City of Boston
Environment

November 13, 2023

Commissioner Mahony
Department of Energy Resources
100 Cambridge Street, #1020
Boston, MA 02114

By Electronic Submission to MA-GMAC@mass.gov

Re: Comments on Electric Sector Modernization Plan Draft Proposed Structure

Commissioner Mahony and Grid Modernization Advisory Council Members,

We are pleased to see the grid modernization proceedings moving forward and appreciate the extensive analysis and planning work being done by the Electric Distribution Companies (EDCs) and Grid Modernization Advisory Council (GMAC). We are already late to envisioning the energy system we will need going forward to achieve our climate change mitigation plans - we need to be building that system now and limiting new investment in fossil fuel systems that will become stranded assets. Dramatically reducing greenhouse gas (GHG) emissions, including from our building and transportation sectors, will require a significant increase in the availability and distribution of clean energy. Such growth needs to be accompanied by measures that limit the need for new infrastructure and implemented in a manner that supports equitable electrification.

The grid modernization proceedings are important to support both our long-term decarbonization goals and ongoing municipal initiatives to advance equitable electrification that provides reliable, resilient and affordable clean energy to residents most in need. The Commonwealth's 2030 emissions targets are coming up fast, and municipalities like the City of Boston are already exploring many of the ideas discussed in the grid modernization plans; we need these plans to translate quickly into action.

The value of this planning process will depend in part on the speed of follow-up action. As such, the electric sector modernization plans (ESMPs), GMAC's recommendations and the Department of Public Utilities' (DPU) orders should include directions to utilities to move forward with implementation, including via exploring new models for partnering with, or supporting initiatives by, municipalities and private parties. For instance, where relevant,

utilities should engage in and support pilot projects before or while the DPU conducts further investigations. Where DPU or utilities do not have the authority to direct or undertake actions recommended by the plans, such gaps should be identified now so that we can seek clarification and/or necessary changes from DPU or the Legislature.

This letter presents, in Section I, three principles that should guide the development, review and implementation of the plans. In brief, these principles relate to: (i) reducing the need for new infrastructure through the use of non-wire alternatives and distributed energy resources; (ii) advancing equitable electrification that considers the distribution of benefits and impacts from innovative approaches and new large infrastructure; and (iii) prioritize deployment of and support for innovative solutions, partnerships, and financing mechanisms, including with municipalities and private parties.

While Section II of the letter provides examples of measures or initiatives that should be pursued to advance these principles, this letter does not attempt to address all aspects of the ESMPs. We look forward to continued opportunities to engage with the utilities, GMAC and the DPU as we move forward in evolving the electric system to support our decarbonization goals in an equitable and efficient manner.

I. Principles to Guide the Grid Modernization Proceedings

We recognize that implementing the principles discussed herein will require work beyond the ESMPs, such as additional dockets by the DPU and, perhaps at times, new authority from the Legislature. However, given that the ESMPs are designed to be a building block for future analysis and decisions, it is important that they include relevant data and ideas to reflect these principles.

A. Reduce the need for new infrastructure through the use of non-wire alternatives and distributed energy resources.

The plans forecast a significant growth in net electric demand, particularly in the Boston metro area, and indicate that existing substations will not be able to meet this demand from a capacity and/or reliability perspective (*e.g.,* Eversource ESMP pgs. 187, 219, 308-09). While the scale of current and projected electric demands makes clear that we will need more electric infrastructure, we should continue to pursue all reasonable and viable opportunities to reduce the amount of new infrastructure that will be required, through both non-wire alternatives (NWA) and distributed energy resources (DER).

NWA and DER measures can serve both as a bridge to future electrification and as a long-term solution. For instance, Eversource's plan to deploy a battery energy storage system (BESS) in

support of the Hyde Park substation in Boston is proposed as an interim measure to address capacity until a new substation is built, while Eversource's BESS-powered microgrid in Provincetown provides a long-term resilience solution in lieu of constructing 13 miles of distribution lines. NWA and DER opportunities should be evaluated as both temporary and permanent alternatives to capacity investments, including a specific analysis regarding the ability to reduce peak loads and delay or reduce the need for building out transmission infrastructure.

