Global Warming Solutions Act Implementation Advisory Committee and Scenario Planning Workshop

November 19th, 2019

1-5pm

Massachusetts Global Warming Solutions

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Scenario Workshop

NOVEMBER 19, 2019

INITIAL SCENARIO WORKSHOP OVERVIEW

Agenda

- Study Briefing
- Scenario Exercise Introduction
- Break
- Group Work
- Break
- Report Out on Group Takeaways

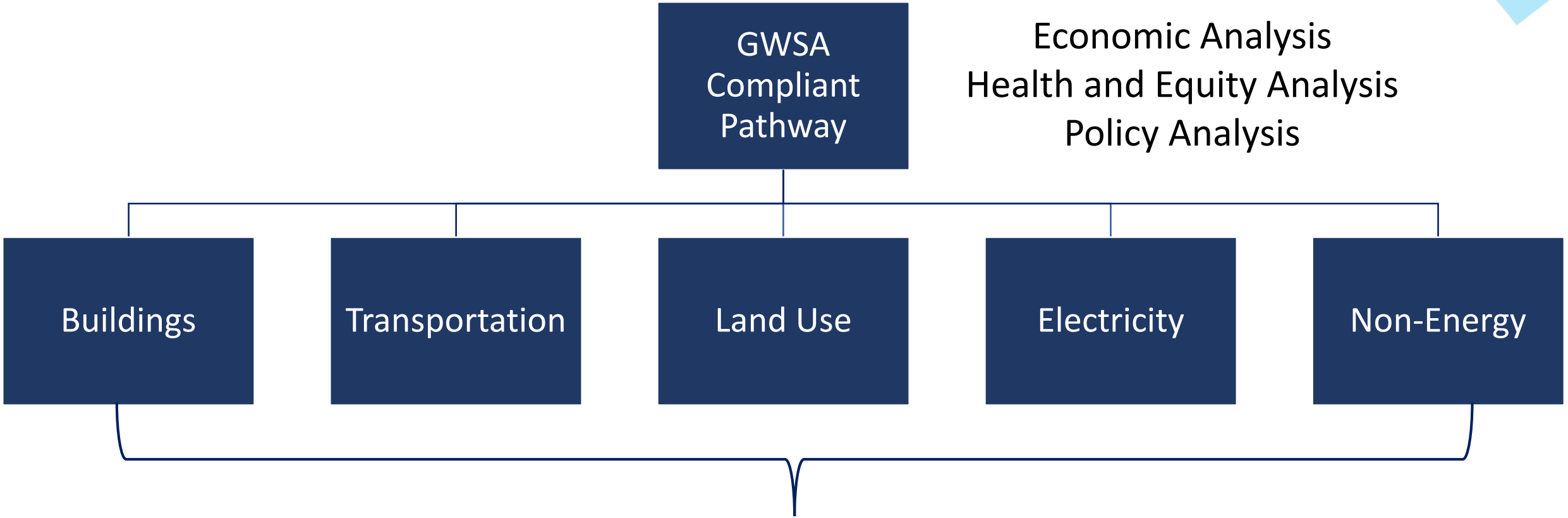
Project Context

80x50 Study Overview

Goals: Comply with the Global Warming Solutions Act (GWSA) by:

- Developing a 2050 Roadmap to achieve at least 80% emissions reductions by 2050
- Informing a 2030 emissions target
- Producing near-term 2030 Climate and Energy Action Plan

Process


GWSA Compliant Pathway
Economic Analysis
Health and Equity Analysis
Policy Analysis
Buildings
Transportation
Land Use
Electricity
Non-Energy
Sector-level decarbonization modeling

Project Timeline

2019			2020			
Project kick-off, develop Workplan	Sector **Models** Built and Tested	Initial **Policy** Analysis	**Scenario** Development	Models, policies, and scenarios analyzed together	Public meetings on findings	Report Writing	Release of 2030 CECP, 2050 Roadmap, and set 2030 limit

