EBC Energy Resources Committee

EBC Second Annual New England State Energy Leaders Virtual Conference

Environmental Business Council of New England
Energy Environment Economy
Welcome

Marc Bergeron

Co-Moderator

Chair, EBC Energy Resources Committee

Principal, Epsilon Associates, Inc.
Thank you to our Sponsors
Introduction

Catherine Finneran

Conference Chair and Co-Moderator

Vice President, Sustainability and Environmental Affairs

Eversource Energy
ISO New England Overview and Regional Update

Environmental Business Council of New England

Energy Conference

Eric D. Johnson

Director, External Affairs
ISO New England (ISO) Has Two Decades of Experience Overseeing the Region’s Restructured Electric Power System

- **Regulated** by the Federal Energy Regulatory Commission
- **Reliability Coordinator** for New England under the North American Electric Reliability Corporation
- **Independent** of companies in the marketplace and **neutral** on technology
ISO New England Performs Three Critical Roles to Ensure Reliable Electricity at Competitive Prices

**Grid Operation**
Coordinate and direct the flow of electricity over the region’s high-voltage transmission system

**Market Administration**
Design, run, and oversee the markets where wholesale electricity is bought and sold

**Power System Planning**
Study, analyze, and plan to make sure New England's electricity needs will be met over the next 10 years
Numerous Entities Including an Independent Board Provide Oversight of and Input on ISO’s Responsibilities
ISO New England Communicates with Public Officials During Emergencies and Other Events on the System

• Several operating procedures trigger communications with state and federal officials
  – Action During a Capacity Deficiency (Operating Procedure No. 4)
  – Action in an Emergency (Operating Procedure No. 7)
  – Cold Weather Condition Operations (SOP-RTMKTS.0050.0007)
  – Actions During an Energy Emergency (Operating Procedure No. 21)

• ISO New England exercises its communications plan with state and federal officials ahead of each winter and summer season

• ISO New England participates in NERC grid security exercises to test the readiness of the power sector to respond to physical and cyber security threats
Planning Advisory Committee (PAC) Provides Feedback to the ISO on the Regional System Planning Process

Key Developments and Milestones in 2019 - 2020

- The ISO is finalizing stakeholders’ 2019 economic studies on offshore wind expansions and related transmission capacity in the regional power system.

- In April, the ISO accepted a new economic study request from National Grid to model outcomes of the future power system under the achieved clean energy goals of the New England states.

- In late 2019, the ISO issued its first RFP for a competitive transmission solution to a Boston-area reliability need:
  - 8 qualified project sponsors submitted 36 proposals in March 2020.
  - The ISO recommended the backstop solution ($49 million) to the PAC.
  - The final project selection is expected in mid-July.

Note: Planning Advisory Committee meetings are free and open to the public.
Consumer Liaison Group Meets Quarterly on Issues of Importance to Electricity Consumers in New England

• Consumer Liaison Group (CLG) meetings are:
  – A forum for sharing information between ISO New England and electricity consumers in New England
  – Free and open to the public

• The 2019 Report of the CLG summarizes the activities of the CLG in 2019
  – The report also provides an update on ISO activities and initiatives, as well as wholesale electricity costs and retail electricity rates in New England

• The September CLG will cover carbon pricing

Source: https://www.iso-ne.com/committees/industry-collaborations/consumer-liaison/
Meeting dates for 2020: June 11, 2020, September 17, 2020, and December 2, 2020
ISO New England Releases Several Annual Publications

2020 Regional Electricity Outlook

Provides an in-depth look at New England’s biggest challenges to power system reliability, the solutions the region is pursuing, and other ISO New England efforts to improve services and performance.

New England Power Grid Profile

Provides key grid and market stats on how New England’s wholesale electricity markets are securing reliable electricity at competitive prices and helping usher in a cleaner, greener grid.

New England State Profiles

Provides state-specific facts and figures relating to supply and demand resources tied into the New England electric grid and state policies transforming the resource mix in the region.
New England’s Power System in a Nutshell

- 9,000 miles of high-voltage transmission lines (115 kV and above)
- 13 transmission interconnections to power systems in New York and Eastern Canada
  - 19% of region’s energy needs met by imports of power in 2019
- $11 billion invested to strengthen transmission system reliability since 2002; $1.6 billion on the horizon
- Roughly 350 dispatchable generators ($\approx 31,000$ MW of generating capacity)
- Thousands of distribution-connected generators, particularly solar photovoltaic (PV) resources, installed “behind the meter”
- Region’s all-time summer peak demand: 28,130 MW on August 2, 2006
- Region’s all-time winter peak demand: 22,818 MW on January 15, 2004
Lower-Emitting Sources of Energy Supply Most of New England’s Electricity

- In 2019, most of the region’s energy needs were met by natural gas, nuclear, imported electricity (mostly hydropower from Eastern Canada), renewables, and other low- or non-carbon-emitting resources.

- Region is transitioning away from older coal and oil resources.

2019* Net Energy for Load: 119,122 GWh

- Natural Gas, 40%
- Nuclear, 25%
- Imports, 19%
- Renewables, 9%
- Hydro, 7%
- Coal, <1%
- Oil, <1%

Note: Renewables include landfill gas, biomass, other biomass gas, wind, grid-scale solar, municipal solid waste, and miscellaneous fuels.

*Data is subject to adjustment.
States Have Set Goals for Reductions in Greenhouse Gas Emissions: Some Mandated, Some Aspirational

The New England states are promoting GHG reductions on a state-by-state basis, and at the regional level, through a combination of legislative mandates (e.g., CT, MA, RI, and ME) and aspirational, non-binding goals (e.g., NH, VT and the New England Governors and Eastern Canadian Premiers).

MA, RI, NH, ME, and VT use a 1990 baseline year for emissions reductions. CT and the NEG-ECP use a 2001 baseline.
States Have Set Goals for Renewable Energy

State Renewable Portfolio Standard (RPS)* for Class I or New Renewable Energy

Notes: State RPS requirements promote the development of renewable energy resources by requiring electricity providers (electric distribution companies and competitive suppliers) to serve a minimum percentage of their retail load using renewable energy. Connecticut’s Class I RPS requirement plateaus at 40% in 2030. Maine’s Class I/IA RPS requirement increases to 50% in 2030 and remains at that level each year thereafter. Massachusetts’ Class I RPS requirement increases by 2% each year between 2020 and 2030, reverting back to 1% each year thereafter, with no stated expiration date. New Hampshire’s percentages include the requirements for both Class I and Class II resources (Class II resources are new solar technologies beginning operation after January 1, 2006). New Hampshire’s Class I and Class II RPS requirements plateau at 15.7% in 2025. Rhode Island’s requirement for ‘new’ renewable energy plateaus at 36.5% in 2035. Vermont’s ‘total renewable energy’ requirement plateaus at 75% in 2032; it recognizes all forms of new and existing renewable energy and is unique in classifying large-scale hydropower as renewable.
The Resource Mix Is Changing

New technologies are coming online and being proposed across the region

Existing Resources

About **20 MW** of grid-scale battery storage projects have come online since 2015

