

Distribution Planning to Enable Massachusetts 2050 Decarbonization Roadmap

MassCEC's Net Zero Grid Planning Lab Workshop #1

February 3, 2022



Workshop Plans

Three collaborative workshops (Task 1)

Today: **Distribution Planning**

March 4th : **Identifying Barriers and Opportunities to Achieve**
10am – 12pm ET

April 13th: **Distribution System Costs to Achieve**
2pm – 4pm ET

... to enable Massachusetts 2050 Decarbonization Roadmap

Today's Agenda

12:00 – 2:00 pm

- Welcome, Introductions, and Workshop Objectives
- Decarbonization Pathways Distribution System Impact Areas
- Panel Session - Distribution Planning Process
- Questions and Discussion
- Feedback and Plans for Workshop #2

Active participation is appreciated!

Invited Stakeholders

Today's Speakers

- Rob Sheridan – EPRI
- Ariel Horowitz – Mass CEC
- Digaunto Chatterjee - Eversource
- Lavelle Freeman – Eversource
- Gerhard Walker – Eversource
- Gia Mahmoud – National Grid
- Dom Fuda – National Grid
- Balaji Doraibabu – National Grid

Invited Stakeholder Groups

- Attorney General's Office Massachusetts
- Electric Power Research Institute (EPRI)
- Eversource Energy
- Executive Office of Energy and Environmental Affairs
- Advocacy Community
- Massachusetts Clean Energy Center
- Massachusetts Department of Energy Resources
- Massachusetts State Legislature
- Metropolitan Area Planning Council
- National Grid

Project Overview

MassCEC's Net Zero Grid Planning Lab is an opportunity to build consensus and strategy around distribution grid changes needed to reach Net Zero by 2050.

As a non-profit research institute that provides thought leadership to help the electricity sector technology gaps and broader needs, EPRI will:

- Highlight barriers and opportunities to meeting the Net Zero goal, presented in these workshops and a white paper with applicability to the 2030 CECP; and
- Use survey results and utility data to forecast customer adoption rates of new beneficial technologies on a sample of representative feeders and then extrapolate those results to understand the impacts of technology adoption across the Commonwealth.

Opening Remarks

Digaunto Chatterjee

Vice President - System Planning
Eversource



Gia Mahmoud

Vice President – Future of Electric
National Grid



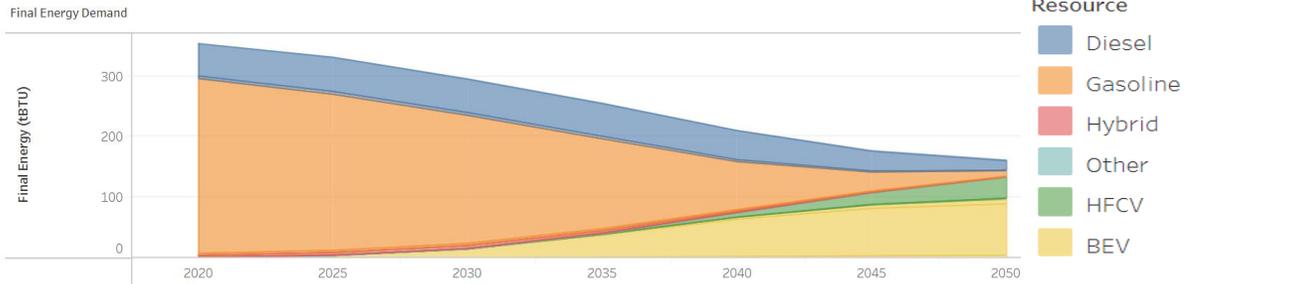
Today's Workshop Objectives

1. Highlight elements of the Decarbonization Pathways that may impact the electric distribution system
2. Review Distribution Planning Processes that drive investment decisions to safely, reliably and cost effectively operate the grid
3. Discuss objectives of next workshop which will focus on barriers to achieve and opportunities for cost efficiency

