

Recommendations from the GWSA IAC Electricity Sector Working Group
(August 30, 2018)

Responding to EEA's request in its 2017-18 Work Plan for the GWSA IAC,¹ the electricity sector working group submits the following recommendations for EEA's development of the Commonwealth's 2020 Clean Energy and Climate Plan. This input includes responses to the two questions posed in the Work Plan regarding the electricity sector² but also other detailed recommendations based on analysis by the Commonwealth using the LEAP emissions accounting tool in support of the 2030 Plan, and by others.³

Included here are several key recommendations for EEA and its agencies to focus in the early 2020s on developing and implementing structural and market changes likely necessary for the successful and least-cost operation of a transitioning-to-low-carbon and ultimately ultra-low-carbon electricity grid in the post-2030 timeframe.

The following Recommendations are not ranked or in preference order. The electricity sector working group looks forward to continued discussion with EEA regarding the timely implementation of these and other important recommendations.

Recommendation 1: EEA should direct DOER to develop, and DPU to approve, a comprehensive statewide plan to maximize emissions reductions from the integration and use of DERs and clean micro-grids on the distribution grid.

Responding to EEA's Work Plan prompt regarding initiatives to help advance the integration of distributed energy resources (DERs)⁴ on the distribution grid, we recommend that EEA direct the Department of Energy Resources (DOER) to develop, and the Department of Public Utilities (DPU) to approve a comprehensive statewide plan to maximize emissions reductions, at least-cost to businesses and families, from the integration and use of DERs and clean micro-grids on the distribution grid. The plan should be: based on best-available DER integration information and practice; should include one or more hosting capacity analyses that meet the most current Interstate Renewable Energy Council (IREC) guidelines;⁵ and should include analysis of and applicable to the use of clean, local, distribution-side micro-

¹ EEA, *GWSA IAC 2017-2018 Work Plan for the 2030 Plan* (Dec. 19, 2017).

² See *id.* at 2 (for August meeting re: electric sector emissions: "1. What initiatives can be taken to help both the utilities and customers integrate and optimize distributed energy resources (DERs) on the distribution grid? ¶ 2. What new cost effective initiatives can be taken to help change consumption behavior and reduce peak demand?").

³ See, e.g., ISO-NE, *2016 Economic Study: NEPOOL Scenario Analysis* (Nov. 17, 2017); Synapse Energy Economics, Inc. & Sustainable Energy Advantage LLC, *An Analysis of the Massachusetts Renewable Portfolio Standard* (May 2017); EEA & DEP, *Analysis of Massachusetts Electricity Sector Regulations 310 CMR 7.74 and 310 CMR 7.75 Electricity Bill and CO2 Emissions Impacts* (Aug. 2017); Synapse Energy Economics, Inc., *New England's Shrinking Need for Natural Gas* (Feb. 7, 2017).

⁴ DERs are energy generation and storage devices and controllable loads connected to the distribution system and may include: solar PV, battery storage, demand response, electric vehicles, and "smart" appliances and HVAC systems.

⁵ See IREC, *Optimizing the Grid: Regulator's Guide to Hosting Capacity Analyses for Distributed Energy Resources* (Dec. 2012), available at: <https://irecusa.org/publications/optimizing-the-grid-regulators-guide-to-hosting-capacity-analyses-for-distributed-energy-resources/>

grids. The plan should be developed by the Commonwealth together with independent third party experts as needed and should include mandatory input from – but not be developed solely or primarily by – the state’s electric distribution companies. The plan should include concrete program and policy recommendations for implementation beginning in 2022, to include immediate review and revision of EDC grid modernization plans, as needed to enable the comprehensive DER/clean micro-grid integration plan.

Recommendation 2: EEA should direct DOER to develop, and DPU to approve a comprehensive statewide plan to reduce peak electricity demand in Massachusetts in a manner that cost-effectively maximizes emissions reductions associated with peak electricity demand.