Roughly **1,400 MW** of onshore and offshore wind have been installed

About **3,500 MW** of grid-scale and behind-the-meter solar have been installed

Proposed Resources

<table>
<thead>
<tr>
<th>Energy Source</th>
<th>Nameplate Capacity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind</td>
<td>12,420, 62%</td>
<td></td>
</tr>
<tr>
<td>Solar</td>
<td>3,622, 18%</td>
<td></td>
</tr>
<tr>
<td>Battery Storage</td>
<td>2,079, 10%</td>
<td></td>
</tr>
<tr>
<td>Natural Gas</td>
<td>1,693, 8%</td>
<td></td>
</tr>
<tr>
<td>Hydro</td>
<td>99, &lt;1%</td>
<td></td>
</tr>
<tr>
<td>Nuclear Uprate</td>
<td>37, &lt;1%</td>
<td></td>
</tr>
<tr>
<td>Fuel Cell</td>
<td>25, &lt;1%</td>
<td></td>
</tr>
<tr>
<td>Biomass</td>
<td>8, &lt;1%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>19,984 MW</td>
<td></td>
</tr>
</tbody>
</table>

Source: ISO Generator Interconnection Queue (June 2019)
FERC and Non-FERC Jurisdictional Proposals; Nameplate Capacity Ratings
Note: Some natural gas proposals include dual-fuel units (with oil backup). Some natural gas, wind, and solar proposals include battery storage.
Wind Power Comprises Two Thirds of New Resource Proposals in the ISO Interconnection Queue

**All Proposed Resources**

- **Wind**: 12,420 MW, 62%
- **Solar**: 3,622 MW, 18%
- **Battery Storage**: 2,079 MW, 10%
- **Natural Gas**: 1,693 MW, 8%
- **Hydro**: 99 MW, <1%
- **Nuclear Uprate**: 37 MW, <1%
- **Fuel Cell**: 25 MW, <1%
- **Biomass**: 8 MW, <1%

**TOTAL**: 19,984 MW

Source: ISO Generator Interconnection Queue (April 2020)
FERC and Non-FERC Jurisdictional Proposals; Nameplate Capacity Ratings
Note: Some natural gas proposals include dual-fuel units (with oil backup). Some natural gas, wind, and solar proposals include battery storage.
States Accelerate Clean Energy Procurements

- To meet their public policy goals, the states are seeking to develop (or retain) clean energy resources through large-scale procurement efforts

<table>
<thead>
<tr>
<th>State(s)</th>
<th>State Procurement Initiatives for Large-Scale Clean Energy Resources</th>
<th>Resources Eligible/Procured</th>
<th>Target MW (nameplate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA</td>
<td>2019 Section 83C II Offshore Wind RFP</td>
<td>Offshore Wind</td>
<td>800 MW</td>
</tr>
<tr>
<td>RI</td>
<td>2018 Renewable Energy RFP</td>
<td>Solar, Wind, Biomass, Small Hydro, Fuel Cells and Other Eligible Resources</td>
<td>400 MW</td>
</tr>
<tr>
<td>CT</td>
<td>2018 Zero-Carbon Resources RFP</td>
<td>Nuclear, Hydro, Class I Renewables, Energy Storage</td>
<td>Approx. 1,400 MW (11,658,080 MWh)</td>
</tr>
<tr>
<td>CT</td>
<td>2018 Clean Energy RFP</td>
<td>Offshore Wind, Fuel Cells, Anaerobic Digestion</td>
<td>252 MW</td>
</tr>
<tr>
<td>MA, RI</td>
<td>2017 Section 83C I Offshore Wind RFP</td>
<td>Offshore Wind</td>
<td>800 MW (MA) 400 MW (RI)</td>
</tr>
<tr>
<td>MA</td>
<td>2017 Section 83D Clean Energy RFP</td>
<td>Hydro Import</td>
<td>Approx. 1,200 MW (9,554,000 MWh)</td>
</tr>
<tr>
<td>MA, CT, RI</td>
<td>2015 Multi-State Clean Energy RFP</td>
<td>Solar, Wind</td>
<td>390 MW</td>
</tr>
</tbody>
</table>

Note: Nameplate megawatts (MW) may be higher than qualified Forward Capacity Market (FCM) capacity MW.
Developers Are Proposing Large-Scale Transmission Projects Deliver Clean Energy to Load Centers

- Developers are proposing roughly 15 elective transmission upgrades (ETUs) to help deliver more than 13,000 MW of clean energy to New England load centers.
- Wind projects make up roughly 62% of new resource proposals in the ISO Generator Interconnection Queue, but some are remote and require transmission.

Source: [ISO Interconnection Queue](#) (June 2019)
ISO New England Forecasts Strong Growth in Solar Photovoltaic (PV) Resources

December 2019 Solar PV Installed Capacity (MW\textsubscript{ac})

<table>
<thead>
<tr>
<th>State</th>
<th>Installed Capacity (MW\textsubscript{ac})</th>
<th>No. of Installations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecticut</td>
<td>566.53</td>
<td>44,514</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>2,180.45</td>
<td>102,381</td>
</tr>
<tr>
<td>Maine</td>
<td>56.32</td>
<td>5,387</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>105.24</td>
<td>9,587</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>159.75</td>
<td>7,776</td>
</tr>
<tr>
<td>Vermont</td>
<td>364.24</td>
<td>13,863</td>
</tr>
<tr>
<td>New England</td>
<td>3,432.53</td>
<td>183,508</td>
</tr>
</tbody>
</table>

Cumulative Growth in Solar PV through 2029 (MW\textsubscript{ac})

Note: The bar chart reflects the ISO’s projections for nameplate capacity from PV resources participating in the region’s wholesale electricity markets, as well as those connected “behind the meter.” The forecast does not include forward-looking PV projects > 5 MW in nameplate capacity. Source: Final 2020 PV Forecast (March 2020); MW values are AC nameplate.
State Installed Solar PV “Heat Maps”

- Understanding the spatial distribution of existing solar PV resources will be critical to the ISO’s ongoing integration activities within both System Planning and System Operations.

- Based on the data provided by distribution owners, the ISO has aggregated the installed nameplate capacity by town within each state, and generated heat maps showing the results.

Note: Heat map reflects MW of solar PV installed through December 2019.
Historic Dip in Midday Demand with Record-High Solar Power Output on May 2, 2020

In Hour Ending 13, behind-the-meter solar reduced grid demand by more than 3,200 MW
General Observations Regarding Electricity Demand During COVID-19

• On average, March-May 2020 demand is approximately **3% to 5% lower than normal**

• Load curves have **changed shape** with the pandemic outbreak while new routines are being established.

