate Act. Specifically:
	1. Instead of a simple reference to another section or subsection of the ESMP, Section 2 should include text explaining how the section or subsection demonstrates compliance.
	2. Section 2 should include a chart or table summarizing and mapping the requirements of the Climate Act with the specific location in the ESMP that demonstrates compliance with those requirements.

## Section 3: Stakeholder Engagement and Equity goals

1. The EDCs should develop goals and clear metrics of success by which to measure the efficacy of proposed stakeholder engagement, including:​
	1. Clearly defined identification of stakeholder groups, historical concerns, and potential conflicts with other stakeholder groups' interests​,
	2. ESMP goals and outcomes for each stakeholder group​,
	3. Information stakeholders need to be well informed​,
	4. Information utility companies need to understand stakeholders’ concerns​,
	5. Appropriate and diverse vehicles for meaningful dialogue​, and
	6. Methods for tracking, organizing, analyzing, and responding to stakeholder feedback.
2. To avoid duplication, the GMAC recommends having the CESAG within the GMAC structure, possibly within the Equity Working Group. The DPU should review the proposed CESAG framework before a working group is established.
3. The GMAC recommends that the CESAG have a co-chair structure, where the group is led in part by EDCs and GMAC.
4. To clarify the CESAG’s focus and measure its success, the GMAC recommends that the CESAG:
	1. Develop consistent definitions of equity, inequity, and discrimination,
	2. Include more specific definitions of equity,
	3. Adopt quantifiable metrics, and
	4. Develop a detailed explanation of the stakeholder engagement process (timeline, stakeholder groups, potential trainings, desired outcomes)​.

## Section 4: Current State of the Distribution System

1. The ESMPs should use consistent methods across EDCs for presenting the following information regarding the current system:​
	1. Aging infrastructure for substations, transformers, feeders, breakers, reclosers, and poles, including descriptions of the rationale that is used for determining when to replace infrastructure. ​
	2. Capacity deficiency for substation power transformers and feeders​.
	3. Existing distributed energy resources (DER) capacity, including DERs online, in the queue, and current time to get through the queue, and broken out by type of DER: energy efficiency, demand response, heat pumps, distributed PV, electric vehicles, storage, etc.​
	4. DER hosting capacity, including estimates of excess capacity for substation power transformers and feeders, forecasted out for 10 years in the absence of new investments​.
	5. Reliability, including most relevant reliability metrics and summary of outage causes on blue-sky days​.
	6. Resilience, including all relevant “all-in” performance metrics and summary of outage causes on major event days.
2. The ESMPs should use consistent tables and charts to depict information in readily accessible formats.
3. The ESMPs should include data and metrics on power quality, new metrics for environmental justice communities and for electrification growth reporting, benefits of smart inverter controls, and estimates for peak demand reduction.
4. In areas of system constraint, the ESMPs should discuss how non-wires alternatives, energy efficiency, DERs and other technologies are acting to reduce load currently. Understanding the contribution of DERs to the current functionality of the system is important in this section on the current state of the system.
5. The ESMPs should explicitly connect content to the Commonwealth’s goals and suggest more technical and policy solutions​.
6. The EDCs should map the locations of their substations alongside projected sea level rise and floodplains for 2030 and 2050 to help readers better understand climate vulnerabilities and existing climate adaptations the EDCs have implemented for the current system.

