

Commonwealth of Massachusetts

Executive Office of Energy and Environmental Affairs

Improving Interconnection to the Electric Grid

Driving Meaningful Progress in 2025

May 16, 2025 Webinar





- The Executive Office of Energy and Environmental Affairs (EEA) has developed a workplan to urgently and comprehensively improve the interconnection of new load and energy resources to the electric grid in 2025.
- The workplan is organized around four categories:
 - 1. Proactive incorporation of public policies in grid planning, including economic development and housing, the deployment of clean energy resources, and electrification of transportation and buildings.
 - 2. Interconnection process improvements developed based on customer insights, including improving the customer experience and addressing discrete technical or policy barriers.
 - 3. Systemic, technical modifications intended to improve the interconnection process at scale.
 - 4. Ongoing or forthcoming DPU proceedings related to interconnection.
- EEA will advance this workplan through coordination with EEA agencies (e.g., DOER and DPU) and key stakeholders, and strategic engagement with the utilities.



- Background
- EEA Interconnection Action Plan
- Clean Energy Resources Interconnection Initiative
 - Overview of existing efforts and EEA coordination
- Load Connection Initiative
 - Overview of new initiatives to drive improvements in 2025
- Public Comment and Q&A

Introduction to EEA





- The Executive Office of Energy and Environmental Affairs (EEA) is a cabinet-level office that oversees the Commonwealth's six environmental, natural resource and energy regulatory agencies.
- EEA seeks to protect, preserve, and enhance the Commonwealth's environmental resources while ensuring a clean energy future for the state's residents.
- Energy agencies
 - Department of Energy Resources (DOER)
 - Department of Public Utilities (DPU)
 - Massachusetts Clean Energy Center (MassCEC; quasi-public)

Background: Electric Utilities in Massachusetts

Investor-Owned Electric Distribution Companies (EDCs)

- **Count**: 3. National Grid, Eversource Energy, and Unitil
- **Customers**: EDCs serve ~90% of electricity customers in the state
- Regulation: The Department of Public Utilities (DPU) regulates the prices and other terms and conditions of the rates EDCs charge for building, operating, and maintaining the local electric distribution system. EDCs may not adjust revenue or rates without approval by the DPU.

Municipal Light Plants (MLPs)

- **Count:** 41
- Customers: MLPs serve ~10% of customers
- **Regulation**: Run by municipal light boards or commissions in a municipality, or by the mayor/board of selectmen. Municipal officials set rates.



Electric Service Providers by Municipality



Background: Emissions Reduction Requirements and Strategy



Massachusetts is required by law to achieve Net Zero emissions in 2050.

- EEA is required to establish interim GHG limits every five years and publishes Clean Energy Climate Plans (CECPs) to outline the Commonwealth's strategy for meeting these limits.
 - The limit for 2025 is 33% of 1990 levels
 - The limit for 2030 is 50% of 1990 levels
- EEA must also set sublimits for six sectors of the state economy:
 - Residential Heating and Cooling;
 - Commercial and Industrial Heating and Cooling;
 - Transportation;
 - Electric Power;
 - Natural Gas Distribution and Service; and
 - Industrial Processes.

TRANSPORTATION

97%

of light-duty vehicles

(5 million) electrified

93% of medium- and heavy-duty vehicles (over 350,000) electrified or non-emitting

BUILDINGS

80%

of homes (over 2.8 million) heated and cooled by electric heat pumps (including those with on-site fuel backups)

ELECTRIC POWER

2.5-fold increase in electric load compared to 2020



97% of electricity consumed is from clean and renewable sources



87%

of commercial space

or alternative fuels

heated by either electricity

NON-ENERGY AND INDUSTRIAL

52% of industrial energy use electrified



Source: Clean Energy and Climate Plan for 2050

Background: Evolution of the Electric Grid



 While MA has made significant progress on energy efficiency, electrification, population growth, economic development, including data centers, are increasing electric demand.