• ISO is **continuously evaluating** trends in the load curve, paying mind to the **expected differences** from historical data

• Changes in load do not pose a threat to system reliability as the system is **built and operated to handle** fluctuations on a daily and seasonal basis.
Energy Efficiency Is a Priority for State Policymakers

Ranking of state EE efforts by the American Council for an Energy-Efficient Economy:

- Massachusetts 1
- Rhode Island 3
- Vermont 3
- Connecticut 6
- Maine 15
- New Hampshire 20

- Billions spent over the past few years and more on the horizon
  - Nearly $5.3 billion invested from 2012 to 2017
  - ISO estimates $10.7 billion to be invested in EE from 2021 to 2029

Source: American Council for an Energy-Efficient Economy

Energy Efficiency and Behind-the-Meter Solar Are Reducing Peak Demand and Annual Energy Use

Projected Summer Peak Demand With and Without EE and PV Savings

Projected Annual Energy Use With and Without EE and PV Savings

Note: Summer peak demand is based on the “90/10” forecast, which accounts for the possibility of extreme summer weather (temperatures of about 94°F).

ISO Load Forecasting Now Includes Electrification

- Ten-year forecasting for air-source heat pumps and for light-duty electric vehicles
  - Forecast uses data-driven assumptions to convert the ASHP/EV adoption forecast into estimated impacts on monthly energy and demand, by state
A Hybrid Grid Is Emerging in New England

There are two dimensions to the transition, happening simultaneously...

1. A shift from conventional generation to renewable energy

2. A shift from centrally dispatched generation to distributed energy resources

Maintaining reliable power system operations becomes more complex with the shift to greater resources that face constraints on energy production.
• Regional stakeholder process to explore the future of the wholesale energy markets in a clean energy policy landscape

• Stakeholders include ISO-NE, NESCOE, NEPOOL and state policy-makers

• Stakeholder meetings held monthly at the joint Markets and Reliability Committees of NEPOOL. Next meeting is August 4

• For more information visit: https://www.iso-ne.com/committees/key-projects/transition-to-the-future-grid-key-project/
Going Forward, the ISO Is Focused on Three Elements Essential to a Reliable Transition

1. **Support the Rapid Transformation of the Region’s Electricity Supply and Demand Mix**
   - Continued market, operational, and planning enhancements are needed to facilitate and integrate high levels of renewable and distributed resources, while upholding the markets’ ability to attract investment in existing and new resources needed to plan and operate the grid reliably.

2. **Maintain a Robust Transmission System**
   - Additional investment in transmission infrastructure will be fundamental to ensuring reliable integration of renewable and distributed resources and decarbonization of the transportation and heating sectors.

3. **Ensure Energy Security**
   - Improvements to the wholesale markets are required to appropriately compensate resources able to ensure a secure energy supply is available to support electricity demand across all kinds of system conditions.
Questions
APPENDIX
Connecticut Installed Solar PV “Heat Map”

Note: Heat map reflects MW of solar PV installed through December 2019. Legend shows color scale of nameplate megawatts per town.
MaineInstalled SolarPV “Heat Map”

Note: Heat map reflects MW of solar PV installed through December 2019. Legend shows color scale of nameplate megawatts per town.
Massachusetts Installed Solar PV “Heat Map”

Note: Heat map reflects MW of solar PV installed through December 2019.
Legend shows color scale of nameplate megawatts per town.
New Hampshire Installed Solar PV “Heat Map”

Note: Heat map reflects MW of solar PV installed through December 2019. Legend shows color scale of nameplate megawatts per town.
Rhode Island Installed Solar PV “Heat Map”

Note: Heat map reflects MW of solar PV installed through December 2019. Legend shows color scale of nameplate megawatts per town.
Vermont Installed Solar PV “Heat Map”

Note: Heat map reflects MW of solar PV installed through December 2019. Legend shows color scale of nameplate megawatts per town.
Riley Allen

Deputy Commissioner
Department of Public Service

State of Vermont

Environmental Business Council of New England
Energy Environment Economy
Environmental Business Council
Energy Sector Initiatives
Vermont

J. Riley Allen
Deputy Commissioner
Vermont Department of Public Service
7/17/20
Who is the Public Service Department?

The Public Service Department = represents the interests of the people of the state as a whole

- Represents public interest in utility cases
- Provides long-range planning for the state's energy and telecom needs
- Ensures all Vermonters share in the benefits of modern communications
- Administers federal energy programs
- Resolves utility customer complaints
- Informs public about utility-related matters
- Makes and administers power purchase contracts

http://publicservice.vermont.gov/

Commissioner June E. Tierney
Vermont Utilities
• 1 IOU (serving ¾ of VT load or 260,000 customers)
• 2 Coops
• 14 Municipals
• 1 transmission utility (VELCO)
• 3 Energy Efficiency Utilities

Vermont Renewable Deployment
• 360 MW Solar PV
• 150 MW Wind
• 120 MW In-State Hydro
• 70 MW Biomass
• 8 MW Landfill Gas
• 5 MW Methane Digesters

900 MW Peak
Sector Strategic Goals

• Least cost
• Service quality (reliable, resilient, responsive and innovative)
• Renewables and environmental

Vermont Statutes
Comprehensive Energy Plan
Executive Order
Current Areas of Emphasis

- Electrify transport and buildings
- Grid modernization and innovation (platform)
- Fostering new market players and customer participation
- Resource decentralization and locational diversity
Active Initiatives

- Rate Design Initiative
- Comprehensive energy plan (are the goals going to change)
- Multi-Year Rate Plan (Climate Resilience Plan)
- Efficiency Utility Budgets
- CARES Act/COVID 19 Activities
- Storage stuff – how much and the pacing
Environmental

Renewable Energy

Energy Efficiency

Transportation

- RES: 2% Tier 3
  - GHG: Reduction of 50% (1990 levels)
- RES: 12% Tier 3
  - GHG: Reduction of 75% (1990 levels)
- Standard Offer:
  - 127.5 MW
  - Total energy: 25%
- RES: 55% Tier 1
  - 1% Tier 2
  - Total energy: 90%

- 2017: 60,000 houses weatherized
- 2020: 80,000 houses weatherized
- 2022: 6% buildings fossil fuels reduction
- 2025: 10% buildings fossil fuels reduction
- 2028: 35,000 CCHPs
- 2030: 35% wood heat in buildings
- 2032: All new buildings net zero
- 2040: Reduce per capita energy consumption by 1/3
- 2050: 80% renewable

- 2020: 10% renewable energy
- 2022: 20% reduction in 2015 energy use
- 2025: 10% of fleet PEVs (~55K vehicles)
Many Clean Energy Initiatives to Choose From (highlighting two)

- Clean Energy Fund
- IRP
- Alternative Regulation
- Appliance Standards
- Flexible Service Delivery
- Targeted Incentives
- Standard Offer
- Building Codes
- Decarbonize RPS
- Carbon Markets
- Energy Efficiency
- Energy Portfolio Standard
- Increased Open Access
- Net Metering
- Regional Markets
- Siting
- Energy Savings Guarantees
- Flex Load Management
- Device Initiatives
- Rate Design Initiative
Rate Design Initiative

• Eight-month stakeholder process sponsored by DOE;
• Focuses on dynamic and non-traditional forms of pricing;
  • Dynamic rates
  • Flexible load management
  • Subscription services
  • Innovation in spurring adoption
• Not focused on traditional rate design issues (customer $, $/kWh, $/kW).

https://publicservice.vermont.gov/content/rate-design-initiative
COMPARISON BETWEEN MODELED SCENARIOS
BASELINE VS. INCLUDING TECHNOLOGY ADOPTION - 2040