## Section 5: 5- and 10-Year Electric Demand Forecast

1. The ESMP load forecasts should include sensitivities that assume different levels of adoption of energy efficiency, new building codes, building weatherization, distributed generation, battery storage, electric vehicles, heat pumps, technological advances, and other electrification transitions. A “high forecast” sensitivity should include assumptions about these technologies that would lead to higher loads than the base case forecast; and a “low forecast” sensitivity should include assumptions about these technologies that would lead to lower loads than the base case forecast. Each sensitivity should clearly identify the assumptions made for each resource type.
2. The EDCs should provide a copy of their load forecasting models in their filings with the DPU. If the model itself cannot be shared, then a clear description of and copies of all inputs, results, and scenarios should be provided in unlocked and linked excel sheets. ​
3. In their demand forecasts, the ESMPs should detail the methodology used, the assumptions made, and any applicable uncertainties. All assumptions should reference include links and citation to relevant sources. The ESMPs should also including descriptions of how different factors like policy, mass transit, climate change impacts, EV charging infrastructure, new building codes, etc. impact the demand forecasts​.
4. The ESMPs should describe how the forecasts of new DERs are derived, including whether they are consistent with Massachusetts goals described in the 2050 Clean Energy and Climate Plan.
5. The EDCs should consider the impact of new building codes and building weatherization on their ESMP forecasts.
6. The ESMPs should use consistent formatting and reporting resolution in their load forecasts.
7. The ESMPs should use consistent metrics to evaluate forecasts.
8. The ESMPs should provide ten-year load forecasts in tabular form that separately quantify expected load impacts from new customers, demand response, energy efficiency, distributed generation, EVs, heating electrification, and distributed storage.
9. The ESMPs should provide additional detail and rigor regarding greenhouse gas emission reduction benefits, including.
	1. The incremental greenhouse gas impacts (in tons, for each year) of the proposed investments.
	2. How those incremental greenhouse gas impacts will help the EDCs meet the EDC’s greenhouse gas emissions reduction targets (in tons, for each year).​
10. The ESMPs should present the capabilities and deficiencies of the current system in a clearer and more transparent manner using consistent definitions, tables, and graphics.

## Section 6: 5- and 10-Year Planning Solutions

1. The ESMPs should accompany the presented solutions with metrics, baselines, and targets, such as:
	1. System-wide DER hosting capacity increases in MWs
	2. System-wide capacity increases in MWs
	3. System-wide reliability/resilience improvements (interruption and duration, with and without major events)
2. The ESMPs should consider alternative solutions to EDC capital spending.
3. The EDCs should clarify whether state decarbonization goals are accounted for and in what proportion in each EDC territory.​
4. The ESMPs should provide more detail regarding cost estimates:
5. The ESMPs should include implied transmission level costs associated with distribution level investments​.
6. Comparisons between business-as-usual operating and capital costs vs. incremental costs should be added throughout the ESMPs​.
7. The ESMPs should explicitly discuss how energy efficiency and distributed generation can alleviate grid issues.​
8. The EDCs should identify expected timelines for implementing the Grid Compensation Fund, as well as the potential cost range for the fund.
9. The ESMPs should map solutions more closely to projections and forecasts to show how they can help reduce capital investment or increase DER adoption.​
10. The ESMPs should identify how distribution system planning will evolve based on climate impacts and describe and integrate climate change impacts into the near-term planning solutions​.
11. The ESMPs should explicitly discuss rate design and rate reform (i.e., differentiated rates for different customers).​
12. The ESMPs should describe how peak demand can be managed through non-wires alternative solutions, including energy efficiency, distributed generation, and storage.​
13. The ESMPs should clarify how stakeholder engagement and community feedback will occur for all solutions presented.​
14. The ESMPs should differentiate between distribution system upgrades and transmission system upgrades and share timelines and cost estimates​.
15. The ESMPs should strive to have consistent models and policy drivers across all three EDCs.
16. The EDCs should clearly identify the investments described in this Section that have already received approval or preauthorization, the investments that are pending decision by the DPU, and those that are new proposals.
17. The ESMPs should expand stakeholder participation to allow stakeholders to provide input before and during the development of the next ESMP, instead of providing input only after the ESMP is developed.