Stakeholder Engagement

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80x50 Study Team

Stakeholders

GWSA Implementation Advisory Committee (IAC)

Academic Steering Committee

State Agencies & Governor's Office

Community Members

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Research Team

VEIC

ARUP

Harvard Forest

Converge Strategies

AEG

Dr. Jonathan Krones*

Dr. Wendy Jacobs*

*Independent Consultant

Study Deliverables

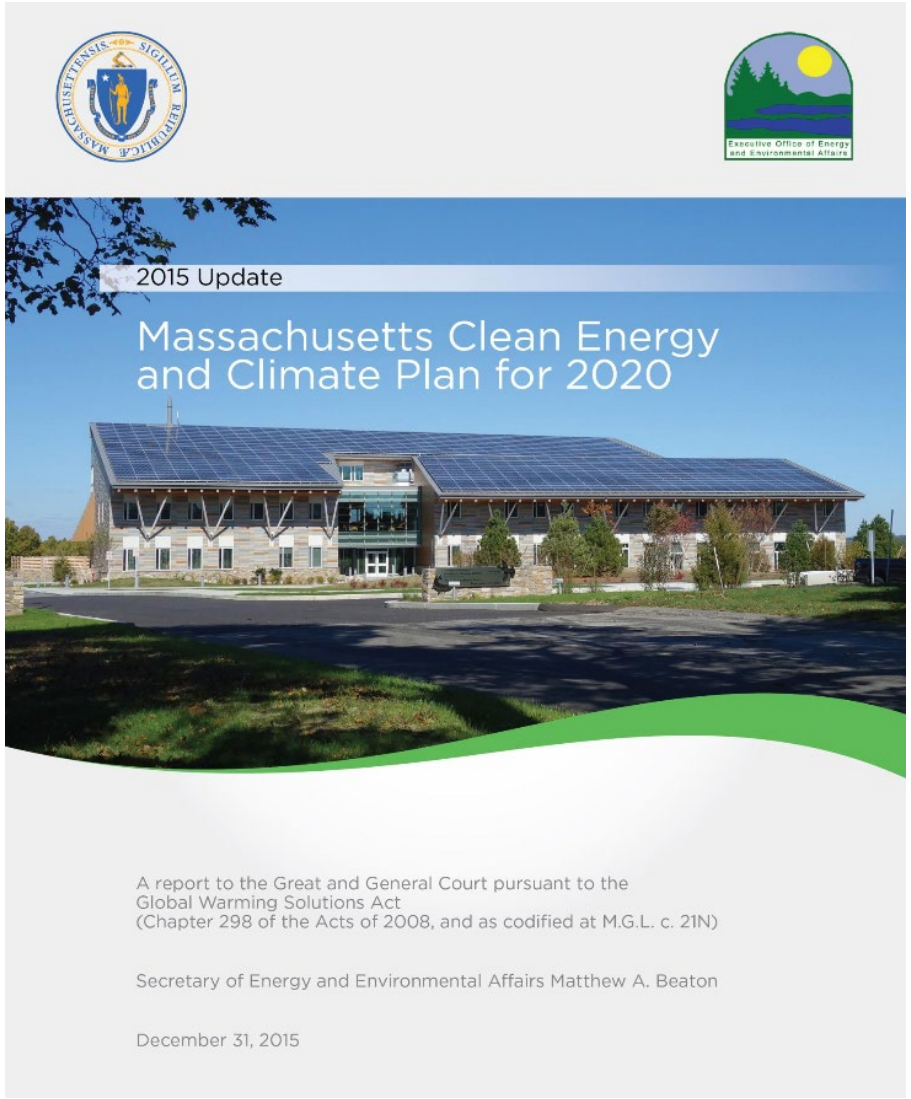
Massachusetts Roadmap to 2050

Massachusetts Clean Energy and Climate Plan for 2030

- **Recommendation for 2030 emissions limit**

Technical reports for each sector:
Transportation, Buildings, Electricity, Land Use, Non-Energy