The City understands that new bulk substations and associated infrastructure will be needed to accommodate the load growth that electrification of buildings and transportation will bring. But it is important that residents and businesses believe that EDCs, the DPU and the City are doing all that we can to alleviate the need for and sizing of these infrastructure upgrades. Public access to the EDCs forecasting and capacity data and modeling tools will help residents and businesses, and the organizations that represent them, assess and understand the role of NWA and DER and the need for new infrastructure.

B. Promote equitable electrification through the distribution of the benefits and impacts of modernizing the grid

Equity in the context of the energy system requires assessing both (i) access to sufficient affordable electricity to meet reliability and environmental objectives and (ii) the distribution of the benefits and burdens of the infrastructure that provides the electricity. This assessment needs to happen at both municipal and smaller neighborhood levels, which underscores the importance of having accurate data about capacity for DER and new electric loads at both the substation and feeder levels.[1]

Through the lens of equitable electrification, the City is exploring ways to use renewable energy and other NWAs and DERS to enhance the resilience of neighborhoods to extreme temperature and weather events. This could include the development of resilience nodes, whereby we strategically promote combinations of smart systems, demand response programs, and distributed solar and storage systems within specific neighborhoods to support critical facilities and keep community lifelines operating during power outages, *e.g.,* emergency services, food and water distribution, and community cooling or heating centers. Such programs can help respond to high prices and grid constraints, both as a short-term solution and to reduce the size of required upgrades to the grid. Based on the City's analysis of needs and opportunities, we can engage with communities and private developers to create such nodes. Access to the EDC's capacity and forecasting models and data supports these initiatives.

[1] While these comments focus on the distributive aspect of equity, we also fully endorse enhancing procedural equity, including, as noted above, by providing the public greater access to forecasting and capacity data and models.

We echo the GMAC's recommendation that the ESMPs should discuss how NWAs, including energy efficiency, DERs and other technologies are acting to reduce load currently, and how they can continue to act as a bridge to and/or reduce the size of future infrastructure.[2]

C. Prioritize deployment of and support for innovative solutions, partnerships and financing mechanisms, including with municipalities and private parties.

Meeting our GHG emission reduction targets will require more than new infrastructure; it will also require integrating new technologies and revising models for siting, owning, operating and financing our electricity systems. These are complicated questions and there will not be a one-size-fits all solution. For instance, different approaches may be needed to support electrification in affordable housing versus large scale commercial or industrial development. But we cannot wait until we have complete answers to act. We must explore opportunities now, including through pilot projects and shadow programs, and remove barriers to forward-looking work by EDCs, municipalities and private parties.

While the ESMPs include some discussion of pilot projects,[3] there should be additional focus on making sure that the EDCs are positioned to take action early and explore new models for delivering service in ways that protect consumers. (We recognize that some pilots may be occurring through other dockets but believe those should be cross-referenced in the ESMPs for full context.) The pilot projects for utility-owned networked geothermal systems are an example of a model for early action that allows utilities and consumers to explore new technologies while we develop parameters for more large-scale deployment.

The table below includes specific recommendations for pilot projects, shadow programs[4] and/or near-term studies around issues such as, interconnections, microgrids, virtual power plants, ownership programs for solar on small low-income housing, alternative rates for low-income heat pump consumers, and financing mechanisms for building-specific infrastructure required to electrify. To support such initiatives going forward, we encourage the EDCs and DPU to integrate "smart" technologies, such as meters and inverters, into new infrastructure and to assess where upgrades to existing systems are needed for significant NWA and DER undertakings.

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[2] We also encourage ESMPS to assess the total greenhouse gas emissions, including from embodied carbon, that NWAs and DERs can avoid by reducing demand for new infrastructure.

[3] *See e.g.,* National Grid ESMP pages 15, 39, 74, 305, 307 and Eversource ESMP pages 281, 282, 283.

[4] We use the term shadow program to refer to a pilot project without direct impacts. For example, rather than directly apply time varying rates, a shadow program could install the technology needed for time varying rates and measure what the bills *would* be if time varying rates were assessed, but continue to charge consumers regular rates. An alternative format would be to charge the time varying rate but use general ratepayer funds to assure that protected consumers do not lose money, either at all or beyond a specified percentage.

II. Examples of Measures that the ESMPs Should Consider

The table at the end of this section outlines examples of measures that could advance some or all of the principles listed above and for which the ESMPs should build a base for moving forward with pilots and/or broader implementation. Many of these align with recommendations from the GMAC and with initiatives that are already being explored by municipalities and other state programs. Action by the EDCs and/or DPU is in some cases necessary to support or allow important local programs: the deployment of microgrids is an example.

