

Summary of MA DPU Grid Modernization Order

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The Massachusetts Department of Public Utilities came out with an order on June 12, 2014 to establish the platform and incentives for utilities and other businesses to innovate, invest and encourage usage of new technology to modernize the grid. Though they have eased some of the requirements in the initial order, they have generally required the utilities to move quickly towards grid modernization.

- Grid Modernization Plan
 - The Order requires all companies to submit their first 10 year Grid Modernization Plan (GMP) within 9 months of the later of Department's final Order in Time Varying Rates and Department's final directive to companies regarding the presentation of their GMP business cases for capital expenditures.
 - The GMP is the company's roadmap for grid modernization, covering all grid modernization planning and investment, not only investments that are incremental, and not limited to capital investments.
 - Ten-year Grid Modernization Plan should outline how each company will make progress towards the four primary objectives:
 - Reduce the effects of outages to meet service quality goals, reduce outages due to extreme weather and enhance resiliency in the face of climate change
 - Optimize demand, which includes reducing system and customer costs – mechanisms such as time-varying rates and distribution grid technologies such as Volt-VAR Optimization are provided as primary examples. The Department is specifically calling out VVO as an important component of any plan, though they are leaving open the possibility of model based CVR vs. just AMI based CVR
 - Integrate distributed resources such as renewables, EVs, microgrid and storage
 - Improve workforce and asset management by reducing operations and maintenance costs and efficiently deploying resources for storm response and other outage events
 - Each plan should also include:
 - An outline of timing and priorities
 - Marketing, education, and outreach plan
 - Research, development, and deployment plan
 - Proposed infrastructure and performance metrics to measure progress in achieving grid modernization objectives
- Short Term Investment Plan
 - The Order requires that the GMP contain a Short Term Investment Plan (STIP) for the next five years, which applies only to a company's capital investments for the first five years of the GMP and is supported by business case analysis.
 - The STIP must include a plan for completing AMF (advanced metering functionality) within the five years, though the order allows the companies to present a longer term AMF plan if the business case does not justify the investment within 5 years. Also, the STIP may include a proposal for grid modernization capital investments other than those associated with advanced metering functionality.
 - Advanced Metering Functionality:
 - Department's role is to determine an appropriate level of functionality, rather than to specify advanced metering infrastructure ("AMI") or some other technologies
 - Collection of customers interval usage data in near real time
 - Automated outage and restoration notices
 - Two way communications between customer and distribution company
 - With customer's permission, communication and control of appliances

- Should be noted that the Department is committed to existing consumer connect / disconnect protection policies and indicates remote connect / disconnect may not be cost effective given the state's policies
 - Does not include VVO and measurement of customers' power quality
 - Cost Recovery
 - Investments contained in the STIP, that is, capital investments made during the first five years of the GMP, are eligible for pre-authorization which involves a review of the company's cost estimates for a project, such that the Department will not revisit in later filings whether the company should have proceeded with these investments.
 - The STIP investments are eligible for targeted cost recovery through a capital expenditure tracker mechanism. These costs include incremental capital investments made within five years of approval of a company's GMP and made for (1) "advanced metering functionality" or (2) "other" incremental grid modernization capital investments, but the latter only as part of a STIP that also addresses advanced metering functionality. "Other" investments must comply with the used and useful standard to obtain tracker relief, but they are not requiring the AMF investments be used / useful in the current year to receive relief.
- Marketing, education, and outreach plan
 - Each company's plan should consist of a component that is common to all of the companies as well as a company-specific, local component.
 - The common component should reflect a collaborative effort resulting in a uniform approach for all the electric distribution companies.
- Research, development, and deployment plan
 - Each electric distribution company should propose projects that could include, but is not limited to smart inverter systems, energy storage, vehicle-to-grid, and software and hardware tools that optimize system planning and management.
 - The Department realizes there will be failures with R&D investments and will not penalize utilities for trying new projects that do not succeed. R&D projects will also be funded by the tracker.
- Proposed infrastructure and performance metrics to measure progress in achieving grid modernization objectives
 - Each electric distribution company must propose two types of company-specific metrics: (1) infrastructure metrics that track the implementation of grid modernization technologies and systems; and (2) performance metrics that measure progress towards the objectives of grid modernization.
 - In addition to the company-specific metrics, the Department directs the electric distribution companies to jointly propose a common list of statewide metrics. To accelerate the development of the statewide metrics they have put together an illustrative list (see Appendix A for full list).
 - The Department finds the purpose of GMP metrics will be to record and report information, and that the metrics will not at present be tied to incentives or penalties.
- Cybersecurity, Privacy, and Meter Data Access
 - The Department expects electric distribution companies to integrate into their existing processes any cybersecurity considerations that are raised by modernizing the grid. Further, the Department requires the companies to address in their GMPs how they will prevent unauthorized access to control systems, operations, and data.
 - Customer-specific data cannot be shared without customer approval.
 - Customer aggregate data may be shared but only after Department-approved procedures are in place to ensure that such data cannot be linked to specific customers.
- Concerns about health effects and opt-out provisions
 - Though they received significant comments on RFI health issues, they reject the scientific evidence and are not letting health issues impact the order.
 - Requires the companies to provide customers with an option to decline the installation of advanced meters.
 - The Department recommends that companies propose in their GMP an illustrative opt-out tariff with an explanation of any cost assumptions and they do not recommend an opt-in program

Appendix A: List of Statewide Metrics

Grid Modernization Objectives	Statewide Metrics
Reducing the effects of outages ²⁸	<ol style="list-style-type: none"> 1. Total number of customer outage minutes avoided as a result of GMP investments (duration) at system or circuit level 2. Total number of customer interruptions avoided as a result of GMP investments (frequency) at system or circuit level
Optimizing demand, including reducing system and customer costs	<ol style="list-style-type: none"> 1. System peak demand 2. Reduction in peak demand from GMP investments 3. System load factor and load factor by region and by customer rate class 4. Reductions in system line losses (for transmission and distribution) from GMP investments 5. Total number and percent of customers on TVR (company administered or other) 6. Total number and percent of customers using web-based portal to access energy usage information or to enroll in energy information

	<p>programs (company administered or other)</p> <p>7. Total number of successful (verified) peak shaving attempts and reductions in peak demand by customers during a given peak event</p>
Integrating distributed resources	<p>1. Total number of grid-connected distributed generation facilities, nameplate capacity and estimated output of each unit, and type of customer-owned or operated units²⁹</p> <p>2. Baseline distributed generation hosting capacity that companies can accommodate at each circuit and at the system level</p> <p>3. Incremental increase in hosting capacity as a result of GMP investments</p>
Improving workforce and asset management	<p>1. Total number of sensors in distribution system (<u>e.g.</u>, voltage or current)</p> <p>2. Total number and percent of distribution system circuits/ feeders equipped with automation or remote control equipment</p> <p>3. Total number and percent of substations equipped with automation or remote control equipment, including supervisory control and data acquisition (<u>i.e.</u>, SCADA) systems</p>