Summary presentations



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To Learn More:

For the most recent documents, webinars, meetings and other news, please visit the study's website:

www.mass.gov/2050Roadmap

Climate Scenarios

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Scenario Modeling

30 years of Uncertainty

Defining Scenarios

What forces will influence how the *State Government* acts on climate mitigation? What do you see is outside the Administration's direct control*:*

- *External* (top-down): Federal policy, regional coordination, technology change, climate
- *Internal* (bottom-up): Consumer and institutional behavior, municipal coordination

Scenario Modeling Outcomes

1. Understand how GHG reduction strategies and their tradeoffs vary across scenarios
2. Design a portfolio of policies that is as resilient to those uncertainties as possible
3. Communicate to all stakeholders that deep decarbonization requires action beyond state policy

Building the Scenarios

Prior Work

Components

Cadmus & GWSA Team Leads identify key scenario components

Today

Prioritize Components

Define Assumptions

Identify Trends & Linkages

Draft Scenario Narratives

Next Steps

Model Scenarios

Use workshop outcomes to draft scenario narratives

Parametrize model with quantitative representations of scenarios

Existing Scenario Frameworks

Massachusetts:

- *Focus 40*, MBTA
- Draft *MetroCommon* Scenarios, MAPC
- *Choices for Stewardship*, Commission on the Future of Transportation
- *Changes to the Land*, Harvard Forest

Global & National:

- *Shared Socioeconomic Pathways,* included in IPCC 6th Assessment
- *GCAM-USA Analysis of Electric Power Sector Transitions*, PNNL
- *Electrification Futures Study*, NREL

Shared Socioeconomic Pathways (SSPs)

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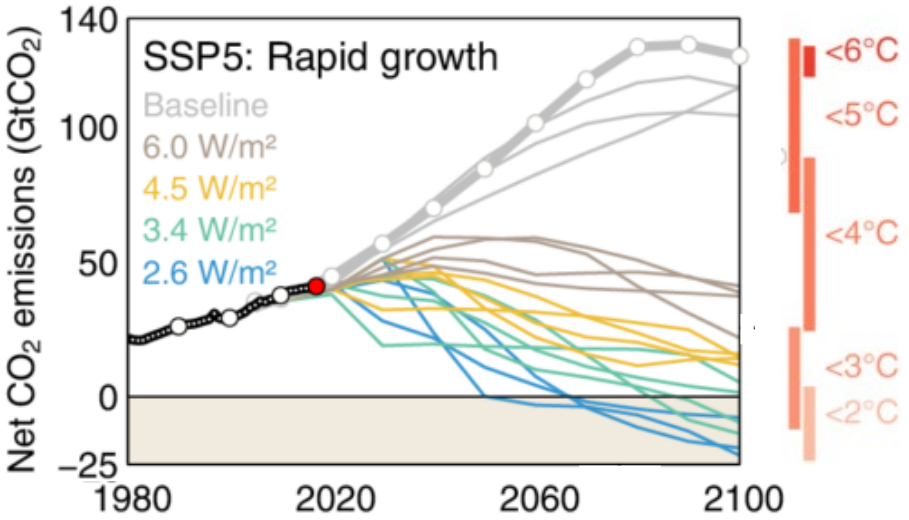
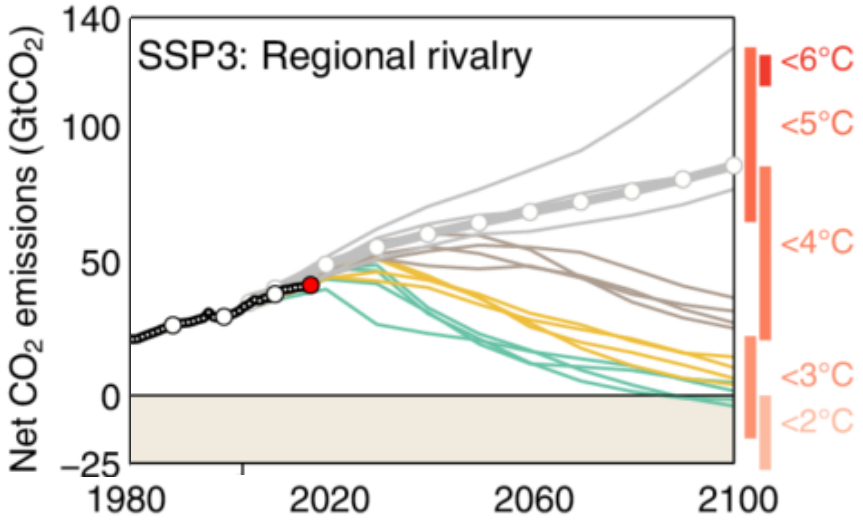
Shared Socioeconomic Pathways