## Section 7: 5-Year Electric Sector Plan

1. The EDCs should provide a direct mapping of the proposed investments to benefits and costs. The EDCs could consider including a table that has columns on investment area, specified proposed investment/projects, costs of the projects, expected benefits, and a quantification of those benefits.
2. The EDCs should standardize approaches to developing ESMP components among utilities, such as benefit projections, revenue requirement (customer cost) projections, assignments value to GHG reductions, establishing acceptable levels of risk to tolerate, etc.
3. The EDCs should develop processes to help improve the process of solution prioritization, selection, and deferral decisions.
4. The ESMPs should clearly distinguish between investments proposed for near-term needs (load growth, DER growth, reliability/resilience) and investments proposed in anticipation of future needs. The nearer term the need, the more specific the data an ESMP should include to substantiate the need (location-specific load forecasts, DER forecasts, or reliability histories, as examples.)
5. The EDCs should make updates to their investment summaries to improve clarity of and increase standardization across their investment proposals. The EDCs should clearly identify the investments in the 5-year plan that are considered to be base/ongoing investments, approved investments (showing an itemization and quantification of the total investment and investment in plant in service, with references to the docket numbers and associated exhibits that provide the specificity), and newly proposed investments (with itemization). For any investments that an EDC plans to seek cost recovery through a mechanism in an approved, pending, or forthcoming rate case, the EDC should clearly identify the mechanism through which the company plans to seek cost recovery.
6. The ESMPs should clearly explain how federal grant proposals and awarded federal funding will impact or offset proposed investments that would otherwise have been borne by ratepayers. The ESMPs should describe if the proposed federal funding projects are in addition to /incremental to what would otherwise have been planned/needed through the ESMP.

## Section 8: 2035 – 2050 Policy Drivers: Electric Demand Assessment

1. The three ESMPs should use consistent forecasting metrics and baseline data, particularly when using benchmarks set forth by the Clean Energy and Climate Plans.
2. The ESMPs should better integrate their 10-year and long-term forecasts.
3. The ESMPs should include additional details and sensitivities regarding future alternative fuel sources, technological advances, impacts of electric vehicles and heat pumps, and impacts of potential battery storage. All assumptions should be clearly explained.
4. The ESMPs should provide greater standardization across the demand assessments, including which 2050 Roadmap scenario the EDCs adopt for their demand assessments and why, including how the scenario details are translated into modeling parameters.​
5. The ESMPs should evaluate scenarios with more ambitious energy efficiency, demand response, and energy storage assumptions (including customer-owned energy storage) to mitigate load growth.
6. The ESMPs should explain how the EDCs will collaborate to achieve the Commonwealth's 2050 targets​.
7. The ESMPs should include information on winter peak load projections and how to consider them.
8. The ESMPs should discuss rate reform and affordability to better understand bill impact on ratepayers and how to improve affordability in light of electrification​.
9. The ESMPs should explicitly state the detailed steps and timeline to developing demand management programs and how the EDCs will reduce peak load​.
10. The ESMPs should clearly articulate how the long-term load forecasts affect the need for investments over the short- and long-term. ​ ​

## Section 9: 2035 – 2050 Solution Set – Building a Decarbonized Future

1. The ESMPs should prioritize energy efficiency and electric heating programs that will reduce demand on coldest days by providing incentives that favor ground-source heat pumps over air-source heat pumps where cost effective.
2. In terms of rate designs, the EDCs should:
3. Avoid residential demand charges, particularly for environmental justice communities (EJC) and low- to moderate-income (LMI) customers. At a minimum, careful study and appropriate EJC/LMI accommodations are required.
4. Include plans for peak-time rebate programs available to all residential distribution grid customers (with a smart meter) regardless of energy supplier. ​
5. The EDCs should include more significant impacts from demand reduction programs as appropriate.
6. The ESMPs should include details of how the EDCs plan to communicate their offerings and how they will increase their transparency.

## Section 10: Reliable and Resilient Distribution System

1. The EDCs should make their climate vulnerability assessments public. If the climate vulnerability assessments are not complete, the ESMPs should describe the expected date of completion and method by which they will notify stakeholders of the finished assessments.
2. ​The ESMPs should include the expected timelines for completing relevant resilience frameworks and assessments.​
3. The EDCs should standardize their climate change risk and planning tools, as well as forecasting windows and parameters.​
4. The EDCs should clarify the timeline for the climate vulnerability assessment framework.
5. The ESMPs should include resilience priorities and the cost estimates of resilience investments​.
6. The ESMPs should contain more details regarding the climate impact measures that the EDCs propose to take.​
7. The EDCs should justify proposed investments with some type of quantification (such as improvements to SAIDI/SAIFI, and benefit/cost analyses) for common actions across the plans.​
8. The EDCs should incorporate local and regional modeling of heat islands into the plans.