Microgrids are a key tool in reducing peak energy load and increasing resilience and, particularly when paired with non-emitting energy sources and storage capacity, can advance the principles discussed above. The benefits of a virtual microgrid in Chinatown, a neighborhood with high levels of air pollution and heat island impacts, are described by its developers as "provid[ing] local residents with control over their own energy generation, new jobs, revenues and savings, and climate resilience."[5] The City has been working for some time to support the deployment of microgrids. For example, a 2016 "Boston Community Energy Study" assessed where throughout Boston microgrids were most feasible, and the Boston Smart Utilities program recently hired a microgrid design expert to help develop microgrid-ready building guidelines that would expand the City's capacity for microgrids. The City has also explored various ownership and operation models for microgrids and the legal parameters for multi-party systems.

As important as microgrids can be, and despite growing interest in these systems, there is little discussion of microgrids in the ESMPs. The plans and DPU should address issues such as (i) how the EDCs will activate microgrids, or in the case of an individual building, a nanogrid, (ii) the relationship between third-party and utility ownership and operation of various components of a microgrid and (iii) the ability for private parties to run electric lines across public ways without utility consent. The ESMPs should address the issues associated with a growing use of microgrids and the DPU should open a microgrids docket to assess how electric utilities can integrate islandable localized energy generation with its other grid operations and whether statutory changes are needed to support deployment of microgrids. While such a docket is pending, DPU should order/authorize the EDCs to undertake demonstration projects; should that happen, Boston has a microgrid project that is ready to implement.

[5] https://climable.org/chinatown-microgrid

Table: City of Boston Specific Recommendations regarding the ESMPs and Action by DPU

Issue Area	Recommendations	Rationale
Interconnection	1. Explore opportunities to expedite the interconnection process and provide greater transparency on expected timeframes for interconnecting DER and new electric loads. (*See e.g.,* National Grid's Active Resource Integration pilot, which is testing flexible solar and energy interconnections to accelerate distributed generation interconnections. National Grid ESMP pg. 75).	Currently, the interconnection process is lengthy and can be costly, thus deterring development of new renewable energy and electrification projects in new and existing buildings.
	2. Explore financing options for infrastructure needed for new electric loads and/or interconnections, *e.g.,* transformers. Consider issues such as who pays for and who owns the equipment, with potentially different approaches based on the type of building, *e.g.,* affordable housing versus research labs.	To the extent electrification is required or incentivized by state or municipal laws, it may make sense to distribute the costs to grow the grid over the entire rate base, rather than individual buildings (*see e.g.,* DPU Docket 20-75). This is particularly relevant for issues like transformers for smaller buildings, which enable users to buy electricity but do not create market opportunities for the building owner.
Data Access	1. The ESMPs should provide for the continued provision, and updating, of maps that illustrate hosting capacity for DEG and new electrification at both the substation and more localized levels, *e.g.,* at the feeder level and by address where feasible.	Transparency around the capacity for new DEG and electrification projects and the need for new infrastructure is a critical tool for developing community understanding and support for new energy projects, and provides planning certainty to developers. Data availability will help create energy literacy and allow for meaningful stakeholder evaluation and engagement in siting processes and other decisions regarding the development of additional NWAs, DEGs and grid infrastructure.
	2. Provide public access to the EDCs' forecasting and modeling tools and data, both the underlying data and easy to read summaries presented in accessible formats (i.e., tables, charts) and in multiple languages.	
Smart Systems	1. Include smart technology, such as meters and inverters, in new systems/infrastructure and assess integrating into	Smart systems are important components of many innovations and developing technologies, from projects like microgrids and virtual

