Massachusetts 80x50 Study Scenario Planning Workshop

Participant Briefing Document

Tuesday, November 19, 2019 from 1:00 – 5:00 PM

U.S. Coast Guard Building, 427 Commercial Street,
Boston, MA 02109

Introduction

The Massachusetts Decarbonization Roadmap: 80x50 study is an effort by the Executive Office of Energy and Environmental Affairs (EEA) to identify cost-effective and equitable strategies to ensure Massachusetts reduces greenhouse gas emissions by at least 80% by 2050. The project will produce a pathway for this reduction, incorporating transitions across a range of sectors: buildings, transportation, electricity, non-energy, and land use. This pathway will be tested under a series of scenarios that represent potential futures for the Commonwealth.

To ensure the tested scenarios capture a sufficient range of plausible 2050 futures and incorporate expert feedback, EEA is hosting a Scenario Workshop to gather stakeholder feedback on the key components of scenarios and to foster discussion of potential scenarios. This workshop is intended to support the development of policies that ensure Massachusetts achieves its greenhouse gas reduction commitments despite current uncertainties. The stakeholder insights and narratives crafted in this session will help us identify trends, which will inform the set of scenarios and modeling parameters that we will use in the 80x50 pathway analysis.

Together, stakeholders will:

1. Receive an update on study progress to date;
2. Engage with the study's scenario approach, including the utilization of scenario components to capture key trends; and
3. Present their perspectives on key scenario components and plausible futures to help inform the development of 3-4 scenarios for modeling analysis.

The workshop will result in a collection of stakeholder insights on the importance of drivers and perspective into scenarios for modeling. This feedback will be used to inform the development of scenario narratives and model parameters. These will be used to qualitatively and quantitatively inform the development of emissions reduction pathways that are responsive to each scenario – and will ultimately be used to inform policy design that will be resilient across the identified future scenarios. **This document introduces workshop content to frame the session for participants and outlines the session agenda.**

Background on Scenario Analysis

With respect to climate change planning, scenario analysis is the process of analyzing potential future greenhouse gas emissions by assessing a range of alternative conditions and policies. It enables researchers to account for uncertainties in future conditions and incorporate qualitative descriptions in addition to quantitative indicators, which is beneficial for articulating changes that cannot easily be quantified (e.g., political instability).

Scenarios capture key changes in various aspects of society, including demographics, socioeconomics, lifestyle, policies, institutions, technologies, and climate, which then allow researchers to anticipate potential challenges to mitigation and adaptation. Once defined, scenarios can be used for qualitative

evaluation of strategies in the context of each scenario. Further, scenarios can be parametrized as quantitative inputs for data-driven modeling efforts.

A number of existing scenario frameworks exist at the local, national, and international levels. For example, the Shared Socioeconomic Pathways (SSP) Framework includes five pathways that represent different mitigation and adaptation challenges on the international scale. On the local level, the MBTA has developed the Focus 40 scenarios to aid in transportation planning, and MAPC has developed the draft MetroCommon Scenarios as part of Greater Boston's regional long-range plan.

In a similar fashion, the 80x50 Study is also employing a scenario approach. The project team is looking to stakeholders to help craft scenarios that capture potential futures in the Commonwealth that should be explored as the Commonwealth charts a path toward decarbonization.

Scenarios are intended to capture influences that are external to the system being studied. For the 80x50 study, we are interested understanding how external factors may influence how the *Commonwealth pursues policies and climate mitigation.* Such influences could include top-down components such as federal policy or bottom-up components such as individual behavior, institutional leadership or municipal coordination. The final set of scenarios in this study will be distinctly defined to cover a range of possible future trends that will influence the impacts of state policy.

Key Terms

The Study and Scenario Workshop materials employ a series of key terms to frame the analysis and guide discussion. Terms with which stakeholders should be familiar ahead of the workshop include:

Pathway: A suite of outcomes that achieves a set of policy goals. In this case, the overall goal is GHG emissions reduction. In the 80x50 Study, the suite of outcomes and policies that will achieve at least 80% by 2050 is referred to as the 80x50 Pathway.

Scenario: An internally consistent storyline outlining driving forces, critical assumptions and uncertainties, and how these forces will impact the future in terms of the Commonwealth's ability to meet the 2050 targets. In the 80x50 Study, we will use scenarios to help explore what policies and programs will be necessary for the Commonwealth to achieve its at least 80% greenhouse gas reduction target, in spite of external factors outside of the Administration's direct control (e.g. federal policy).

Component: A factor that will impact the Commonwealth's ability to decarbonize and is outside of the Administration's direct control. These will be combined to help characterize and describe a current state and potential future in the Commonwealth. Components are part of one of four categories: Socioeconomic & Lifestyle, Policy & Institutions, Technological Change, and Climate. In the Study, the components will be linked to specific modeling parameters to explore the impact of components on the achievement of the at least 80% by 2050 goal. The full list of components is found below in this pre-event document.