## Section 11: Integrated Gas-Electric Planning

1. The ESMPs should detail how the transition from gas to electric will be coordinated, how and where the systems overlap, and identify recommendations for how the transition should occur.
2. The ESMPs should provide more details regarding how integrated energy planning will be undertaken in the future. ​
3. The Joint Utility Planning Working Group should focus on short- and long-term capital investment plans for both electric and gas utilities.
4. When estimating how proposed investments will impact rates, the ESMPs should account for the rate impacts on gas utility customers as well as electric customers. ​
5. The ESMPs should provide more detail on how the integrated energy planning will be used to comply with the Climate Act and align with the forecasts in the Clean Energy and Climate Plan. ​
6. When estimating net benefits from proposed investments, the ESMPs should account for the costs and benefits to gas utility customers. ​
7. The EDCs should describe whether the greenhouse gas forecasts meet the requirements of the Climate Act.

## Section 12: Workforce, Economic, and Health Benefits

1. The EDCs should specifically present the incremental impacts of their proposals on workforce, jobs, GHG emissions, and health and how such investments will help the EDCs meet the state’s greenhouse gas emissions reduction targets. This requires, at least, presenting one scenario with the proposed investments and one without.​
2. The ESMPs should better integrate workforce benefits with economic analysis.​
3. The analysis of economic benefits in the ESMPs should be a net analysis that accounts for rate impacts and job losses.
4. Regarding workforce benefits, the ESMPs should:
	1. Include metrics related to the training programs, ideally aligned with those produced by the Equity Working Group;
	2. Identify specific strategies to address the lack of diversity in the energy sector;
	3. Specify which types of jobs are expected to grow because of the ESMP, as well as what existing workers will be supported to transition to new jobs;
	4. Establish a unified approach to a statewide workforce plan;
	5. Include a workforce organization chart in the ESMP; and
	6. Leverage existing resources and infrastructure to integrate clean tech education, curriculum, and opportunities.​

## Section 13: Conclusion

1. The ESMPs should include metrics that are tied to the ESMP proposals, such as achievement dates, improvements to reliability metrics such as SAIDI and SAIFI, increase in DER hosting capacity, GHG emissions reductions, and the use of DERMS.
2. The metrics proposed in the ESMPs should all include specific metrics and quantification methods for determining the incremental impact of proposed investments. For example, the EDCs should explain in detail how resilience will be measured, how the EDCs will identify which customers benefit, and how incremental impacts of greenhouse gas emissions will be determined.
3. The metrics proposed in the ESMPs should include sufficient detail to enable review and implementation, including definitions. For example, the ESMPs should clearly define “major ESMP infrastructure projects,” including the categories such investments fall in.
4. As the EDCs are measuring net benefits for their filing with the DPU:
	1. The costs and benefits included should be identified up-front. The EDCs should begin with the cost-effectiveness tests used for energy efficiency, but should also include safety, security, reliability of service, affordability, equity, and reductions in greenhouse gas emissions.
	2. All benefits and costs should be compared with a reference case which is based on forecasts of clearly justified investments.
	3. Alternative cases should be designed to evaluate the net benefits of incremental investment projects, relative to the reference case, and each incremental project should ideally be evaluated and justified on its own merits. These incremental projects should be compared against alternative projects, which may include non-wires alternatives. If it is not practical to evaluate each incremental project, then some projects should be bundled into logical groupings of interrelated projects.
	4. Uncertainty can be addressed in BCA by applying sensitivities to those assumptions that are most uncertain and affect the results the most.
	5. The discount rate for calculating present value dollars should be identified. The GMAC recommends using a low-risk discount rate, as used for energy efficiency programs.
5. The ESMPs should conduct a rate impact analysis to demonstrate that the ESMPs will minimize or mitigate rate impacts.
	1. The rate impact analysis should account for increased costs of infrastructure investments, reduced sales from load reducing DERs, and increased sales from other DERs (such as electrification of transportation and heating).
	2. The rate impact analysis should follow the same structure as the BCA in terms of the definition of the reference case and discretionary vs. non-discretionary investments.
	3. Decisions on which investments to make should be informed by the rate impact analysis.
6. The ESMPs should articulate how benefits will be experienced by EJC customers relative to other customers.