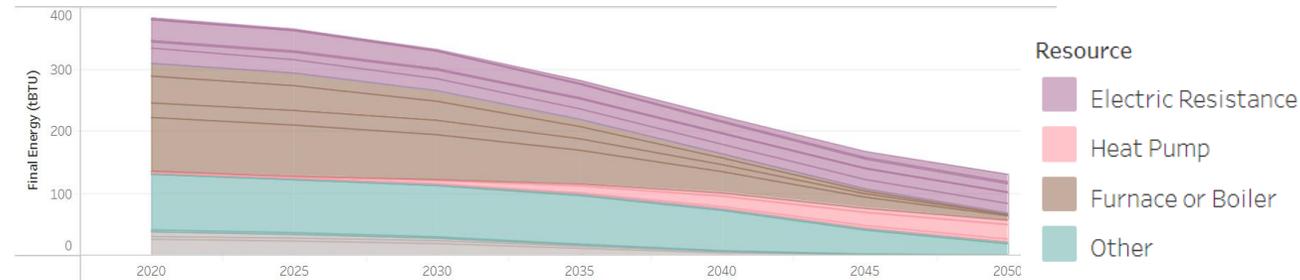
Enabling Massachusetts 2050 Decarbonization Roadmap



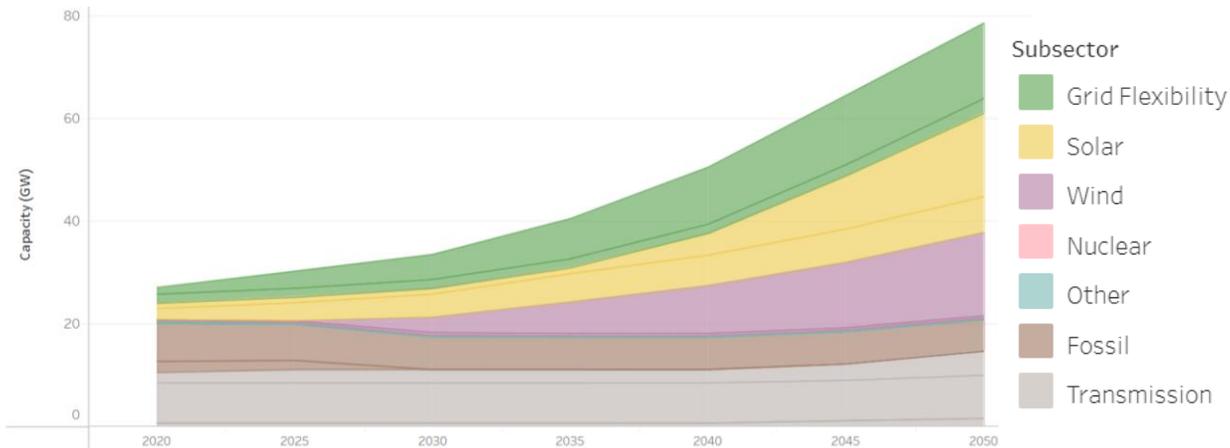
2050 Decarbonization Pathways



Increasing Electrification of Transportation



Increasing Electrification of Building Heating



Increasing Solar and Grid Flexibility

Energy Pathways to Deep Decarbonization

*A Technical Report of the Massachusetts
2050 Decarbonization Roadmap Study*

December 2020

2050 Pathway Elements Distribution Planning Considerations

- Magnitude of Demand (kW)
- Energy Requirement (kWhr)
- Load Profile (daily, weekly, monthly)
 - Temporal Coincidence
 - Intermittency
- Location and electrical connectivity
- Flexibility
 - Alignment to local needs