Issue Area	Recommendations	Rationale
	existing systems. 2. Investigate and deploy grid-interactive efficient buildings (this concept is being explored at the Mary Ellen McCormack project in South Boston).	power plants to time varying rates. Smart systems can increase DER hosting capacity, including improving demand response programs, and improve grid reliability. ESMPs should evaluate integrating these technologies now and going forward so that we have the backbone needed for data-dependent programs.
Microgrids	1. Address how EDCs will activate microgrids and integrate islandable localized energy generation with other grid operations. 2. Address the relationship between third-party and EDC ownership and operation of various microgrid components. 3. Address the ability of private parties to run electric lines across public ways without utility consent. 4. ESMPs should look to deploy microgrids and virtual microgrids now, while we continue to explore ownership models, configurations, etc. Early pilot projects could include Boston's ready to implement Marine Park Microgrid pilot.	Municipalities and private parties are interested in using microgrids, but additional certainty around how EDCs and the DPU will interact with and regulate microgrids is needed to support continued investment. For example, (i) knowing how EDCs will activate microgrids will inform municipal requirements for developers to to build to microgrid-ready standards, and (ii) confirmation from DPU that EDC consent is not required to run electric lines across public ways could support more innovative multi-party microgrids.
Virtual Power Plants	1. The ESMPs should include more discussion of pilot projects for virtual power plants (VPPs), building off National Grid's proposals for VPPs that would aggregate behind the meter residential solar, connected batteries, and smart thermostats to deliver grid services based on targeted distribution network constraints (National Grid ESMP pg. 15). 2. DPU should open a docket to investigate potential rates, particularly distribution charges, for VPPs.	While the ESMPs identified an imminent need to increase the capacity and flexibility of the electric grid that will require the development of new substations, we should also explore alternative options like VPPs. VPPs may help limit the need for new infrastructure, including flattening peak demand and the need for additional transmission resources. While Massachusetts' existing demand response programs are important and should be continued, we need to explore virtual power plants as well.

Issue Area	Recommendations	Rationale
Solar for Low-Income Owners and Tenants	1. Pilot ownership programs for solar on small low-income housing that provides benefits to owners and tenants while avoiding out of pocket expenses and protecting the affected residents from bill increases. (*See e.g.,* Eversource ESMP pg. 285)	Low-income owners and tenants often have limited access to solar and/or the benefits from on-site solar, including financial barriers to direct ownership. EDC financing for rooftop solar owned by low-income owners/landlords that assures savings to the building owner and occupants may reduce overall costs to the general rate payers because of the differential in pricing for solar and electricity discounts for low-income consumers.
Integrate EVs into Demand Response	1. Pilot bi-directional charging for municipal or privately owned large electric vehicle fleets.	Electric vehicles present a potential opportunity for demand response. The City currently has an electric school bus pilot program with a goal of full electrification by 2030. Entering into a utility-municipal partnership, this municipal-owned electric fleet could serve as a reliable backup power source.
Resilience Nodes	1. ESMPs should provide for coordination with municipalities to develop resilience nodes in neighborhoods with known grid congestion. Pilot projects could explore combinations of smart systems, demand response programs, solar generation and storage systems, all with different models of financing and ownership.	Resilience nodes in high priority areas that intersect with high solar generation potential can protect residents and increase access to reliable, resilient and affordable energy. Municipal and community engagement is important to identify priority areas, *e.g.,* high levels of medical electricity dependency or lack of emergency cooling shelters, and to advance community justice.
Rate Structures	1. Run pilot and/or shadow programs to explore new rate structures, *e.g.,* a separate electric rate for low-income consumers with heat-pumps, time varying rates, or peak-load rates. DPU should authorize such pilot/shadow programs and open a docket to explore alternative rates in more detail. 2. Coordinate with gas companies to explore a shared rate for customers converting to electric heat that would support continued maintenance of the gas system without the costs being borne solely by a shrinking rate base.	The ESMPs propose large amounts of capital spending but do not present detailed information on rate impacts or ways to mitigate potential impacts. Rate impacts are an issue in other programs as well, such as the Mass Save program, where concern has been raised about short-term rate impacts on low-income customers that convert to electric-based heat and/or assume heating bills because of electrification in their buildings.

Issue Area	Recommendations	Rationale
Transmission Planning	1. Going forward, the EDCs and DPU should consider when costs associated with the ESMPs could be categorized as transmission costs.	Certain transmission system related costs may be eligible for different forms of cost recovery and thus borne by a larger group than a single ESMP's ratepayers.

Thank you for your attention to these comments. We appreciate your ongoing work on this important issue and look forward to future opportunities to engage in the grid modernization proceedings. Should you have any questions, please contact Aladdine Joroff, Director of Climate Policy (aladdine.joroff@boston.gov; 617-635-3407).

Sincerely,

Chief Mariama White-Hammond
Environment, Energy and Open Space, City of Boston