#  Process for the Next ESMPs

The above recommendations are a result of GMAC members, consultants, and stakeholders dedicating significant time and resources to prepare for the ESMP process, and to review, understand, and analyze the draft ESMPs. However, the ESMP process is new and untested, and it is important to evolve the process to learn from its execution and accommodate the realities of implementing such a comprehensive and voluminous undertaking. The GMAC recognizes that both the GMAC and the EDCs face challenges with the timing for this new process. It is imperative that the DPU investigate and implement rules and procedures for future ESMP iterations to efficiently evolve the ESMP process to best meet its intended purpose under law and the Commonwealth’s clean energy policies and objectives. The GMAC will discuss the initial ESMP process during its December meeting and also suggestions for future iterations.

# Appendix: ESMP Compliance with the Climate Act

This appendix describes the GMAC’s assessment of how well the ESMPs comply with the requirements of the Climate Act. While the GMAC has attempted to make an objective assessment of compliance, the exercise of judgement was necessary in some situations. As an example, Section 92B(b) requires that the ESMPs “describe in detail” several discrete elements. Gauging compliance with this subsection of the Climate Act necessarily involves the application of discretion in determining what constitutes a sufficiently detailed description.

While the ESMPs contain much useful information required by the Climate Act, the organization of these plans makes it difficult to understand what each EDC is proposing and whether each ESMP has met statutory requirements. Further, the lack of standardization between the three ESMPs makes it difficult for clear comparison across the EDCs.

The results of the GMAC assessment of Climate Act compliance are provided in the tables that follow. Within each table, relevant provisions of the Climate Act are listed, with each ESMP’s citations to the complying section(s) (provided in Section 2) noted alongside for each ESMP. The GMAC’s assessment of each ESMP’s compliance with the associated requirement is indicated in separate columns.

The criteria enumerated in Section 92B(a) do not represent discrete informational requirements but rather objectives for the ESMPs in their entirety. However, these criteria are restated in Section 92B(b) as specific informational requirements, wherein the Climate Act directs that the ESMPs should “describe in detail” those investments necessary to achieve the objectives in Section 92B(a). As such, the GMAC has assessed compliance with the criteria in Section 92B(a) based upon whether the ESMPs have fulfilled the associated informational requirements in Section 92B(b).

Section 92B(a).vi, requiring the minimization or mitigation of ratepayer impacts, does not directly map to any of the requirements in Section 92B(b). However, the GMAC observes that the ESMPs do not include sufficient information to demonstrate that ratepayer impacts have been minimized or mitigated because ratepayer impacts are not quantified in any of the plans.

While Section 92C(b) concerns the responsibilities of the GMAC in reviewing the ESMPs, the criteria and considerations that are to inform this review create implicit informational requirements for the ESMPs. Specifically, the GMAC is tasked with encouraging investments or alternatives that least-cost, maximize net benefits, minimize or mitigate impacts on ratepayers, and reduce impacts on and provide benefits to low-income ratepayers. If the ESMPs do not include the necessary relevant information, then it is not possible for the GMAC to evaluate the ESMPs as directed.

The tables below do not include those subsections of Section 92B and 92C Climate Act that do not articulate a specific requirement for the EDCs. To this end, Sections 92C(a) and 92C(c) have been excluded. Section 92B(c)iii describes responsibilities for each EDC following submission of its ESMP; it has been included below but deemed “not applicable” (N/A) for purposes of assessing ESMP compliance with the Climate Act.