[Graph showing comparison between baseline and technology adoption scenarios for the years 2020 to 2040. Key points include:
- 2020: Base, w/ Tech
- 2025: Base, w/ Tech
- 2030: Base, w/ Tech
- 2035: Base, w/ Tech
- 2040: Base, w/ Tech, Difference

Upward Pressure]

- 2020: Base: $200,000, w/ Tech: $200,000
- 2025: Base: $400,000, w/ Tech: $400,000
- 2030: Base: $600,000, w/ Tech: $600,000
- 2035: Base: $800,000, w/ Tech: $800,000
- 2040: Base: $1,000,000, w/ Tech: $1,000,000
- Difference: 2020: $0, 2025: $0, 2030: $0, 2035: $0, 2040: $500M

Key: ISO-NE Capacity, AF Energy, RPS Compliance Costs, RPS Capacity (Embedded Costs), Total Revenue]
Not all hours are created equal from perspective of utility costs
Flexibility

New loads and customer-sited technologies are generally large and easily managed.
New loads and customer sited technology related costs can be managed through **well-formed rates and flex-load management**.
New loads left unmanaged are **cost drivers**
Five Recommendations

1. Establish firm foundation in fully allocated cost-based rates
2. Establish forward looking price signals and provide sharper price signals to reflect character of avoidable costs
3. Selective use of device specific rates (e.g., EVs and potentially integrated CCHP)
4. Subscription-based rates as framework for simplifying and promoting flex-load management
5. Default rates linked to other program incentives to increase participation (e.g., utility incentives for EVs and heat pumps)
Anticipated outcomes

- Better load factors;
- More responsive and managed loads;
- Lower average system costs/rates/bills;
- Better integration of renewables;
- New business models;
- Improving environmental outcomes.
- Electrification of buildings and transportation.
Bonus Slides with statutory references
30 V.S.A. § 202a

It is the general policy of the State of Vermont:

(1) To assure, to the greatest extent practicable, that Vermont can meet its energy service needs in a manner that is adequate, reliable, secure, and sustainable; that assures affordability and encourages the State's economic vitality, the efficient use of energy resources, and cost-effective demand-side management; and that is environmentally sound.

(2) To identify and evaluate, on an ongoing basis, resources that will meet Vermont's energy service needs in accordance with the principles of least-cost integrated planning; including efficiency, conservation and load management alternatives, wise use of renewable resources, and environmentally sound energy supply.
Goals in Statute

- Renewable policies that promote economic benefit, efficient use of resources, stable prices, market development, air and water quality, grid stability, climate change mitigation, and diversity of resources. (30 V.S.A. § 8001)
- 25% renewable by 2025. (10 V.S.A. § 580(a))
- 50% GHG emission reduction by 2028, and 75% (if practicable) by 2050. (10 V.S.A. § 578(a))
- Building efficiency – weatherize 25% of housing stock by 2025. (10 VSA. § 581)
Requirements in Statute

Renewable Energy Standard (30 V.S.A. § 8005)
• Total renewable energy (55% in 2017 growing to 75% in 2032)
  • Any size/vintage renewable resource, provided it delivers into New England
• Distributed generation (1% to 10%, carve-out of Tier 1)
  • Under 5 MW, commissioned after 6/30/15, connected to VT distribution
• Energy transformation (2% to 12%, not a carve-out)
  • Fossil fuel reduction

Standard Offer Program (30 V.S.A. § 8005a)
• Long-term contracts for resources 2.2 MW or less, adding up to 127.5 MW

Net Metering (30 V.S.A. § 8010)
• Compensation based on residential rates with adjustors for siting and RECs
RAP + DOE (EV) Elasticities

- **Price Only**
- **Technology**
- **EV-Specific Elasticity**

![Graph showing peak reduction vs. on-peak to off-peak pricing differential.](image-url)

- **Peak Reduction** on the y-axis.
- **On-Peak to Off-Peak Pricing Differential** on the x-axis.
State of Rhode Island

Carrie A. Gill, Ph.D.
Chief, Program Development
Office of Energy Resources

Environmental Business Council of New England
Energy Environment Economy
Advancing RI’s Clean Energy Leadership in Challenging Times

Environmental Business Council of N.E.
July 17, 2020
Clean
Reduce carbon-intensity of supply portfolio

Affordable
Consumer cost as a lens for all policies, from procurement to investment

Reliable
Invest in a diverse resource portfolio through infrastructure, supply and system redesign

Principles for Policy and Programmatic Decision-Making
CLEAN ENERGY LEADERSHIP

RENEWABLE ACCELERATION
2020 Qtr. 1
Rhode Island Clean Energy Portfolio

920 Megawatts

11 MW 35 MW 144 MW 300 MW 430 MW

Small Hydro Landfill Gas / Anaerobic Digestion Onshore Wind Solar Offshore Wind

1,000 MW by end of 2020
Revolution wind: A game changer...

- **$91 million** saved in energy costs
- **11 million** metric tons in reduced emissions
- **270,000 homes** powered (1/4 of RI’s electric use)
EXECUTIVE ORDER
20-01
January 17, 2020
ADVANCING A 100% RENEWABLE ENERGY FUTURE FOR RHODE ISLAND BY 2030

WHEREAS, Rhode Island and the world face significant environmental, economic, energy, and public health challenges from the impacts of climate change; and

WHEREAS, Rhode Island is committed to mitigating economy-wide greenhouse gas emissions and their effect on climate change, while spurring new and innovative opportunities for investment and job growth throughout the state’s clean energy economy; and

WHEREAS, Rhode Island’s clean energy sector has seen a 74% increase in jobs since 2014, demonstrating that protecting against climate change and strengthening our economy are complementary goals; and

WHEREAS, the Resilient Rhode Island Act establishes targets for Rhode Island to reduce greenhouse gas emissions to 10% below 1990 levels by 2020, to 45% below 1990 levels by 2035, and to 80% below 1990 levels by 2050; and

WHEREAS, the Rhode Island Executive Climate Change Coordinating Council (EC4), in its December 2016 Greenhouse Gas Emissions Reduction Plan, made clear that a business-as-usual approach to reducing economy-wide greenhouse gases is insufficient to meet Resilient Rhode Island Act emission reduction targets; and

CLEAN ENERGY LEADERSHIP

100% RENEWABLE BY 2030
The importance of decarbonizing electricity

- Electricity generation currently emits 26% of Rhode Island’s GHGs
- Rhode Island is a (small) part of the ISO New England grid, which is still largely gas-fired
- Electrification is a primary pathway for decarbonizing other sectors, such as transportation and heating
- Electrifying most transportation & heating in New England would roughly double load by 2050

New England 2020-2050 Projected Load to Achieve 80% GHG Reduction

- Recent RI Heat Sector Transformation report: electrification via heat pumps is a key decarbonization pathway that should be pursued aggressively
- Electrifying transportation would require even more electricity than electrified heat

RI’s initial challenge is to reach **100% renewable energy** by 2030

- This will require adding about **360 GWh per year** on average from 2020 to 2030, beyond what existing renewable programs may add.