Results from Global Integrated Assessment Models





Low Adaptation & High Mitigation Challenges

- Wealthy, globalized, energy-hungry world
- International cooperation
- Advanced technology can diffuse rapidly
- Lots of CCS & negative emissions
- **Possible to achieve Paris 2˚C target**

High Adaptation & High Mitigation Challenges

- Fractured, unequal world
- No global land use objectives
- Advanced technology diffuses slowly
- Action is slower to happen
- **Impossible to achieve Paris 2˚C target**

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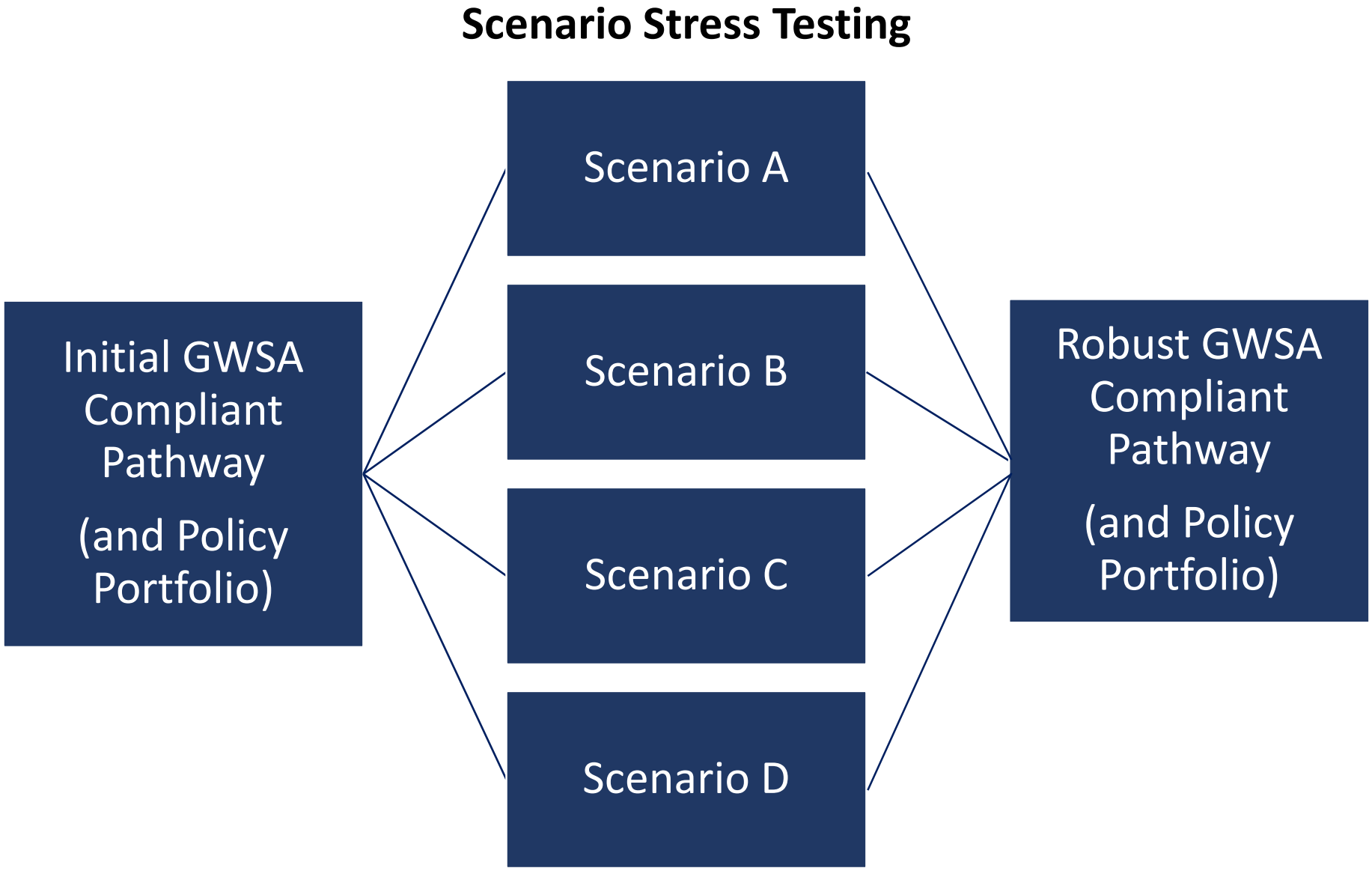
MA 80x50 Project Process