|  | **Eversource** | **National Grid** | **Unitil** |
| --- | --- | --- | --- |
| **Section of General Laws Chapter 164** | **Language of General Laws Chapter 164** | **Chapter 2 Cited Source** | **GMAC Assessment of Compliance** | **Chapter 2 Cited Source** | **GMAC Assessment of Compliance** | **Chapter 2 Cited Source** | **GMAC Assessment of Compliance** |
| 92(B)a | ***The department shall direct each electric company to develop an electric-sector modernization plan to proactively upgrade the distribution and, where applicable, transmission systems to:*** |  |
| 92(B)a.i | Improve grid reliability, communications, and resiliency | 4.3.9, 4.4.9, 4.5.9, 4.6.9, 10.0, 6.3 | Yes | 4.0, 6.0, 9.0, 10.0, 6.3, 9.8 | Yes | 4.0, 10.0, 6.3 | Yes |
| 92(B)a.ii | Enable increased, timely adoption of renewable energy and distributed energy resources | 6.1, 7.1 | Yes | 5.0, 6.0, 7.1, 8.0, 9.0 | Yes | 6, 7 | Yes |
| 92(B)a.iii | Promote energy storage and electrification technologies necessary to decarbonize the environment and economy | 7.1, 8.0, 9.0 | Yes | 5.0, 6.0, 7.0, 8.0, 9.0 | Yes | 7, 8, 9 | Yes |
| 92(B)a.iv | Prepare for future climate-driven impacts on the transmission and distribution systems | 10 | Yes | 10 | Yes | 10 | Yes |
| 92(B)a.v | Accommodate increased transportation electrification, increased building electrification and other potential future demands on distribution and, where applicable, transmission systems | 6.0, 8.0, 9.0 | Yes | 5.0, 6.0, 8.0, 9.0 | Yes | 6, 8, 9 | Yes |
| 92(B)a.vi | Minimize or mitigate impacts on the ratepayers of the commonwealth, thereby helping the commonwealth realize its statewide greenhouse gas emissions limits and sublimits under chapter 21N | 7.1, 9.0 | Information not provided | 7.1, 9.0 | Information not provided | 7, 9 | Information not provided |
| 92(B)b | ***An electric-sector modernization plan developed pursuant to subsection (a) shall describe in detail each of the following elements:*** |  |
| 92(B)b.i | Improvements to the electric distribution system to increase reliability and strengthen system resiliency to address potential weather-related and disaster-related risks | 4.3.9, 4.4.9, 4.5.9, 4.6.9, 10.0 | Yes | 4.0, 10.0 | Yes | 4, 10 | Yes |
| 92(B)b.ii | The availability and suitability of new technologies including, but not limited to, smart inverters, advanced metering and telemetry and energy storage technology for meeting forecasted reliability and resiliency needs, as applicable | 6.3, 9.0 | Yes | 6.11, 9.0 | Partial | 6, 9 | Partial |
| 92(B)b.iii | Patterns and forecasts of distributed energy resource adoption in the company's territory and upgrades that might facilitate or inhibit increased adoption of such technologies | 5.0, 8.0 | Yes | 5.0, 8.0 | Yes | 5, 8 | Yes |
| 92(B)b.iv | Improvements to the distribution system that will enable customers to express preferences for access to renewable energy resources | 9 | Yes | 9 | Yes | 9 | Yes |
| 92(B)b.v | Improvements to the distribution system that will facilitate transportation or building electrification | 7.1, 8.2, 8.3, 9.1.1, 9.1.2 | Yes | 5.0, 6.0, 8.0, 9.0 | Yes | 7, 8, 9 | Yes |
| 92(B)b.vi | Improvements to the transmission or distribution system to facilitate achievement of the statewide greenhouse gas emissions limits under chapter 21N | 7.1, 9.0 | Yes | 5.0, 6.0, 7.1, 8.0, 9.0 | Yes | 7, 9 | Yes |
| 92(B)b.vii | Opportunities to deploy energy storage technologies to improve renewable energy utilization and avoid curtailment | 4.3.5, 4.4.5, 4.5.5, 4.6.5, 5.1.6, 9.1.4, 9.5.2 | Partial | 4.3.5, 4.4.5, 4.5.5, 4.6.5, 4.7.5, 4.8.5, 5.2.5, 9.1.4, 9.6.2 | Partial | 4, 5, 9 | No |
| 92(B)b.viii | Alternatives to proposed investments, including changes in rate design, load management and other methods for reducing demand, enabling flexible demand and supporting dispatchable demand response | 7.1.1, 9.1, 9.5 | Partial | 7.1.1, 9.1, 9.5 | Partial | 7, 9 | Partial |
| 92(B)b.ix | Alternative approaches to financing proposed investments, including, but not limited to, cost allocation arrangements between developers and ratepayers and, with respect to any proposed investments in transmission systems, cost allocation arrangements and methods that allow for the equitable allocation of costs to, and the equitable sharing of costs with, other states and populations and interests within other states that are likely to benefit from said investments | 7.1.2, 9.5; 6.3.1, 7.1.3, 12.0 | Partial | 7.1.2, 9.6 | Partial | 7, 9 | No |