After 2030, electricity use is projected to rise as electrification helps economy-wide decarbonization.

RI must therefore continue to add renewable energy to **stay at 100%** beyond 2030

- This will require adding about **440 GWh per year** on average from 2030 to 2050
- With other states also moving away from fossil fuels, the power system becomes less flexible, more intermittent.
Project timeline

Report due by December 31, 2020

Governor signs Executive order
January 17, 2020

Public Workshop
July 9, 2020

Public Workshop
TBD

Report Due
December 31

Initial research, model development & stakeholder input

EC4 Update
Sept 2020

EC4
TBD 2020

Please note that all 2020 dates are subject to change
CLEAN ENERGY
LEADERSHIP
HEATING SECTOR
TRANSFORMATION
Rhode Island heating sector dominated by gas and delivered fuel, with urban/rural split

Notes: “Other” includes propane, kerosene, solar, and no heat.
**FIGURE ES 1**: ANNUALIZED COST OF SPACE HEATING IN 2050, REPRESENTATIVE SINGLE-FAMILY HOME, BOOKEND SCENARIOS, 2018$
FIGURE ES 3: TOTAL ANNUAL ENERGY WALLET COMPARISON FOR REPRESENTATIVE CONSUMER: 2020 VS 2050 MIXED SCENARIO, 2018$

Note: Uncertainty band reflects uncertainty on heating costs as above, plus the effect of electricity price uncertainty on other end uses. Gasoline price excludes federal and state taxes. Water heating cost is not broken out explicitly, though to the extent electricity is currently used for water heating, this is included implicitly in Baseline Electricity Consumption.
Policy framework

Ensure
Increase efficiency and reduce carbon content of all fuels to zero over time – ensures progress no matter which technologies are used

Learn
Data collection, R&D, pilot projects to understand technologies, infrastructure, and customers

Inform
Educate stakeholders – customers, installers, policy-makers – about pros and cons of options, system interactions, etc.

Enable
Facilitate deployment with incentives; target natural investment opportunities; align regulation, rules, codes; expand workforce

Plan
Expand planning horizon; develop long-term, high-level contingency plans now (don’t commit yet) and use to guide near-term policy
CLEAN ENERGY LEADERSHIP

ENERGY EFFICIENCY
Benefits of Energy Efficiency in Rhode Island

Driving the local economy with over $2.3 billion in economic benefits since 2006
Every $1 invested in energy efficiency puts $4.20 back into Rhode Island’s economy

Preventing 7 million tons of greenhouse gas emissions over the life of energy efficiency improvements
Equivalent to taking nearly 1.5 million passenger cars off the road for one year

Saving $1 billion on utility bills
Energy efficiency helps keep costs down to maintain grid infrastructure, and keeps rates down for all Rhode Islanders

Supporting over 8,000 local jobs
Over 700 Rhode Island businesses are in the energy efficiency industry
COVID-19 and Energy

• 3,900 fewer clean energy jobs since March

• Clean energy industry can play a key role in economic recovery

• Properly adjusted HVAC systems can mitigate risk of disease transmission

• OER’s COVID-19 Health & Energy Resources webpage:

http://www.energy.ri.gov/COVID-19/
Carrie A. Gill, Ph.D.
Administrator, Grid Modernization and Systems Integration
Rhode Island Office of Energy Resources
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www.energy.ri.gov
State of Maine

Dan Burgess

Director
Governor’s Energy Office

Environmental Business Council of New England
Energy Environment Economy
Maine COVID-19 Coordinated Response: Statewide effort led by the Governor - https://www.maine.gov/covid19/

Maine Economic Recovery Committee: Economy-wide experts offering short and long term recommendations, including in energy sector

Energy Sector Engagement: generators, electric and gas utilities, ISO-NE, delivered fuels industry, Efficiency Maine Trust, regional organizations, and National Association of State Energy Officials regarding COVID-19 impacts and response

MAINE PUBLIC UTILITIES COMMISSION: Opened investigation to evaluate impacts of the pandemic on utilities and their customers, moving forward with procurements

Maine’s Climate Council: Recommendations to meet climate goals, informed by COVID-19
ACHIEVE STATE CARBON NEUTRALITY BY 2045

Climate Council is tasked with including recommendations on how to achieve neutrality in its Climate Action Plan.

CARBON NEUTRALITY can help grow the clean energy economy in Maine and benefit farmers, foresters, and others whose practices and land sequesters carbon.

MINIMIZE Energy Use + Switch to Cleaner Fuels

GENERATE Renewable Energy

INNOVATE Grow ME’s clean energy economy

CARBON NEUTRALITY FOR A BETTER FUTURE
<table>
<thead>
<tr>
<th>CLIMATE COUNCIL MITIGATION GOALS</th>
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<tbody>
<tr>
<td><strong>45%</strong></td>
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<tr>
<td>below 1990 gross</td>
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<tr>
<td>annual greenhouse</td>
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<tr>
<td>gas emissions by 2030</td>
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<tr>
<td><strong>80%</strong></td>
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<tr>
<td>below 1990 gross</td>
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<tr>
<td>annual greenhouse gas</td>
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<td>emissions by 2050</td>
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<tr>
<td>Use the latest scientific</td>
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<tr>
<td>and technological</td>
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<td>information</td>
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<tr>
<td>Analyze technical feasibility</td>
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<tr>
<td>and cost-effectiveness of</td>
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<tr>
<td>potential solutions</td>
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<tr>
<td>Emphasize clean <strong>energy economy</strong> and opportunities for good job creation, consider impacts on Maine’s people and communities</td>
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<tr>
<td>CARBON NEUTRAL BY 2045</td>
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</table>
**Bold emissions reductions**: Develop plan to meet state greenhouse gas emissions reduction targets

**Mitigation**: Strategies for all sectors of the economy, with a focus on Maine’s transportation, electricity, and buildings sectors

**Resilience**: Develop strategies that will make Maine people, industries, and communities resilient to the impacts of climate change

**Clean Energy Economy**: Plan to grow good paying jobs in the transition to a lower carbon economy

**Transition**: Ensure Maine’s rural, low-income and elderly populations are not adversely impacted in the shift to a low-carbon economy, while also delivering benefits like lower heating bills

**Equity**: Encourage diversity, inclusion, and equity of all Maine people and communities
MAINE GREENHOUSE GAS (GHG) EMISSIONS AND REDUCTIONS GOALS

Exponential fit line is approximate path emission reductions might take to meet targets

Source: Maine DEP, 2020
MAINE GREENHOUSE GAS (GHG) EMISSIONS BY SECTOR

- Transportation: 54%
- Residential: 19%
- Commercial: 11%
- Industrial: 9%
- Electric Power: 7%

Source: Maine DEP, 2020
**Renewable Portfolio Standard LD 1494**
- Increased RPS of 80% by 2030
- Goal of 100% renewable power by 2050

**Solar & Distributed Generation LD 1711**
- Incentivizes at least 375 MW of distributed generation
- Encourages small scale and community solar projects

**Heating**
- Initiative to install 100,000 new heat pumps by 2025 with a focus on low-income residents
INCREASE Maine’s RPS to 80% by 2030, up from 40 percent, with a goal of 100% by 2050.