- To meet our ambitious emissions reduction limits, MA will need to electrify transportation and buildings.
- By 2035, electric load is likely to have grown by as much as 50% compared to today.
- Increase of distributed energy resources (DERs) like solar and storage on distribution grid create the need for grid investments as well.
- Electricity system components of the 21st century grid, like two-way flows of power and variable renewable resources, also require a more dynamic grid to respond to electricity supply and demand in real-time.
- This has led to the need for more proactive planning to modernize the grid and ensure it can handle the increase in load and DERs.



Tomorrow's Grid



- Interconnection refers to the connection of new energy resources, like solar energy or battery storage, to the transmission or distribution grid.
- Load connection refers to connecting, or "plugging in," a new source of electric load, like new construction or an EV charger, to the distribution grid.







- Existing interconnection barriers inhibit Massachusetts' ability to deploy clean energy at the scale and on the timeframe necessary to achieve our statutory climate requirements, and weaken the Commonwealth's competitiveness.
- Customers often can't plug into the grid due to a lack of grid capacity, and face a long, complex and sometimes expensive process.
- This is caused by insufficient grid capacity in many areas of the state, a lack of necessary equipment like transformers, complex and unclear interconnection processes, and prohibitive grid upgrade costs for interconnecting facilities.
- Traditional utility planning is also at odds with the sudden growth in demand for electrical system capacity and the need for proactive distribution system planning for a net zero emissions future.
- These interconnection barriers increase the cost of doing business in the Commonwealth and the costs passed on to ratepayers.



To address these issues, EEA worked with the Department of Energy Resources (DOER) and Department of Public Utilities (DPU) to develop an **Interconnection Action Plan**, which includes numerous efforts to urgently and comprehensively improve the interconnection of new load and energy resources to the electric grid.





Clean Energy Resources Interconnection Initiative



- Energy projects in Massachusetts must follow a DPU or ISO New England-approved process to interconnect to the electric grid to ensure reliability, safety, and fair access to the grid.
- For projects connecting to the transmission grid, projects must receive approval from the regional grid operator ISO New England. The required process is laid out in ISO's Open Access Transmission Tariff for Large Generator Interconnection Procedures and Small Generator Interconnection Procedures.
- To connect to the distribution grid of an investor-owned utility, projects must follow the interconnection process pursuant to that utility's Standards for Interconnection of Distributed Generation tariff (DG Interconnection Tariff).

Submit application→ deemed complete and placed in simplified, standard or expedited process Standard and expedited process conduct **distribution** system impact study - possibility of ASO study Interconnection Service Agreement issued with cost estimates +/- 25% → construction timeline set once payment received

Interconnection Barriers

- Currently, there are long queues of energy projects waiting to be connected to the grid in a number of areas throughout the Commonwealth.
- A lack of grid capacity, resulting in interconnection delays, and traditional cost allocation methodologies that assign prohibitive upgrade costs to interconnecting facilities can make clean energy projects uneconomical.
- Barriers to interconnection significantly inhibit Massachusetts' ability to deploy clean energy at the scale and on the timeframe necessary to achieve our climate requirements.
- It is important to address these issues now so that the Commonwealth can take advantage of siting and permitting reforms that were approved in the 2024 Climate Act.







	Capital Investment Project (CIP)	Electric Sector Modernization Plans (ESMP)	Long-Term System Planning Proposal (LTSPP)*	EV Charging Grid Planning (Section 103)
Frequency	As Needed	5 Years	5 Years	2 Years
Investments	Grid investments in specific geographic areas to create capacity for solar and storage	Investments for grid modernization and decarbonization	 Proactive investment to create capacity statewide for solar and storage Will replace CIPs 	 Proactive investment to enable EV fast charging hubs and fleet depot charging
Timeframe/scope of investments	Intended to build capacity for existing interconnection queue	Five-and ten-year demand forecasts	Will coincide with ESMP five-and ten-year demand forecasts	10-year EV charging demand forecasts; investments limited to fast charging hubs and fleet depots

*As proposed in the recent EDC filing with DPU



Origin

EDCs were required to create ESMPs in the 2022 Climate Law to modernize and upgrade the electric grid to enable an affordable, equitable clean energy transition.