| 92(B)b.ix(continued) | For all proposed investments and alternative approaches, each electric company shall identify customer benefits associated with the investments and alternatives including, but not limited to, safety, grid reliability and resiliency, facilitation of the electrification of buildings and transportation, integration of distributed energy resources, avoided renewable energy curtailment, reduced greenhouse gas emissions and air pollutants, avoided land use impacts and minimization or mitigation of impacts on the ratepayers of the commonwealth. | 7.1.2, 9.5; 6.3.1, 7.1.3, 12.0 | Partial | 6.3.1, 7.1.3, 12.0 | Partial | 7, 9 | No |
|  |  |  |  |  |  |  |  |
| 92(B)c | ***In developing a plan pursuant to subsection (a), an electric company shall:*** |  |  |  |  |  |  |
| 92(B)c.i | Prepare and use 3 planning horizons for electric demand, including a 5-year forecast, a 10-year forecast and a demand assessment through 2050 to account for future trends, including, but not limited to, future trends in the adoption of renewable energy, distributed energy resources and energy storage and electrification technologies necessary to achieve the statewide greenhouse gas emission limits and sublimits under chapter 21N; | 5.0, 8.0 | Yes | 5.0, 8.0 | Yes | 5, 8.0 | Yes |
| 92(B)c.ii | Consider and include a summary of all proposed and related investments, alternatives to these investments and alternative approaches to financing these investments that have been reviewed, are under consideration or have been approved by the department previously. | 7.1, 7.1.1, 7.1.2 | No | 7.1, 7.1.1, 7.1.2 | No | 7 | No |
| 92(B)c.iii | Solicit input, such as planning scenarios and modeling, from the Grid Modernization Advisory Council established in section 92C, respond to information and document requests from said council and conduct technical conferences and a minimum of 2 stakeholder meetings to inform the public, appropriate state and federal agencies and companies engaged in the development and installation of distributed generation, energy storage, vehicle electrification systems and building electrification systems. | 3.0 | Yes | 3.0 | Yes | 3.0 | Yes |
| 92(B)d | In order to be approved, a plan shall provide net benefits for customers and meet the criteria enumerated in clauses (i) to (vi), inclusive, of subsection (a) | Not addressed | Information not provided | Not addressed | Information not provided | Not addressed | Information not provided |
| 92(B)e | An electric-sector modernization plan developed by an electric company pursuant to subsection (a) shall propose discrete, specific, enumerated investments to the distribution and, where applicable, transmission systems, alternatives to such investments and alternative approaches to financing such investments, that facilitate grid modernization, greater reliability, communications and resiliency, increased enablement of distributed energy resources, increased transportation electrification, increased building electrification and the minimization or mitigation of ratepayer impacts, in order to meet the statewide greenhouse gas emissions limits and sublimits under chapter 21N. | Not addressed | No | Not addressed | No | Not addressed | No |
| 92(C)b | The council shall seek to encourage least-cost investments in the electric distribution systems, alternatives to the investments or alternative approaches to financing investments that will facilitate the achievement of the statewide greenhouse gas emission limits and sublimits under chapter 21N and increase transparency and stakeholder engagement in the grid planning process. The council shall review and provide recommendations on electric-sector modernization plans developed pursuant to subsection (a) of section 92B that maximize net customer benefits and demonstrate cost-effective investments in the distribution grid, including investments to enable interconnection of, and communication with, distributed energy resources and transmission-scale renewable energy resources, facilitate electrification of buildings, transportation and other sectors, improve grid reliability and resiliency, minimize or mitigate impacts on ratepayers throughout the commonwealth and reduce impacts on and provide benefits to low income ratepayers throughout the commonwealth. The council shall cooperate and coordinate with the clean energy transmission working group. | Not addressed | Information not provided | Not addressed | Information not provided | Not addressed | Information not provided |