Requires Maine PUC to PROCURE 14% of Maine load via long-term contracts for Class I and IA.

- 70% ratepayer benefits & 30% economic benefit

1st Procurement = 10% of Electric Load
- 1st round were due on May 11, 2020
- Final contracts approved by December 2020
- 2nd round initiated by Jan 2021
Net metering project cap increased from **660 kW to 5 MW**

**C&I NET ENERGY BILLING PROGRAM**
- Non-residential customers
- Tariff Rate = Standard Offer + 75% T&D

**DECLINING BLOCK PROGRAMS**
- **125 MW of C&I**
  - 25 MW Blocks
- **250 MW of ‘shared distributed generation resources’**
  - 50 MW Blocks
  - Low/Moderate Income Household Participation

**MAINE PUC DG PROCUREMENT – BLOCK 1**
- Schedule of requirements from May 11 to July 30
- Notice of Award and Clearing Price Issued August 31 for Block 1
INTERCONNECTION QUEUES – June 2020

CMP - Solar Interconnection Queue
- 1345.5 MW
- 294.8 MW
- 34.0 MW

Versant Solar Interconnection Queue
- 363.8 MW
- 58.5 MW

Battery • Solar • Solar/Battery
Offshore Wind

• Significant potential for offshore wind development in the Gulf of Maine

• Joined **BOEM Intergovernmental Renewable Energy Task Force** with New Hampshire and Massachusetts

• **Maine Aqua Ventus:** First of its kinds floating offshore wind pilot project developed by UMaine

• **Searsport Port Infrastructure and Market Potential Assessment**

• Engagement of public and stakeholders
  
  • Crucial early in the process, minimize impacts

Source: NREL
MAINE, NEW ENGLAND & U.S. HOME HEATING DATA

Energy Source Used for Home Heating, Percent of Households, Maine, 2017

- Natural Gas: 12.8%
- Fuel Oil: 61.3%
- Electricity: 7.7%
- Propane: 11.4%
- Other/None: 6.7%

2017 Total Residential Distillate Fuel Oil Usage Per Capita

Source: EIA, SEDS Database
Heat Pumps
Goal of 100,000 new heat pumps installed by 2025

Efficiency Maine Trust and Maine Housing
  • More than 45,000 installed today

Heat Pump Rebate Program (up to $1500)
  • Residential & Commercial

Electric Vehicle Rebates & Charging Infrastructure Grants
EV Rebates: 1,000-$2,000 rebates for eligible electric vehicles. Qualifying low-income Mainers, Maine governmental entities, and tribal governments can receive enhanced rebates

Charging Infrastructure Grants:
  • Phase I: Expanding Maine’s EV Fast-Charge Network
  • Phase II: Improve Local Access and Destination Charging With Publicly Available Level 2 chargers
  • Phase III: Extend Maine’s EV Fast Charge-Network
FRAMEWORK:
Based on Governor’s 10-Year Economic Plan:
• Increase valued added per job
• Equitably grow Maine’s median annual wage
• Grow workforce

STABILIZE AND SUPPORT:
• Resources and strategies for sectors to survive COVID crisis
• Position state for federal stimulus
• Address immediate challenges related to workforce, regulation, and infrastructure

SUSTAIN AND GROW
• Bridge crisis to Maine’s 10-year economic plan
• Prepare Maine’s economy to thrive
• Remove barriers to grow state’s workforce, improve regulatory environment, and support key infrastructure and innovation initiatives

CLEAN ENERGY ECONOMY
• Clean energy economy part of short and long term solutions
dan.burgess@maine.gov

www.maine.gov/energy
State of New Hampshire

Matthew Maillouex

Energy Advisor and State Energy Program Associate

Office of Strategic Initiatives

Environmental Business Council of New England

Energy Environment Economy
New Hampshire Energy Policy Outlook

Matthew Mailloux
Energy Advisor, OSI

July 17, 2020
Topics for Today

- Brief Introduction to the Office of Strategic Initiatives’ scope and role
- Gulf of Maine Offshore Wind Update
- Volkswagen Settlement Update
- Updates on state level energy policy efforts
About OSI

- OSI provides information, data & guidance to assist decision-makers on issues pertaining to energy use, development, land protection & community planning.
- We guide the state's future growth through public policy development, education, research, & partnership building.
Energy Division

- The Office of Strategic Initiatives operates several Energy Programs in partnership with both private and public entities to promote a sustainable, environmentally sound and least-cost energy future for New Hampshire.

- We function as the Governor’s Energy Office & we are administratively attached to the Office of the Governor.
Offshore Wind efforts in the Gulf of Maine
Observed Wind Speeds

- Gulf of Maine has some of the best wind resources anywhere in the world
- Considerably stronger than mid- and southern Atlantic coast states
Federal Waters in Gulf of Maine

- Federal Waters are between 3 to 200 miles offshore
Northern New England is “export constrained” meaning there is insufficient transmission to export power to load centers in southern New England.

- New transmission investment may be required to site and interconnect OSW.
ISO-NE Wholesale Market is Vulnerable to Winter Price Spikes
Offshore Wind Efforts
Offshore Wind Background

- Jan 2, 2019: Governor Sununu issued a request to BOEM to initiate the offshore wind regulatory process
- April 17, 2019: BOEM returns Acknowledgment Letter, paving the way to begin the Task Force Process
  - For better coordination, BOEM opted to make this a regional effort with Maine & Massachusetts
- December 3, 2019: Governor Sununu issued an offshore wind executive order (Order 2019-06)
- December 12, 2019: First BOEM Gulf of Maine Task Force meeting
Offshore Wind Executive Order


- Established 4 Advisory boards:
  - Environmental impacts
  - Port infrastructure
  - Existing offshore industries
  - Transmission and siting

- Required two studies to be completed by January 2021:
  - Potential reductions in greenhouse gas (GHG) emissions
  - Opportunities to attract offshore wind supply chain manufacturers

NH Office of Strategic Initiatives | 2020
NH Task Force Membership

- State agency commissioners from:
  - Department of Environmental Services
  - Public Utilities Commission
  - Department of Business and Economic Affairs
  - Department of Safety
  - Department of Natural and Cultural Resources
  - Office of Strategic Initiatives
  - NH Fish & Game

- Elected Officials from Seabrook, Hampton, North Hampton, Rye, New Castle, and Portsmouth
  - Selectmen, State Reps, State Senators, Mayor, and Executive Councilor
  - State Reps from the House Science Technology and Energy Committee
  - Senators from the Senate Environment and Natural Resource Committee
Stakeholder Engagement

- NH is committed to engaging with stakeholders at every step of the process
  - Task Force needs to be transparent, engaged, and responsive throughout the entire process
  - Stakeholders should have opportunities to be heard both at BOEM meetings and state led advisory boards.
State Energy Goals
NH State Energy Strategy