Distribution Planning Panel Session

Panelists



Rob Sheridan

EPRI

Technical Executive Consultant
Distribution Operations & Planning



Lavelle Freeman

Eversource

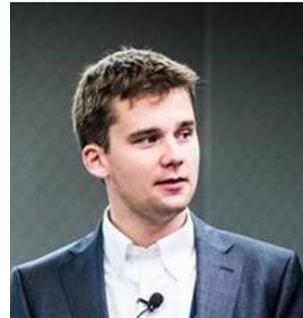
Director
Distribution Planning



Domenico Fuda

National Grid

Director
Electric Strategy Activation
Future of Electric



Gerhard Walker

Eversource

Principal Engineer
System Planning

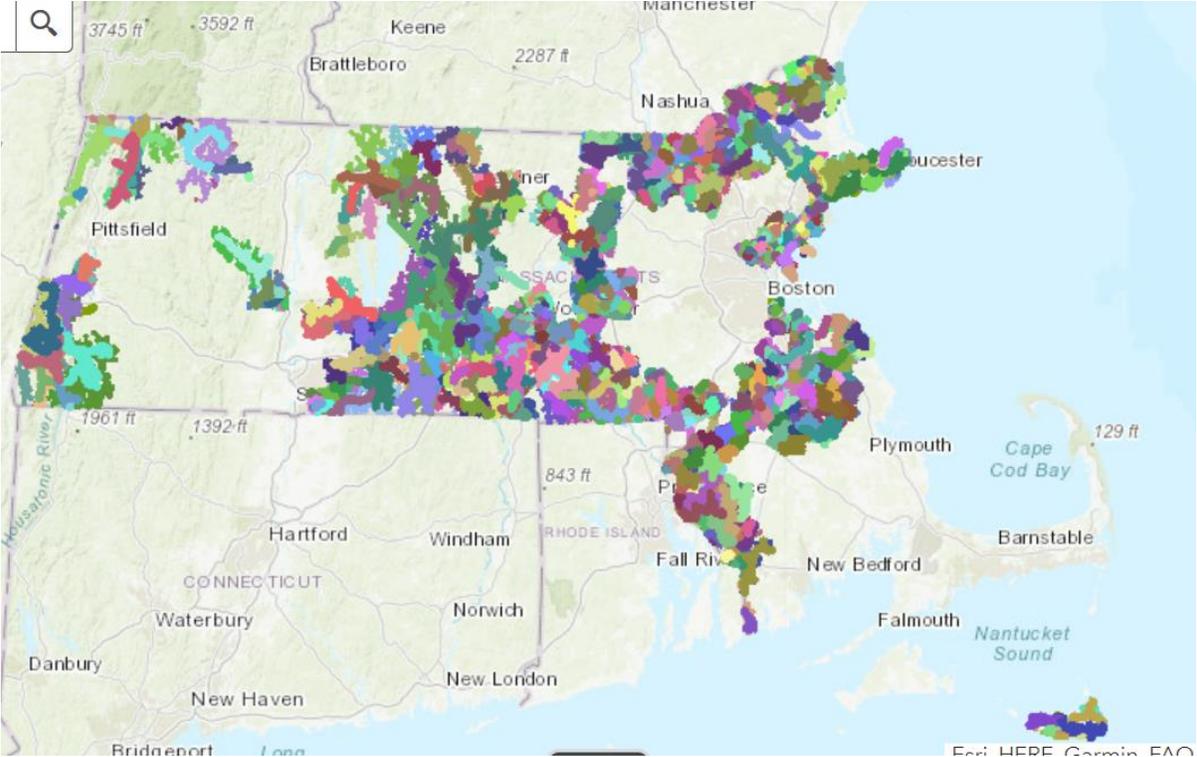
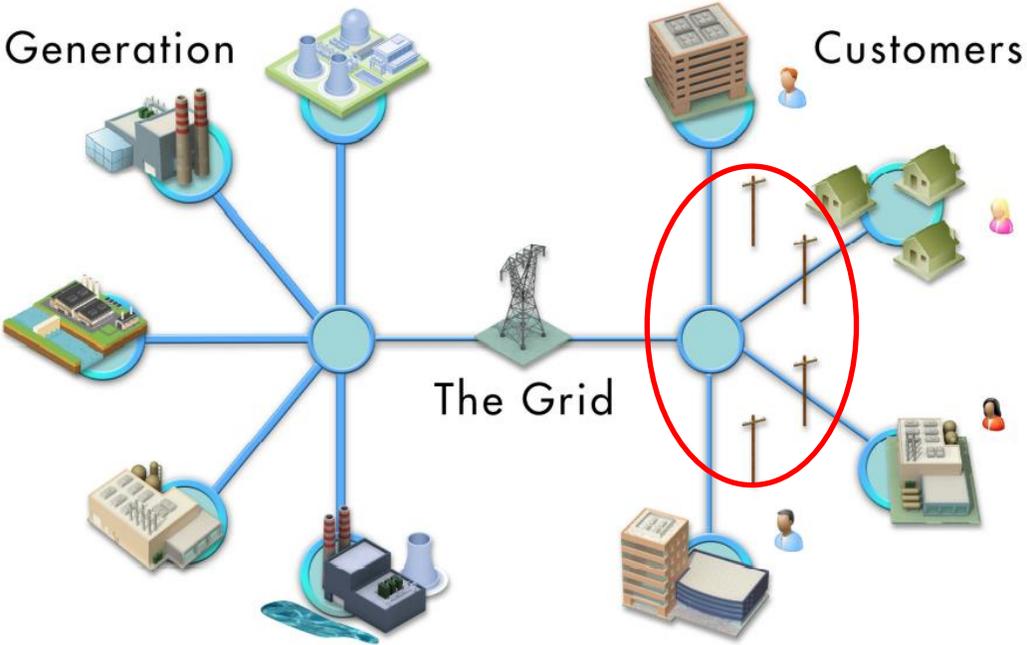