What it is

The ESMPs are published every 5-years and must:

- Improve grid reliability, communications, and resilience; enable increased, timely adoption of renewable energy and DERs
- Promote energy storage and electrification technologies for decarbonization
- Prepare for climate-driven impacts on T&D systems
- Accommodate transportation and building electrification, and other new loads
- Minimize or mitigate impacts on ratepayers
- Include 5-year and 10-year forecasts and a demand assessment through 2050.

Status

- In August 2024, the DPU approved the first ESMPs as strategic plans.
- DPU has initiated the second phase of the ESMP proceeding establishing an interim cost recovery mechanism for the investments included in the utilities' ESMPs. In addition, DPU is investigating metrics and reporting templates for ESMP investments.

Other State Involvement

•The Grid Modernization Advisory Council, chaired by DOER, provided recommendations to the EDCs on their proposed ESMPs

Long-Term System Planning Process (LTSPP)



- In the ESMP Order, the DPU established a Long-Term System Planning Process (LTSPP) working group to establish a long-term process for the EDCs to proactively identify infrastructure needs to facilitate DER interconnection.
- DOER participated in the working group alongside Distributed Generation (DG) stakeholders and the Office of the Attorney General.
- After a seven-month stakeholder process, the EDCs filed their proposal for a framework for a Long-Term System Planning Process for Distributed Generation on May 9, 2025. It includes a proposal for a Long-Term DG Assessment every five years, stakeholder input into that assessment, and a cost allocation methodology.
- DOER's primary areas of non-consensus with proposal:
 - LTSPP should include electrification load
 - Stakeholder engagement in the LTSPP should extend to electrification stakeholders (such as C&I customers)
 - The current proposal lacks appropriate incentives for and incorporation of flexible interconnection
- DPU issued a memorandum establishing docket D.P.U. 25-20 for subsequent adjudication and noted there will be an opportunity for stakeholders to submit written comments on the LTSPP report after it is filed.
 - DOER plans to participate in the DPU proceeding and will provide detailed comments with substantive recommendations.

Flexible Interconnection

- Flexible interconnection is a "no-regrets" solution to get more renewable energy resources online faster and cheaper using readily available technology.
- It allows customers and distributed energy resources (DERs) to connect to the grid in regions with limited grid capacity without the need for infrastructure investments.
- Flexible interconnection can be defined as any process by which a distribution company allows new distributed energy resources to interconnect to the electric distribution grid based on an agreed upon curtailment schedule or protocols and associated tariff, contract, or technical requirements.
- Paired with distributed energy resource management systems, DER like solar and storage can be curtailed in real time using software, enabling the utility to reduce infrastructure costs by limiting DER production during worst-case scenarios instead of overbuilding the grid to accommodate them.
- EEA is working with DOER and industry to identify how best to advance flexible interconnection, whether through the IIRG or legislation.



Grid Planning for EV Charging Infrastructure





- Section 103 of the <u>2024 Climate Law</u> requires a new grid planning process specifically for investments to accommodate EV charging.
- The Electric Vehicle Infrastructure Coordinating Council (EVICC) is required to conduct a 10-year EV charger forecast in its Assessment to the Legislature every two years, and to identify areas of the grid that may need grid upgrades based on this forecast. The first forecast will be released in August 2025.
- EVICC will then work with state agencies and the EDCs to identify fast charging and fleet charging hubs across Massachusetts.
- Within a year of the Assessment, the EDCs are required to identify distribution system upgrades necessary to meet the 10year EV charging demand, and to file a plan for the necessary grid upgrades with DPU.



- The Interconnection Implementation Review Group (IIRG) works to identify and discuss policy issues related to DG interconnection and provide recommendations to DPU on systemic improvements that can unlock further DG deployment.
- The IIRG is made up of utility, non-utility, and advisory panel members
 - DOER is an active member of the IIRG, alongside the electric utilities and stakeholders.
- On March 25, 2025, the IIRG filed recommended interconnection process improvements:
 - Updated simplified / expedited tariffs
 - Allowing projects stuck behind group studies to move forward (where capacity)
- The filing also highlighted EDC and industry members "support further discussions with the Department on Simplified process interconnection costs, including discussions exploring cost sharing mechanisms [for transformer costs]."