1. Executive Office of Energy and Environmental Affairs, Clean Energy and Climate Plan for 2050 at 30, available at <https://www.mass.gov/doc/2050-clean-energy-and-climate-plan/download> (Dec. 2022). [↑](#footnote-ref-2)
2. St. 2022, c. 179, § 53, codified at G.L. c. 164, §§ 92B-92C. [↑](#footnote-ref-3)
3. Eversource, Electric Sector Modernization Plan, available at <https://www.mass.gov/doc/gmacesmp-drafteversource/download?_gl=1%2Ako8zfs%2A_ga%2ANzUwNDI5MDE3LjE2NTA5ODEyMjQ.%2A_ga_SW2TVH2WBY%2AMTY5MzkyMDE2OS4zNi4xLjE2OTM5MjM1NzQuMC4wLjA> (Sep. 2023). [↑](#footnote-ref-4)
4. National Grid, Future Grid Plan: Empowering Massachusetts by Building a Smarter, Stronger, Cleaner and More Equitable Energy Future, available at <https://www.mass.gov/doc/gmacesmp-draftnational> grid/download?\_gl=1%2Adfgptb%2A\_ga%2ANzUwNDI5MDE3LjE2NTA5ODEyMjQ.%2A\_ga\_SW2TVH2WBY%2AMTY5MzkyMDE OS4zNi4xLjE2OTM5MjM1OTcuMC4wLjA (Sep. 2023). [↑](#footnote-ref-5)
5. Unitil, Electric Sector Modernization Plan, available at <https://www.mass.gov/doc/gmacesmp-draftunitil/download?_gl=1%2A3rigaj%2A_ga%2ANzUwNDI5MDE3LjE2NTA5ODEyMjQ.%2A_ga_SW2TVH2WBY%2AMTY5MzkyMDE2OS4zNi4xLjE2OTM5MjM2MTQuMC4wLjA> (Sep. 2023). [↑](#footnote-ref-6)
6. G.L. c. 164, § 92B(a). [↑](#footnote-ref-7)
7. G.L. c. 164, § 92C(b) [↑](#footnote-ref-8)
8. Due to the timing constraints of the review period, a second aggregated spreadsheet for GMAC member and EDC reactions was not completed for the final block of sections (Sections. 2, 7, and 13). Members were instead encouraged to provide their reactions during the final review meetings in November 2023. [↑](#footnote-ref-9)
9. https://www.mass.gov/info-details/grid-modernization-advisory-council-gmac#gmac-executive-committee-meeting-schedule- [↑](#footnote-ref-10)
10. https://www.mass.gov/doc/gmac-equity-working-group-charter/download?\_gl=1%2A1f6n54i%2A\_ga%2ANzUwNDI5MDE3LjE2NTA5ODEyMjQ.%2A\_ga\_SW2TVH2WBY%2AMTY5NTE2MjU4Mi42NC4xLjE2OTUxNjU5NjQuMC4wLjA. [↑](#footnote-ref-11)
11. Massachusetts GMAC Equity Working Group Charter at 1, available at https://www.mass.gov/doc/gmac-equity-working-group-charter/download?\_gl=1%2A1f6n54i%2A\_ga%2ANzUwNDI5MDE3LjE2NTA5ODEyMjQ.%2A\_ga\_SW2TVH2WBY%2AMTY5NTE2MjU4Mi42NC4xLjE2OTUxNjU5NjQuMC4wLjA. [↑](#footnote-ref-12)
12. *See* CETWG, available at https://www.mass.gov/info-details/clean-energy-transmission-working-group-cetwg. [↑](#footnote-ref-13)
13. G.L. c. 164, 92C(b). [↑](#footnote-ref-14)
14. *See* DOER, GMAC, available at https://www.mass.gov/info-details/grid-modernization-advisory-council-gmac. [↑](#footnote-ref-15)
15. DOER, GMAC, available at https://www.mass.gov/info-details/grid-modernization-advisory-council-gmac. [↑](#footnote-ref-16)
16. National Grid, Distributed System Implementation Plan Update of Niagara Mohawk Power Corporation d/b/a National Grid at 3, Figure ES-1, available at <https://jointutilitiesofny.org/sites/juny/files/National%20Grid%20DSIP.pdf>. [↑](#footnote-ref-17)
17. Per D.P.U. 20-75-B, the Provision System Program was intended to address a defined set of group study projects while a long-term solution was developed. D.P.U. 20-75-B at 35. [↑](#footnote-ref-18)
18. G.L. c. 164, § 92B(b)(vii-ix), 92B(c)(ii), 92B(e) [↑](#footnote-ref-19)