Trend: Ongoing or anticipated changes to components for which the Commonwealth should plan as they develop strategies for decarbonization.

Linkage: Identification of connections between components that are likely to trend together or in opposition to one another under a particular future scenario (i.e. Land Use, Development, & Affordability and Mobility & Transportation).

Decarbonization Components

The following 15 components are proposed as the foundation for scenario development. Varying levels of these components will influence the scenarios and modeling parameters used by the Study. During the session, we will introduce these components and stakeholders will be asked to review and identify the components they believe are most important to decarbonization and the expected future impacts associated with them:

Component		Description
Socioeconomic & Lifestyle	**Land Use, Development & Affordability**	The extent to which, housing costs, land use policy, and open space influence migration, sprawl, private vehicle use, and forest cover
	Economic Activity	The impact of economic trends, such as a boom in personal wealth or a recession, on space and energy demands and decarbonization investments
	Equity	The influence of current inequities, such as environmental injustice and income inequality, on climate mitigation actions
	Consumer, Corporate & Institutional Behavior	The examination of how individual and institutional behaviors and level of concerns about climate change influence decisions about technology adoption
Policy & Institutions	**Federal Action**	The adoption and implementation of federal policy focused on decarbonization: CO_2 price, federal transit investment, R&D, RPS, limiting fossil fuel extraction, etc.
	Regional Coordination (Multistate)	The degree of successful collaboration across multiple states regarding current policies and new initiatives: e.g., RGGI and TCI
	Municipal Coordination	Local level, cross-town coordination to develop climate-conscious infrastructure and housing
	Institutions	Examination of the role of public trust in the government, science, and the media and the strength of these institutions

Technological Change	**Mobility & Transportation**	The extent of transformation and level of investment within transportation and transit systems including improved EV service, new modes (e.g., microtransit), autonomous vehicles, deployment of charging equipment, etc.
	Built Environment & Industry	The transformation of new construction and existing facilities within the built environment and industry, particularly around efficiency and electrification
	Energy Supply & Delivery	The exploration of level of deployment of carbon free energy technologies and the capacity of infrastructure to deliver energy generated by those technologies
	Innovation (Technology & Market)	The extent and speed at which technological advancements (e.g. storage, grid modernization), R&D investments and workforce development support and influence the decarbononization trajectory
Climate	**Sea Level Rise & Flooding**	The impacts of climate change and adaptive efforts on the ability for coastal communities maintain and continue to grow population and economic activity
	Temperature Impacts	The impact of climate change on winter and summer temperatures, and its subsequent effect on heating and cooling energy consumption
	Ecosystem Impacts	The influence of higher CO_2 levels and elevated temperatures on biological productivity and carbon sequestration

Pre-Event Actions

To facilitate an informed, productive discussion concerning scenario development, the project team has outlined the following pre-event actions for participants:

1. **Review Key Terms and Key Components:** To best prepare to for the workshop conversation, please review the list of key terms used to frame the exercise and the list of key components attached to this document. These components will be a focus of the workshop discussion and the foundation of the scenarios used in the study.
2. **Come Prepared to Discuss**: This workshop is designed to collect your feedback and insights into potential scenarios to include in the study. When reviewing the components list and descriptions, consider the following questions:
    - Are there any key components missing from this list, or any that should be modified?
    - Which of these components do you believe are most important to consider when assessing Massachusetts' pathway to decarbonization?
    - What trends are associated with the components you have identified as most important?
3. **Review Scenario Analysis Background**: The scenario analysis framework approach is commonly used in decarbonization studies to frame pathways. To become more acquainted with this process and what it entails, consider reviewing section above entitled "Background on Scenario Analysis" including the reports and studies that are hyperlinked in this section.

Session Agenda

TIME	AGENDA ITEM	DESCRIPTION
1:00-1:10 PM	**Welcome and Introductions**	Welcome from EEA and review of the agenda for the day
1:10-1:30 PM	**Implementation Advisory Committee (IAC) Business**	The Global Warming Solutions Act IAC will complete a few items related to their workplan and business
1:30 - 2:00 PM	**Study Briefing**	Project Team will provide an update on the 80x50 study to date, introduce the role of stakeholder engagement, and share the scenario key components and framework with the group
2:00 - 2:10 PM	**Scenario Exercise Introduction**	In small groups, stakeholders will discuss and prioritize components to develop the basis for scenarios, with each group developing a 2-3 sentence 2050 scenario "elevator pitch"
2:10 - 2:25 PM	**Break into Groups**	
2:25 - 3:55 PM	**Small Group Exercises**	Facilitators will guide small groups through the component prioritization and scenario development. Participants will use smartphones to share the scenario they develop with the larger groups via an online polling platform, Slido. *If you have access to a mobile device, you can interact with Slido directly through your technology of choice.*
3:55 - 4:05 PM	**Break**	Transition back to plenary
4:05 - 4:50 PM	**Report Out**	Small groups will share the key components they deemed most influential and share their scenario with the whole group
4:50 - 5:00 PM	**Conclusion**	