- Released in April 2017, select goals include:
  - Prioritize cost-effective energy policies.
  - Ensure a secure, reliable, and resilient energy system.
  - Achieve environmental protection that is cost effective and enables economic growth.
  - Encourage market-selection of cost-effective energy resources.
  - Generate in-state economic activity without reliance on permanent subsidization of energy.
  - Protect against neighboring states’ policies that socialize costs.
Emphasis on “All-of-the-Above”

- Fundamental principle that all energy sources should be able to compete on a level playing field in an open energy market.
- Government intervention in energy markets should be limited, justified, and technology-neutral.
Breaking Down Barriers to Offshore Wind

- By initiating the BOEM process, Wind Energy Areas may be identified in federal waters in the Gulf of Maine

- This is a vital step to identify potential opportunities for future offshore wind development

- Signals to developers that NH is open for business

NH Office of Strategic Initiatives | 2020
Economic Development

- Access lower cost, native electricity generation for NH ratepayers
- Reduction of environmental impact on NH natural resources, a key economic lifestyle and tourism driver
- Diversified opportunities for new industry jobs
- Modernization of NH port facilities
- Diversification options for growing NH component manufacturing industry in OSW supply chains

NH Office of Strategic Initiatives | 2020
Volkswagen Settlement
Total Awards

- NH received approximately $31 million in settlements funds
  - Approximately $15.5 million (50 percent) of NH’s allocation will be used to replace state and municipal vehicles and equipment.
  - Approximately $4.6 million (15 percent) of NH’s allocation will be used for the acquisition, installation, operation and maintenance of electric vehicle supply equipment (EVSE).
  - Approximately $6.2 million (20 percent) of NH’s allocation will be available to all entities, public and private, through a competitive solicitation.
  - Remainder accounts for administrative costs, 15% maximum.
Funds committed to date

- $13,142,202 of VW funding has been allocated/committed to date.
  - Approximately 42% of NH’s total settlement allocation
  - Projects include replacement of heavy trucks in the state fleet, DERA, and EVSE solicitations.
Future opportunities

- OSI is working to finalize and reissue an RFP for DC Fast Charging infrastructure along targeted state corridors.
- School bus replacement for electric/alternative fuel buses.
- Statewide municipal EVSE charging program.
- Additional state fleet vehicle replacements
State level policy updates
2020 Clean Energy Plan

- Governor Sununu released his 2020 Clean Energy Plan last January
- The plan sought to increase retail electric choice, expand opportunities businesses to net meter, and create new avenues for cities and towns to better control electric rates.
- The plan was killed in the House of Representatives along party lines.
COVID Disruption

- The onset of the COVID-19 pandemic disrupted the legislative session in NH, like many other states.
  - This negatively impacted for standalone energy legislation, including plans for state buildings, RPS, and offshore wind.
    - Some of these bills have been incorporated into omnibus legislation that remains still pending.
- The governor did sign HB 715, relative to electric energy storage into law.
Questions?

Contact:
Matthew Mailloux
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Matthew.Mailloux@osi.nh.gov
EBC Second Annual New England State Energy Leaders Virtual Conference

July 17, 2020
DOER Mission

Clean

Solar and renewable generation

Affordable

Peak reduction and energy efficiency

Resilient

Stored energy; Flexible resources
What is Net Zero?

MA Historical & Hypothetical Future GHG Emissions
(Forecasts shown are illustrative ONLY and do NOT represent actual model results)

GHG Emissions (MMTCO2e)

120%
100%
80%
60%
40%
20%
0%
-20%

1990  2000  2010  2020  2030  2040  2050

-20%

Transportation
Non-Energy
Difference Between Net and Gross Emissions
MassDEP GHG Inventory
(NZ Residual)

Electricity Consumption
Buildings
Net Carbon Sink
80x50 (Gross)
Net-Zero Emissions
Electric Vehicle Adoption

- COVID has substantially impacted light duty vehicle sales, including sales of passenger electric vehicles
- DOER reinstated the MOR-EV rebate program January 1, 2020 following receipt of additional funds from the legislature
  - The addition of funds enabled the return to $2,500 for BEVs and inclusion of PHEVs
- Even with the higher rebate levels and inclusion of PHEVs, initial numbers indicate rebates in May 2020 were the lowest in the program’s six year history
- Responsive Actions:
  - Expanded rebate eligibility to include commercial and non-profit fleets to maintain demand for EVs in the Commonwealth
  - Review opportunities to target incentives to improve equity
SMART

Overall Program
• Began in November 2018
• Over 20,000 applications and 1,100 MW of capacity committed

New Emergency Regulations
• Released on April 15, 2020 and went into effect immediately
• Doubles the amount of solar to 3,200 MW
• Incentivizes behind the meter systems
• Incentivizes low-income population in our communities
• Incentivizes public solar projects
• Protects Commonwealth’s natural resources
• Adds new consumer protection provisions
• Final updates to the program were filed on July 10, 2020
  ➢ Updates were made to land use regulations and grandfathering provision
Clean Peak Standard

Background
• Market incentive for clean energy to be used – storage, renewables, demand response – during times when costs and emissions are at their highest
• Creates an annual requirement on all electricity suppliers to purchase a certain amount of Clean Peak Energy Certificates (CPECs)

Implementation
2019
• Engaged stakeholders, developed and presented a straw proposal, issued draft and revised regulations, and held public hearings
• Issued technical bulletin establishing 2020 obligation at 1.5%

2020
• Filed with Joint TUE Committee and state clerks to begin formal review process
• Promulgation and regulation effective date anticipated later this year

MA will be first in the nation to implement a Clean Peak Standard
Status Quo Challenge to Resolve

2030 Winter Week Without CPS

Pricing differentials reflect higher oil and gas use to meet peak

Significant renewable generation, but not during peak hours

Production profile for 1,090 MW Hydro, 3,200 MW Offshore Wind, 5,000 MW Solar PV
Clean Peak As a Solution

Opportunity to shift clean energy to peak periods through storage

CPS shifted wind energy generated overnight when prices and demand are lower to evening peak when demand is high

Production profile for 1,090 MW Hydro, 3,200 MW Offshore Wind, 5,000 MW Solar PV
83C Procurements

- Original authorization for 1,600 MW through Energy Diversity Act of 2016
- Power Purchase Agreement (PPAs)
  - Contracts with the Electric Distribution Companies (EDCs)
  - Energy and Environmental Attributes (RECs)
  - RFP allows paired storage
  - Total price includes transmission costs
- Round 1 (2018) - Selected Vineyard Wind 800 MW project
  - 8.4 cents/kwh (Nominal Levelized)
- Round 2 (2019) - Selected Mayflower Wind 804 MW project
  - 7.8 cents/kwh (Nominal Levelized)
  - 13% decline in pricing in real dollars from Round 1
  - Includes significant economic development commitments
- With the Selection of Mayflower Wind, the EDCs have solicited the original authorization of 1,600 MW
- Technical Conference held on March 3
Offshore Wind Going Forward

• In 2018, Massachusetts passed An Act to Advance Clean Energy. The Act allows DOER to require
  – The EDCs to solicit and procure up to an additional 1,600 MW of offshore wind.
  – The EDCs to solicit and procure proposals for independent offshore wind energy transmission