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What Matters for Massachusetts

- What **socioeconomic and lifestyle** trends impact the consumption of resources such as energy and land?
- How will other **political institutions** (federal, regional, local) act to address climate change?
- What are the **technological changes** that will help or hinder decarbonization efforts?
- How will a **changing climate** impact local systems?

Proposed Components for Massachusetts

Socioeconomic & Lifestyle	• Land Use, Development, & Affordability • Economic Activity • Equity • Consumer, Corporate, and Institutional Behavior
Policies & Institutions	• Federal Action • Regional Coordination (Multistate) • Municipal Coordination • Institutions
Technological Change	• Mobility & Transportation • Built Environment and Industry • Energy Supply and Delivery • Innovation (Technology + Market)
Climate	• Sea Level Rise & Flooding • Temperature Impacts • Ecosystem Impacts

Crafting a Scenario

- Prioritizing **components**:
  - Which components matter for Massachusetts?
  - Which components matter for your sector/area of expertise?

- What are the broad **trends** that shape how these components influence society?

- What are the key **linkages** that determine how scenario components interact?

- How do components, trends and linkages help us craft potential scenarios?


Questions
& Answers

Scenario Exercise Overview

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Goals

1. Solicit ideas on the **components and trends** Massachusetts should consider

2. Create opportunities for **cross-sector collaboration** to identify key linkages

3. **Address uncertainties** that can be barriers to implementation

4. Create a **foundation for 3-4 scenarios** to be included in modelling effort

Structure

Breakout Groups – Table Assignments Posted Throughout Room!

Small Group Work:

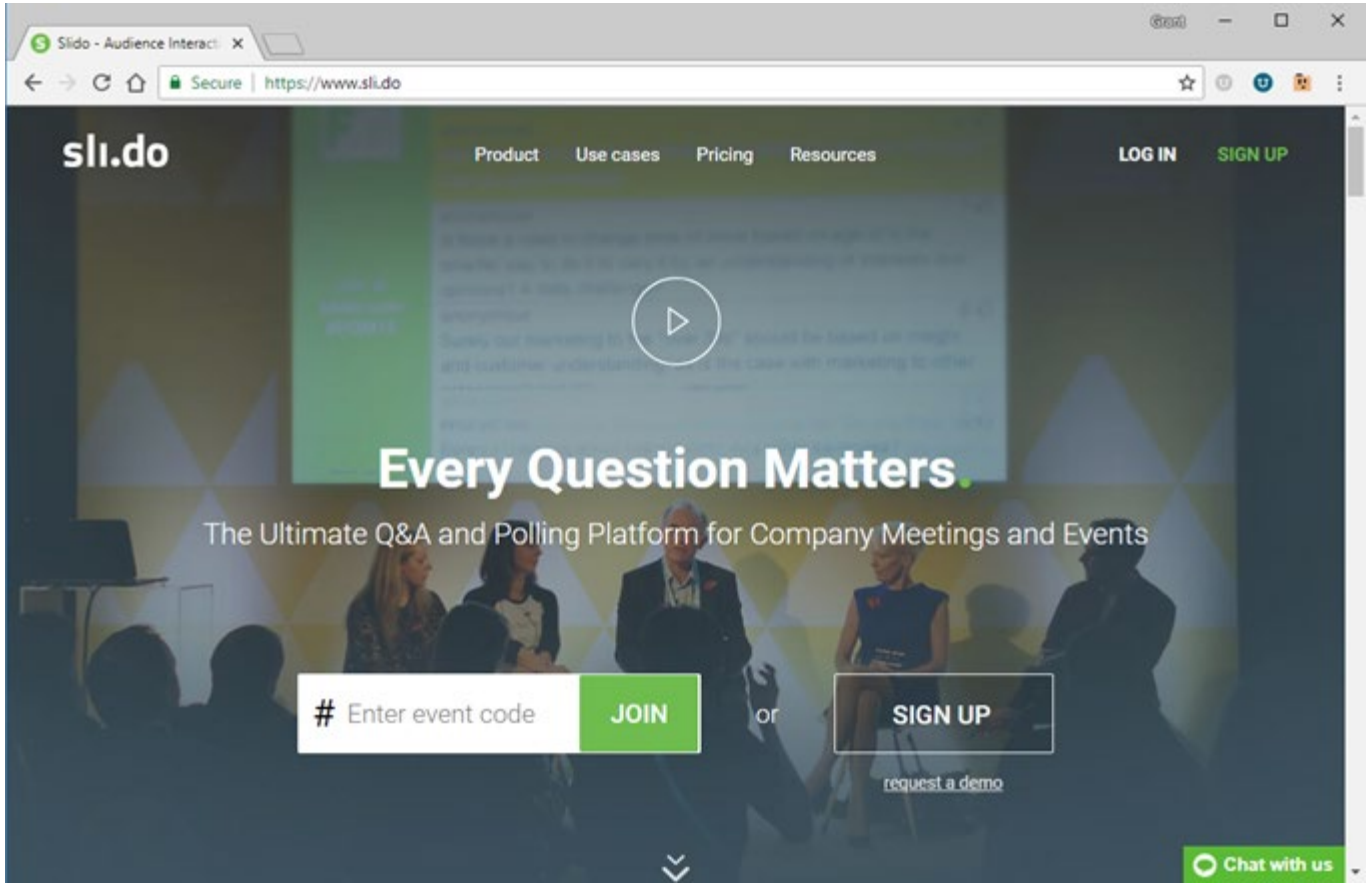
- Step 1: Component Review and Prioritization
  - Enter prioritized components into Slido
- Step 2: Anticipated Trends and Linkages
- Step 3: 2050 Scenario Drafting
  - Enter draft narrative into Slido

Report Out

- Groups present on their top components and narrative
- Participants have opportunity to provide live feedback

Slido

Navigate to Slido.com on your Smartphone, Tablet or Laptop



Type EEA as the event code – an individual in your breakout will be a designated notetaker for your table.