Responding to EEA’s Work Plan prompt regarding initiatives to help reduce peak electricity demand, we recommend that EEA direct DOER to develop, and DPU to approve a comprehensive statewide plan to reduce peak electricity demand in Massachusetts in a manner that maximizes emissions reductions associated with peak electricity demand, and does so at least-cost to businesses and families. The plan should be based on best-available information and practice regarding peak demand reduction and should consider, but not be limited to, deployment of time-of-use, or time-blocked, rates together with “smart grid” and consumer tools (e.g., real-time price and system information for customers, active demand management technologies, on-site storage, etc.) to access and respond to them. The plan should be conducted by the Commonwealth together with independent third party experts as needed and should include mandatory input from – but not be developed solely or primarily by – the state’s electric distribution companies (EDCs). The plan should include concrete program and policy recommendations for implementation beginning in 2022, to include immediate review and revision of EDC grid modernization plans, as needed to enable the peak demand plan.

Recommendation 3: EEA should immediately commission, in order to directly inform and integrate into its 2030 Plan, detailed, quantitative “backcast” modeling and analysis of the Commonwealth’s energy economy and emissions in their regional context.

Responding to the cross-sector nature of the economy-wide deep decarbonization required to meet the GWSA’s 2050 emissions limit, and in light of best-available technical analysis which understands the necessity of a clean electricity sector in order to cost-effectively decarbonize the building and transportation sections, we recommend that EEA immediately commission, in order to directly inform and integrate into its 2030 Plan, detailed, quantitative 2050 “backcast” modeling and analysis⁶ of the Commonwealth’s energy economy and emissions in their regional context, to include the regional electric grid, sufficient to identify multiple technically and economically feasible pathways of reducing statewide emissions consistent with the GWSA’s 2050 emissions limit.

⁶ Such modeling and analysis should be comparable to that conducted by the European Union in support of its Roadmap 2050 effort (*available at:* <http://www.roadmap2050.eu/reports> (technical and economic analysis)), or that conducted by the U.S. Deep Decarbonization Pathways Project in 2014 (*available at:* <http://usddpp.org/downloads/2014-technical-report.pdf>).

Recommendation 4: EEA should direct DOER to (a) study and make recommendations regarding changes to regional electricity markets necessary in order to most effectively and efficiently transition to and operate an ultra-low carbon electricity grid, and (b) actively advocate for the same via the NEPOOL stakeholder process.

In order to ensure the Commonwealth achieves its GWSA-required emissions reductions cost-effectively, and in light of initial LEAP analysis by EEA demonstrating the growing importance over time of emissions related to electric power generated in other New England States and imported in the Commonwealth, we recommend that EEA direct DOER to (a) study and make recommendations regarding necessary changes to regional electricity markets in order to most effectively and efficiently (from both a technical and cost perspective) transition to and operate an ultra-low carbon electricity grid, including the addition of one or more new regional clean energy⁷ and ancillary services markets and (b) actively participate in the supervision and operation of ISO-NE via the NEPOOL stakeholder process to recommend and advocate for new and existing markets and market modifications designed to directly advance GWSA-required emissions reductions at least cost to businesses and families in the Commonwealth.

Recommendation 5: EEA should direct DOER to study and make recommendations regarding the extent to which the Commonwealth can maximize the value of, and ancillary services provided by, intermittent renewables, demand response, and energy storage.

Because programs and procurements by the Commonwealth are leading electricity system and market change in the region, and in order to maximize the economic and social value to Massachusetts businesses and families from such programs and procurements (and related expenditures), EEA should direct DOER – together or in coordination with its Recommendation 4 analysis – to study and make recommendations regarding the extent to which the Commonwealth can ensure its own programs and procurements recognize, include, and value the full technical potential of intermittent renewables, demand response, and energy storage resources to provide, in addition to electricity and program credits, ancillary services like ramping, system balancing, and voltage regulation.

Recommendation 6: EEA and DEP should actively work towards, and where possible affirmatively incentivize, the adoption by all New England states of a uniform method of GHG emissions accounting.