• In the Offshore Wind Study:
  – DOER directed the EDCs to solicit for and procure the additional 1,600MW of offshore wind, if cost effective
    • DOER recommended two 800 MW solicitations in 2022 and 2024
    • Allow for continued price declines and a steady pipeline of solicitations to spur and maintain economic development opportunities
  – DOER recommended holding a technical conference to assess whether and/or how a solicitation for independent transmission proposals should occur and, if necessary, issue a separate contingent solicitation for independent transmission prior to additional offshore wind solicitations.
    • Request for Stakeholder Comment Ongoing
    • Technical Conference held on March 3
THANK YOU
State of Connecticut

Victoria Hackett

Deputy Commissioner for Energy
Department of Energy & Environmental Protection

Environmental Business Council of New England
Energy Environment Economy
Connecticut's Energy Priorities

Department of Energy and Environmental Protection

Presented by: Vicki Hackett
Deputy Commissioner of Energy
Our GHG goals

2008 Global Warming Solutions Act
Reduce GHG emissions 10 percent below 1990 levels by 2020 and 80 percent below 2001 levels by 2050.

2018 Act Concerning Climate Change Planning and Resiliency
Reduce GHG emissions 45 percent below 2001 levels by 2030.

Our clean grid goals
Executive Order No. 3
Analyze pathways and recommend strategies for achieving a 100% zero carbon target for the electric sector by 2040.
GC3 recommends policies, regulations, or legislative actions that will assist in achieving the GHG reduction targets. In September 2019, Governor Ned Lamont issued Executive Order No. 3, expanding the responsibilities of the GC3 to *address adaptation and resilience strategies* in the face of climate change.

CT made its single largest purchase of renewable power ever and selected Vineyard Wind to develop an *804-megawatt offshore wind project*. Once developed, the project will constitute *roughly 14% of the state’s power needs*. 

**Governor's Council on Climate Change (GC3)**

**Offshore Wind Procurement**

CT made its single largest purchase of renewable power ever and selected Vineyard Wind to develop an 804-megawatt offshore wind project. Once developed, the project will constitute roughly 14% of the state’s power needs.
Energy Equity

Our state’s mitigation initiatives need systematic attention to environmental equity and justice (EEJ).

- The GC3 appointed EEJ Working Group has 27 members representing NAACP, native peoples, people with disabilities, civil rights organizations, and others.
- EEJ attention is baked into several GC3 working groups via cross-membership.
- EEJ working group is systematically reviewing the climate change strategies laid out in prior GC3 analyses along with the strategies underway in the 7 working groups.
- Extensive EEJ stakeholder engagement process planned for 2021 will provide deeper EEJ perspective
On July 14, 2020

Connecticut joined 15 states and the District of Columbia in an MOU that commits 100% percent of all new medium- and heavy-duty vehicle sales to ZEVs by 2050 with 30% ZEV sales by 2030.

This builds upon a previous 2013 MOU CT signed to effectively put 125-150,000 light-duty ZEVs on the road by 2025.

“Now is the time to act regionally to protect the health of our residents and our climate by reducing emissions from medium- and heavy-duty trucks,”

Identifies objectives needed to accelerate the deployment of electric vehicles (EVs) to meet ZEV MOU goals.

The EV Roadmap also examines policies and regulatory tools for addressing equity, purchasing incentives, consumer education, charging infrastructure expansion, and utility rate design.

**Integrated Resources Plan (IRP)**

The IRP assesses CT’s future electric needs and develop a plan to meet them.

The IRP’s Clean Energy Pathways Analysis will examine different possible scenarios from now to 2040 under varying levels of decarbonization policy and electrification.

Draft IRP anticipated August 2020.

**Policy Assessment of Deregulation**

Assess Connecticut’s experience in pursuing its environmental goals, and the original aims of Connecticut’s electric sector deregulation statute in the current deregulated wholesale energy market.

**Shared Clean Energy Facilities**

Our statewide SCEF program seeks new or incremental Class I renewable generation projects for a 20-year term.

Eligible projects are to be chosen through competitive bidding procurement process each year, for a total of 6 years. The program capacity is up to 25 MW per year.
COVID-19 Impacts on Business

Business employees impacted

<table>
<thead>
<tr>
<th>Event</th>
<th>All Small Business</th>
<th>Clean Energy Contractors</th>
</tr>
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<tbody>
<tr>
<td>Employee schedules reduced</td>
<td>33.11%</td>
<td>47.15%</td>
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<tr>
<td>Employees laid off</td>
<td>32.52%</td>
<td>47.15%</td>
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<tr>
<td>Employees furloughed</td>
<td>31.71%</td>
<td>50.40%</td>
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<tr>
<td>Some employees working remotely</td>
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<tr>
<td>No staffing changes</td>
<td>11.65%</td>
<td>13.01%</td>
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<tr>
<td>Hiring employees</td>
<td>4.87%</td>
<td>4.88%</td>
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<tr>
<td>Employee schedules increased</td>
<td>3.99%</td>
<td>0.00%</td>
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</tbody>
</table>

Delays and Cancellations Hit Hard

% of appointments delayed or cancelled

<table>
<thead>
<tr>
<th>Industry</th>
<th>All Sectors</th>
<th>67%</th>
<th>73%</th>
<th>76%</th>
<th>78%</th>
<th>78%</th>
<th>80%</th>
<th>83%</th>
<th>83%</th>
<th>90%</th>
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<tr>
<td>Home Energy Solutions contractor</td>
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<td>Non-solar renewable energy contractor</td>
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<td>Small Business Energy Advantage contractor</td>
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<td>Other energy efficiency contractor</td>
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<td>Distribution</td>
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<td>Operations and Maintenance</td>
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<td>Professional services (e.g., consultant)</td>
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<td>Utility-scale solar contractor</td>
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<td>All sectors</td>
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<tr>
<td>Traditional HVAC contractor</td>
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<td>Financial services</td>
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Our Pandemic Response

Focused on Equity, and Affordability, and Clean Jobs

Ensuring Equity

We expanded ways to automatically qualify LMI residents for the HES Income-Eligible (HES-IE) program.

We made programs more affordable by increasing incentives for insulation and heat pumps and increased program access for the most overburdened/underserved populations.

We allowed customers on Utility Payment Programs to participate in HES-IE without needing to submit income verification.

Expanding Affordability

We reduced the minimum loan amount from $1,000 to $500 for the residential Micro Loan program for home efficiency improvements.

We eliminated the co-pay for residential programs and increased project caps for businesses to help defray home and business utility costs.

We deferred repayment of loans for 6 months for commercial customers.

Supporting Contractors

We improved cash flow to commercial/industrial contractors by requiring that utilities pay contractors for partial completion.

We offset unpredictable cashflows for residential sector contractors by reimbursing administrative costs.

We began working in March to develop Health and Safety Protocols that prioritize contractor and customer safety.

We supported virtual home energy audits for those preferring not to have contractors in their homes yet.
Thank you

www.portal.ct.gov/DEEP

DEEP.EnergyBureau@ct.gov
Moderated Discussion

Co-Moderators:

Catherine Finneran, *Eversource Energy*