Transmission



The Federal and Regional Energy Affairs Office (FREA) within EEA is engaged, alongside other New England states, in multiple efforts to improve interconnection on the transmission level.

Distribution (Dx) / Transmission (Tx) Planning Coordination Protocols

- FREA, DOER and DPU are working together to:
 - better understand whether and how state-level distribution planning efforts are incorporated into regional transmission planning by ISO-NE and transmission owners;
 - better understand how costs associated with correlated transmission/distribution system upgrades are allocated; and,
 - identify whether and what opportunities exist to enhance distribution/transmission planning coordination.

Phase II Transmission Procurement

 In December 2024, the New England states submitted a request to ISO-NE to issue a regional transmission procurement to unlock onshore wind resources in Maine, enhance system reliability, and reduce customer costs. ISO-NE issued the procurement RFP On March 31, 2025, and expects to select a project by September 2026. FREA will continue to engage with NESCOE, ISO-NE, and stakeholders to progress the Phase II transmission procurement.

FERC Order No. 2023 Compliance

In July 2023, FERC issued Order No. 2023, mandating significant reforms to generator interconnection procedures and agreements. ISO-NE submitted its Order No. 2023 compliance filing with FERC in May 2024. On April 5, 2025, FERC issued an Order that, in large part, approved ISO-NE's compliance proposal without modification. FREA will continue to work with ISO-NE and clean energy developers throughout the finalization and implementation of ISO-NE's 2023 cluster study process. Similarly, FREA will work with stakeholders in identifying and pursuing any additional interconnection improvements to ensure timely integration of clean energy resources.

DG ASO Study Coordination

 ISO-NE is reviewing planning procedure updates regarding DG ASO coordination in light of FERC's order. FREA will continue to work with ISO-NE, clean energy developers, and other stakeholders with respect to ISO-NE's finalization and implementation of DG ASO coordination processes and potential opportunities for improvement.



Distribution	Transmission
Electric Sector Modernization Plans	Distribution (Dx) / Transmission (Tx) Planning Coordination Protocols
Long-Term System Planning Process	Phase II Transmission Procurement
Flexible Interconnection	DG ASO Study Coordination
EV Charging Grid Planning	FERC Order No. 2023 Compliance
DG Interconnection Process Improvements	

Energy Affordability, Independence, and Innovation Act DER Interconnection



More information on the Energy Affordability, Independence, and Innovation Act can be found here

Long-Term Distribution System Planning (Section 30)

 Would require DPU to create a comprehensive distribution system planning and cost recovery framework that encompasses the electric-sector modernization plans and the discrete investments identified therein, base distribution rates and associated applications, reconciliation charges and associated filings, and other relevant DPU department proceedings and electric company filings by July 1, 2028.

Comprehensive Load Management and Virtual Power Plan Plans (Sections 29 + 56)

- Would require the EDCs to include a comprehensive load management and virtual power plant plan in their next ESMP filing that, based on the best available data, minimizes ratepayer costs and maximizes ratepayer benefits of distributed energy resources and distributed generation to the greatest extent possible.
- Would require the EDCs to file an initial version of the plan ahead of the next ESMP, one year after the Act is authorized, to allow for iteration with stakeholders ahead of the next ESMP.

Flexible Interconnection (Section 41; NEW Section 159 of Chapter 164)

 Would require the EDCs to offer a comprehensive flexible interconnection program designed to enable the efficient connection of new customer loads and to maximize the deployment of distributed energy resources, while minimizing associated electric infrastructure costs. Flexible interconnection is defined generally as any agreement between the resource and the utility to operate in an agreed upon manner to avoid grid infrastructure costs.

Critical Facility Microgrids (Section 41; NEW Section 160 of Chapter 164 + Section 56)

 Would allow government microgrids to operate in the public right-of-way and requires tariffs to enable such microgrids to be in place by July 1, 2027.