Balaji Doraibabu

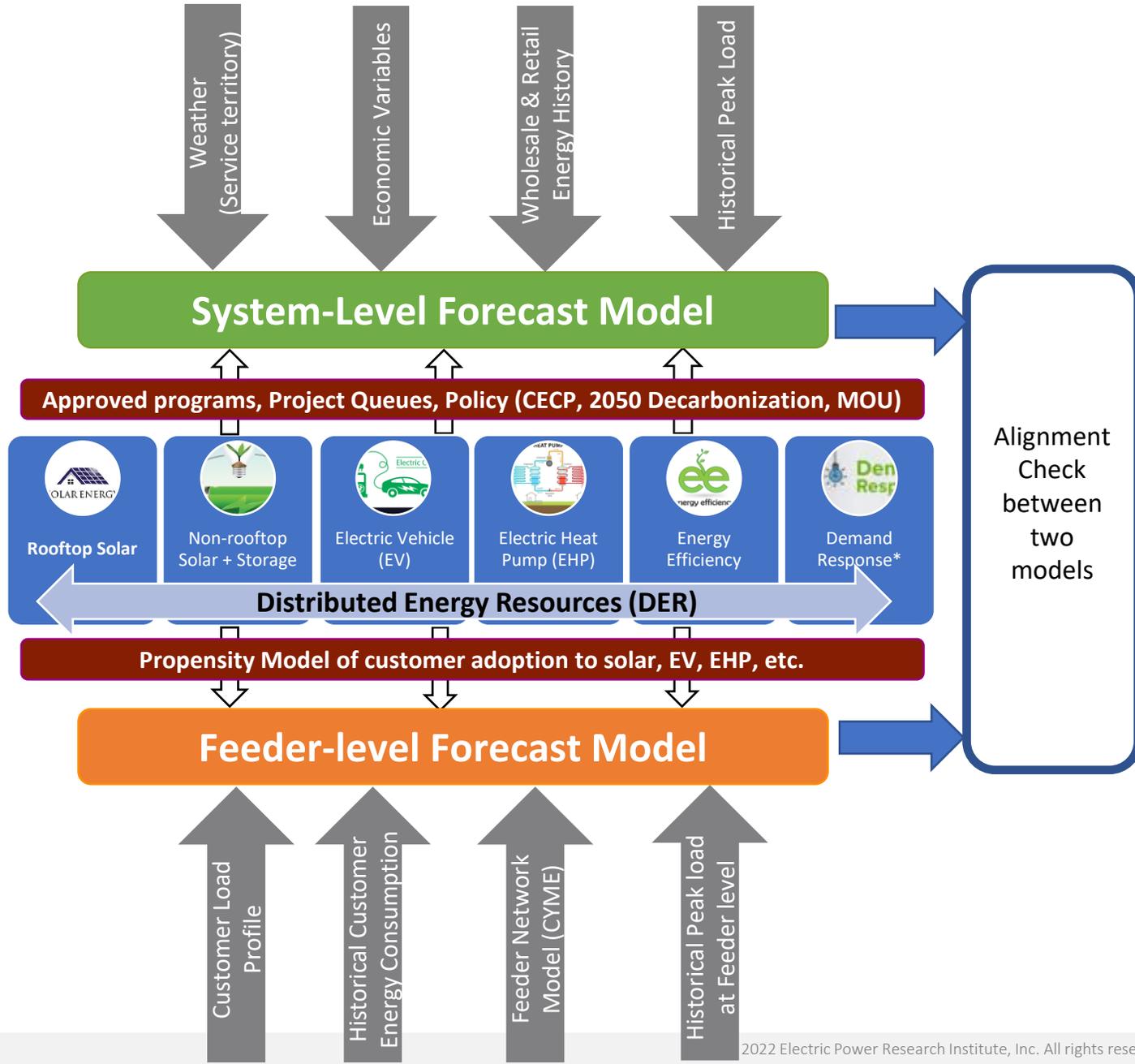
National Grid

Director
Advanced Data & Analytics
Future of Electric

Electric Distribution Systems



National Grid - 8760 Electric Load & DER Forecasting for 15-year projections

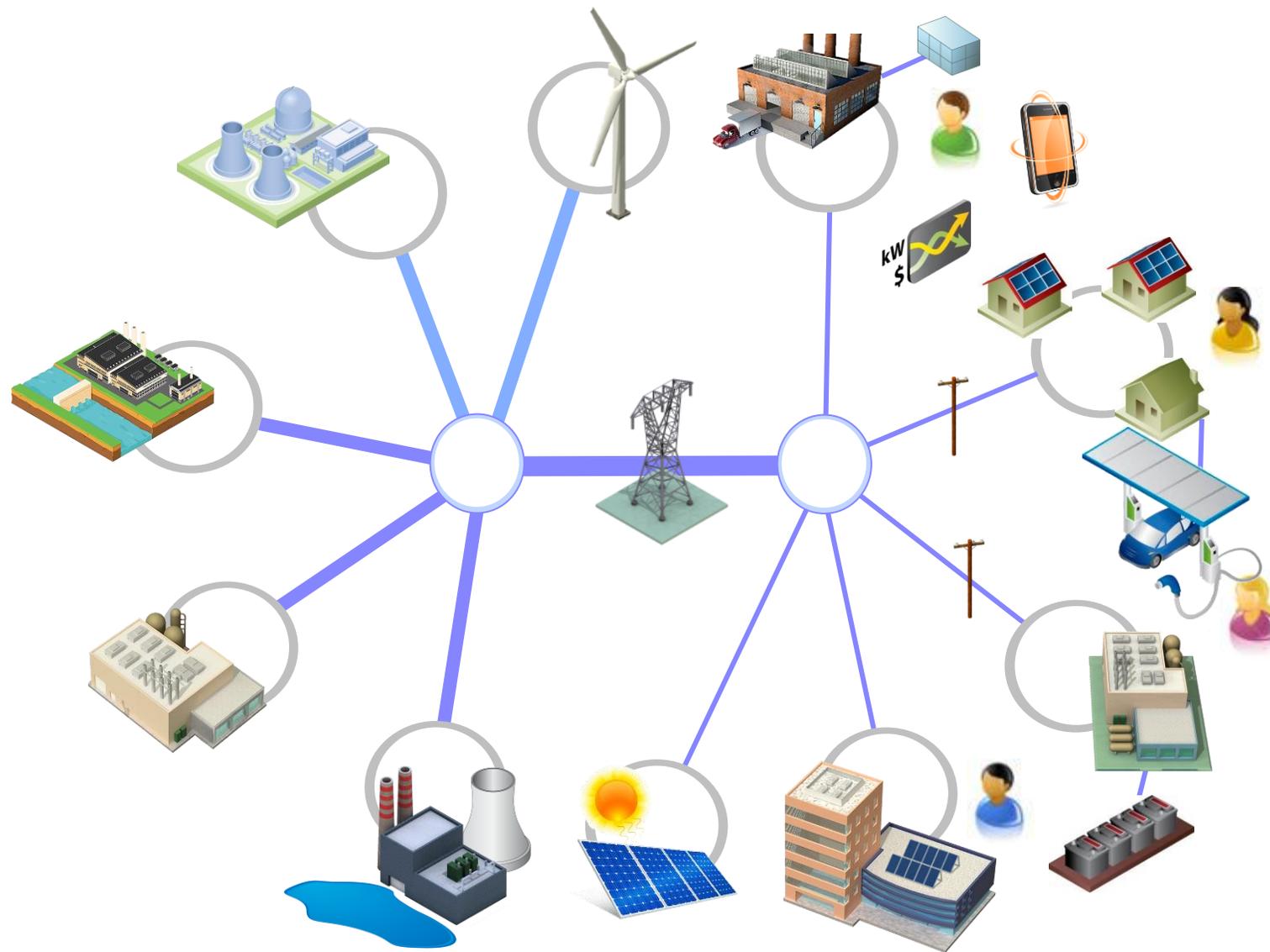


DERs Scenarios

- Base, High and Low
- Probabilities

DER	NG Forecast projections
Solar PV	<u>Base</u> : Meet pro-rata of CECP goal by 2030
Energy Storage	<u>Base</u> : Meets state's 2025 targets. No explicit State target in CECP
Electric Vehicles (EVs)	<u>Base</u> : Meet CECP goal (50% by 2030 and 100% by 2035)
Electric Heat Pumps (EHP)	<u>Base</u> : Delayed achieve CECP goal by 2036 <u>High</u> : On-target by 2030

Looking Forward





Q&A



**Feedback
and
Considerations for Workshop #2**

**Identifying Barriers to Achieving Massachusetts 2050
Decarbonization Roadmap**

A blue-tinted photograph of four people, two men and two women, standing in a row. They are dressed in professional attire, including lab coats and a hard hat. The image is semi-transparent, allowing the text to be overlaid. The text "Together...Shaping the Future of Energy™" is centered in white.

Together...Shaping the Future of Energy™