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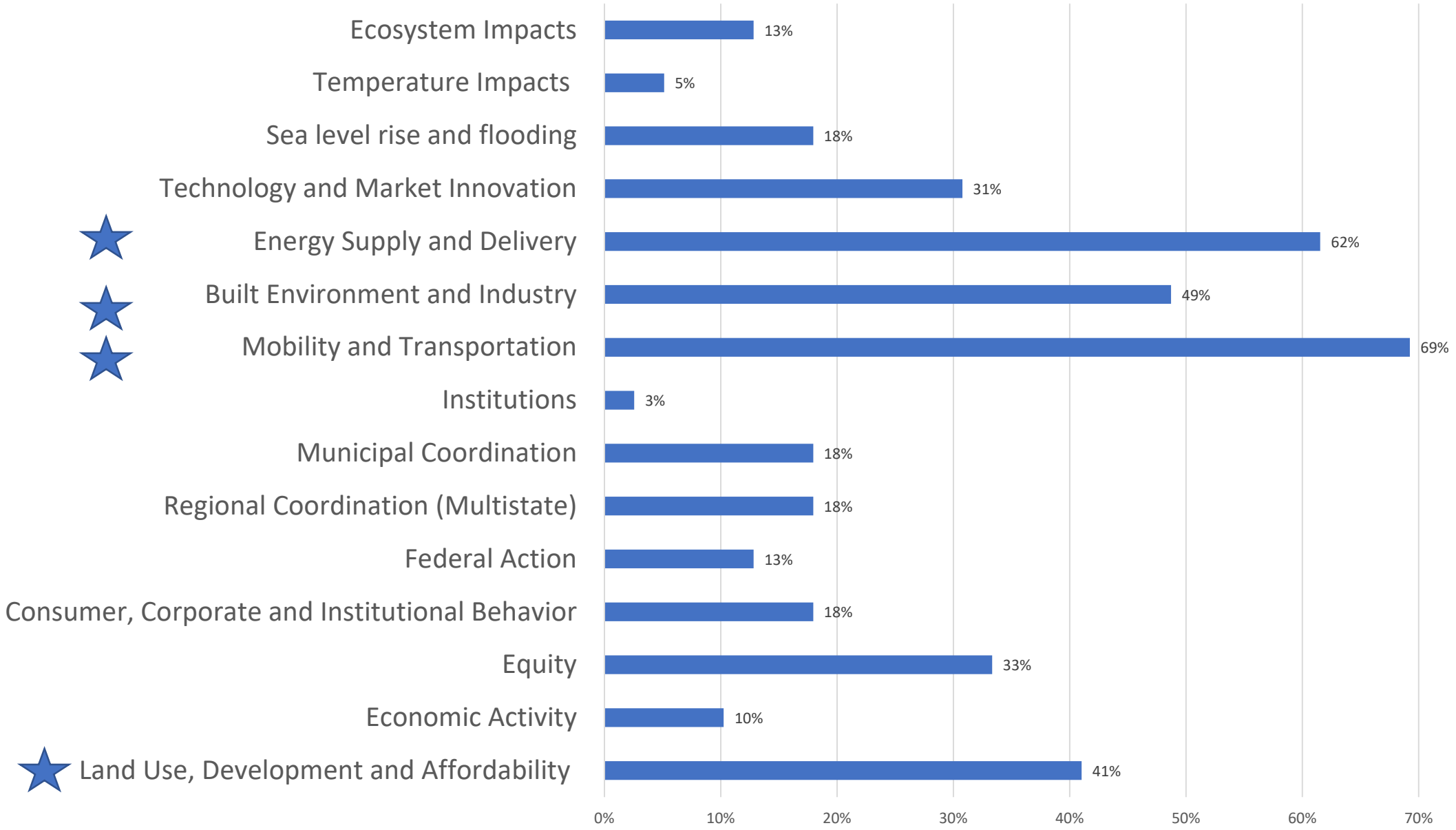
Pre-Meeting Survey Results

From your perspective, what are the four most important components for the Commowealth to consider? (n=39)



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Pre-Meeting Survey Results

What are major uncertainties that could impact the Commonwealth's path to a low carbon future?

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Reminder: Key Terms

- **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.
- **Component:** A factor that will impact the Commonwealth's ability to decarbonize and is outside of the Administration's direct control.
- **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).


Break
(Please go to sign-in if you do not know your table assignment!)