Other Provisions

• Would move SMART to Chapter 25A (new section 24), modify net metering for large systems, and requires a common DG application



Load Connection Initiative



- The Administration has received increasing numbers of complaints about grid capacity issues and the grid connection process from new load customers like businesses and housing developments.
- The process for connecting new customer load to the electric grid can be a barrier to economic and housing development, including the timeframes for connecting new load and making necessary grid upgrades.
- As Massachusetts electrifies its buildings and new load is added to the grid due to new housing and economic development, the amount of load the electric grid will need to support in 2035 is estimated to grow by as much as 50 percent compared to today.
- Reforms to this process should be made now before this problem grows, leading to longer wait times for connection and higher costs.





On average takes about 40 weeks, but the process can take from a few weeks to several years depending on the project

Important Information on Load Connection Process

- Engage with your utility early in the project development cycle to understand the available grid capacity
- Submit a formal work order / connection request ASAP
- Work towards any payment steps in the connection request process ASAP, as this step is typically the trigger to hold your position in the connection queue
- Transformer supply chains are highly constrained, causing significant delays



- In response to customer input and staff experience with the new load connection process, EEA is meeting monthly with National Grid, Eversource, and Unitil to identify ways to improve the customer experience and the availability and accessibility of easily understandable resources.
- Opportunities for collaboration include:
 - Developing additional customer resources
 - Establishing process(es) to identify new developments
 - Coordinating EDC approaches to customer processes
- The following slides include early ideas provided for context and input.

Developing Additional Customer Resources



Develop a central website with links to relevant utility webpages

- Develop a generic one-pager like the one on the right to explain the new load connection process
- Each EDC creates one landing page that the central website links to.
- EEA will work with MMWEC and ENE to develop landing page(s) for the MLPs.

Develop new customer resources and/or find new ways to promote existing resources, including, but not limited to:

- Improve and/or promote public grid capacity / loading maps
- High-level analysis of where MBTA Communities Act encourages development and where there is grid capacity
- Dos and Don'ts document for developers with common barriers / misunderstandings

New load connection process webinars/trainings

 Semi-annual/quarterly trainings for building developers (e.g., housing, new businesses), EV charging developers, and municipalities

Step Zero Process

Create / update an early engagement process for customers adding load





- One common issue → information about planned construction or electrification project does not make its way to the utility, which can lead to significant project delays if sufficient grid capacity does not exist at that location, requiring upgrades.
- A process that systematically (and, ideally, automatically) provides them with the relevant information about planned large projects as soon as the local planning department or state government is notified would help them plan better and reduce timelines for projects.
- EEA hopes to engage with customers, municipalities, and other state agencies to identify a process through which information on new construction or electrification projects could be passed along to the EDCs.



- Over the coming months, EEA plans to engage with businesses, municipalities, and other large load customers to learn more about load connection or electrification barriers and any knowledge gaps among customers, and identify additional potential solutions.
- EEA is currently working with the following groups to hold "focus groups" with businesses and developers:
 - Metropolitan Area Planning Council (MAPC; likely 2-3 focus groups with their members in early summer)
 - MassHousing and others state agencies and relevant stakeholders working on affordable housing
 - Other Regional Planning Agencies, like MAPC
- EEA plans to hold other roundtables to engage with business, municipalities, universities, EV charging owners and other large load customers across the state this summer and fall.
- We will use the findings and solutions from these convenings into our broader efforts to improve load connection processes.
- The <u>Improving Interconnection to the Electric Grid webpage</u> will be updated with any planned opportunities for public engagement.



- EEA plans to use its monthly meetings with the EDCs to identify potential, existing process or technical barriers and make improvements to the load and DG interconnection processes for customers.
- We are collectively doing a deep dive on the connection processes to:
 - Better understand the potential public policy implications of the current processes
 - Discuss potential concerns and/or improvements
 - Identify ways the processes could be standardized
- We also plan to present the finding of our convenings with large load customers regarding new connection barriers to help identify potential improvements.