Because consistent, principled, and transparent emissions accounting is so critical to achieving the “volume over time” quantitative emissions reductions required by the GWSA, and in light of initial LEAP analysis by EEA demonstrating the growing importance over time of emissions related to electric power generated in other New England States and imported in the Commonwealth, we recommend that EEA and the Department of

⁷ Several new market mechanisms such as the Dynamic Forward Clean Energy Market (*available at: http://files.brattle.com/files/11819_a_dynamic_clean_energy_market_in_new_england.pdf*) were proposed during NEPOOL’s 2017 Integrating Markets and Public Policy (IMAPP) process.

Environmental Protection (DEP) actively work towards, and where possible affirmatively incentivize, the adoption by all New England states of a uniform method of greenhouse gas (GHG) emissions accounting consistent with that currently used by the Commonwealth. Such methodology should reflect best-available information and practices for UN IPCC-compliant emissions accounting, and should result in the amendment of the Commonwealth's methodology as needed to so conform.

Recommendation 7: EEA and DEP should (a) comprehensively review and analyze inclusion of municipal utilities, biomass, landfill gas, and MSW “waste-to-energy” in RPS, CES, and CPS and (b) to propose no later than 2022 legislation and regulation based there on as need to ensure Massachusetts will meet its GWSA obligations.

Because initial analysis by the Commonwealth and by others,⁸ indicates that in order to achieve GWSA-required levels of 2050 emissions across the economy, ultra-low per-megawatt-hour emissions will be required for the Commonwealth's entire electricity sector, we recommend that EEA and DEP (a) comprehensively review and analyze the ability of the state to meet GWSA-required emissions limits in 2050 (i) without the inclusion of municipal utilities in the otherwise mandatory Renewable Portfolio Standard (RPS), Clean Energy Standard (CES), and Clean Peak Standard (CPS) programs and (ii) while maintaining the current inclusion in those programs of biomass (particularly woody biomass), landfill gas, and municipal solid waste “waste-to-energy” and (b) to propose no later than 2022 legislation and regulation based there on as need to add or remove municipal utilities, biomass, landfill gas, and MSW “waste-to-energy” to/from the RPS, CES, and CPS in order to ensure Massachusetts will meet its GWSA obligations.

Recommendation 8: EEA place a priority on advancing grid modernization in order to help enable many of the other recommendations regarding/impacting the distribution grid.

Grid modernization requires/encompasses four components:

- i. Distribution System Planning that includes distribution system investment plans to enable the transition from a model where utilities deliver commodity electricity to a model where they serve as a distributed platform system operator, integrating distributed energy resources and third party technology and enabling two-way flows of electricity and information.
- ii. Forward Looking, Outcomes-Based Regulatory Framework where the DPU develops forward-looking, outcomes-based approaches to regulating distribution utilities, including definition of an agreed set of goals and outcomes that the utility will be expected to measure and deliver in future years, incentives that reward the utilities for meeting these goals and achieving outcomes while both delivering value and enabling value creation by customers and third parties who use the network.
- iii. Efficient and Fair Rate Design that moves toward time varying rates providing customers with timely and actionable price signals and information about the costs that their usage and patterns of usage cause for the system. These rates need

⁸ See, e.g., Williams et al., *Pathways to Deep Decarbonization in the United States* (Nov. 2014) (available at: <http://usddpp.org/downloads/2014-technical-report.pdf>).

to properly compensate distribution utilities for that use, and also incentivize and compensate the developers, owners and operators of distributed energy resources for the value of the services they provide. The objective is to send price signals to customers to optimize system-wide efficiency and open the door to innovative and responsive demand-side solutions and support the investment in the system that will be required to do so.

- iv. Unlock Innovation to encourage distribution utilities to continually explore and adopt new technologies to adapt to changing demands from customers and the distribution system by allowing them to establish budgets for demonstration, testing, and integration of new technologies and processes to determine their value for broader deployment. Regulators also need to encourage utilities to seek non-traditional solutions to system needs, engaging with competitive solutions providers, including new business models, partnerships and innovation practices that accelerate creation and implementation of new solutions.

As a first step, then, the DPU should move quickly to open its proceeding on advanced metering and time varying rates, to address (iii) above, as well as elements of (i) and (iv). All of the above should also be the focus in any distribution utility rate cases going forward.