Report Outs

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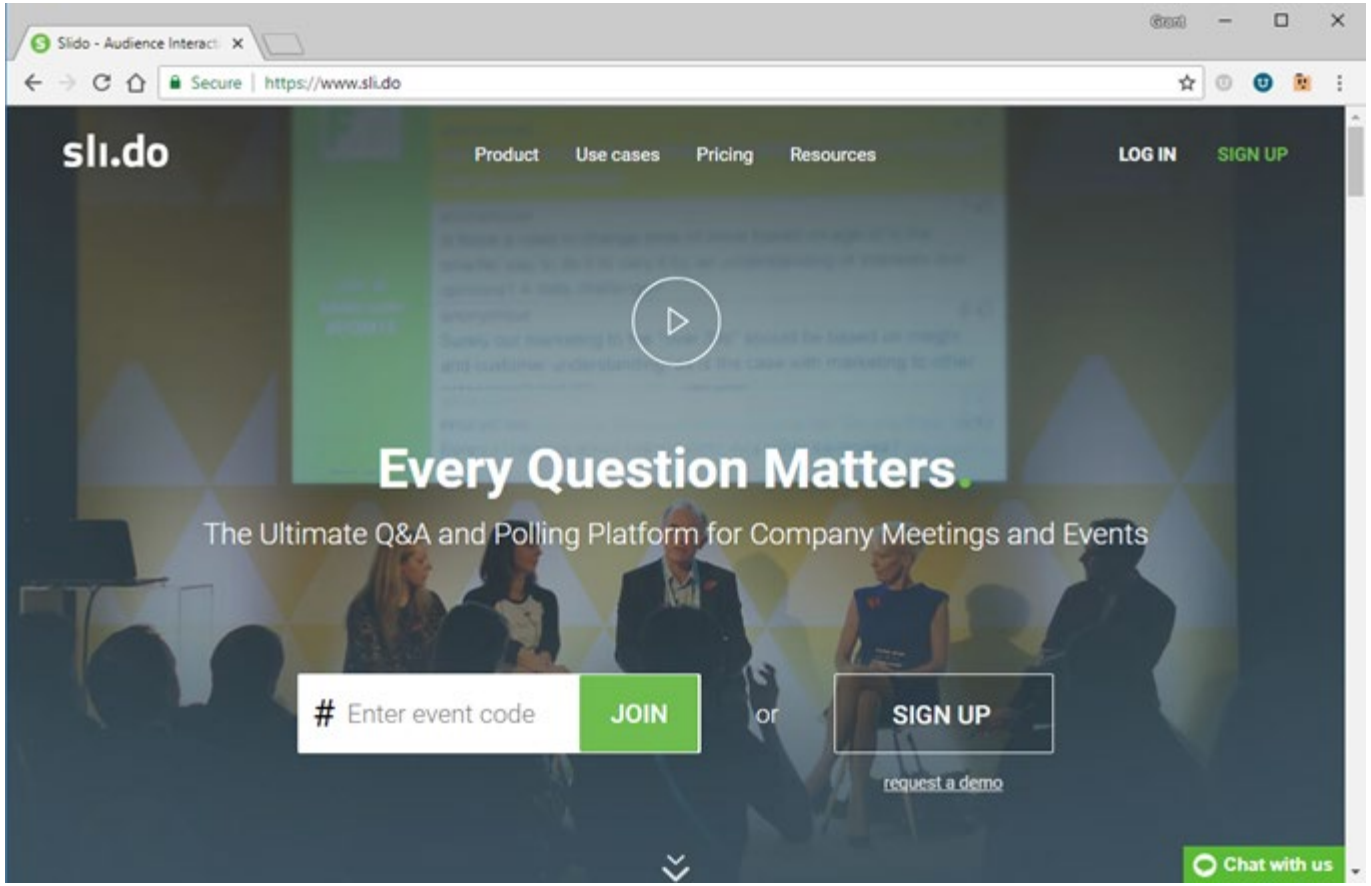

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