- The Office of Energy Transformation (OET) has created a new focus area working group to develop solutions to create economic development zones that have grid capacity and are clean energy-ready, to enable businesses like climatetech or advanced manufacturing to more quickly and easily expand and grow.
- Through the Enabling Sustainable Economic Development Work Group, OET hopes to enable the following:
 - Expand grid capacity and streamline the process for connecting new customer economic development-enabled load to the electric grid.
 - Help drive economic development to areas with least grid impacts and are aligned with existing capacity and/or future plans.
 - Attract more businesses like advanced manufacturing, life sciences, climatetech, and Al.
 - Increase competitiveness with other jurisdictions that provide energy-focused support/amenities.
 - Additional focus on and coordinated stakeholder input into EEA's ongoing work to meaningfully improve the interconnection of new load and energy resources to the electric grid.

State-Led Load Electrification Projections





Electrification Load Projections

- EEA is developing projections of anticipated transportation and building electrification load in the next ten years, and the impact of this new load on the electric grid.
- These projections will help inform that state's engagement with the EDCs on proactive grid planning processes.

Building Electrification Load Projections

• EEA is developing a granular analysis of the deployment of anticipated new, electric building heating and cooling measures, and a high-level assessment of the impact on the distribution grid consistent with existing regulatory requirements and the state's Clean Energy and Climate Plans.

EV Charging Projections in EVICC Assessment + Subsequent Grid Upgrade Identification Processes

• EEA will complete a geographic analysis of the EV chargers needed to meet the state's climate goals through 2035 by August 2025. EVICC will then work with stakeholders to identify fast charging hubs and fleet depots and necessary grid upgrades to enable this demand, as required by the 2024 Climate Law.



Collaboration with Utilities	State-Led Efforts
Developing Additional Customer Resources	Engagement with Large Load Customers
Establishing a Process to Identify New Building Developments	Enabling Sustainable Economic Development Work Group
Coordinating EDC Approaches to Customer Processes	State-Led Electrification Projections

Energy Affordability, Independence, and Innovation Act New Load Connections



More information on the Energy Affordability, Independence, and Innovation Act can be <u>found here</u>

Long-Term Distribution System Planning (Section 30)

 Would require DPU to create a comprehensive distribution system planning and cost recovery framework that encompasses the electric-sector modernization plans and the discrete investments identified therein, base distribution rates and associated applications, reconciliation charges and associated filings, and other relevant DPU department proceedings and electric company filings by July 1, 2028.

Updates to the Electric Sector Modernization Plans (Section 29)

- Would add consideration of housing and economic development load to the list of EDC considerations required to be included in future ESMPs.
- Would require the EDCs to coordinate with state agencies and stakeholders on housing and economic development inclusion in the ESMPs.

Codifying Enabling Sustainable Economic Development Work Group (Section 51)

• Would codify the current working group into statute and would allow DPU to consider any recommendations of the group, including, but not limited to special contracts or tariffs.

Other Provisions

• Would allow submetering for heating/cooling, on-bill financing of clean energy and building efficiency investments, and the utilities to own heat loops

Stay Involved

- Join one of our customer convenings this summer and fall to provide feedback on your experiences with the load connection process.
- All public engagement opportunities will be posted on the <u>Improving Interconnection to the Electric Grid webpage</u>.
- The <u>Grid Modernization Advisory Council (GMAC)</u> is hosting an in-person event to convene municipal stakeholders and community leaders who are interested in and/or taking steps to decarbonize and electrify their city or town. Community engagement strategies and recommendations will be discussed through facilitated breakout discussions.
 - Thursday, July 17, 2025 from 9:00 AM 12:30 PM
 - Location: 100 Cambridge St. Boston, MA 02114
 - Please fill out this form to indicate your interest in attending: <u>Interest Form</u>







- Use the "raise hand" function to indicate your desire to speak at the appropriate time
- Identify yourself and affiliation prior to commenting
- Limit comments and questions to 3 minutes
- Please engage in constructive and respectful dialogue
- Be able to substantiate assertions or claims in support of comments



Thank You!