Climate Change Mitigation and Adaptation

This phase of MetroCommon is for looking at the region’s major challenges and opportunities.
Climate change is having a widespread effect on our region.

We have time, however, to make the worst-case scenarios less likely. We have the facts and knowledge to do it.

We can prosper even with large climate changes. But only if we focus on the challenge now through shared action and behavior change.
Why we should care?

Climate-related changes will alter food production, land use, transportation, the economy, health, and much more.

Climate change will impact municipal finance in many ways: for example, 3 feet of sea level rise would threaten $104 million of property taxes across 89 communities in Metro Boston (Shi & Varuzzo, 2020)

More Days Above 90°

Data shown for the Charles River Watershed, Data courtesy Northeast Climate Science Center
As if that’s not enough...

Low-income communities and communities of color have contributed the least to this reality. A host of systemic disadvantages means they stand to bear the worst impacts.

Indicators of vulnerability to climate hazards, such as heat and flooding, can be grouped two categories, sensitivity, and adaptive capacity.
Climate Vulnerability

**Sensitivity**
The pre-existing social, economic, and political conditions of a given community influence access to resources and exposure to hazards.
Climate Vulnerability

**Adaptive Capacity**
A group’s ability to plan for and adapt to changing conditions

- Info Access, Social Networks, and Mobility
- Financial Resources and Access
- Race, Ethnicity, and Language
- Additional Housing Characteristics
13% of the region's residents live in tracts highly vulnerable to extreme heat (409,000 people)

**Highest heat vulnerability in 7 of 101 MAPC municipalities**
Chelsea, Everett, Lynn, Revere, Boston, Malden, Framingham
How did we get here?

Our use of fossil fuels has put too much carbon in the atmosphere. This has set off changes that are altering weather patterns – temperature, wind, rainfall, and storm events.

Where we want to be by 2050

**A Climate-Resilient Region**: Metro Boston is prepared for – and resilient to – the impacts of climate change.

**A Net Zero Carbon Region**: The Metro Boston region is highly energy efficient and has reduced its greenhouse gas (GHG) emissions to net zero.

**A Healthy Environment**: Greater Boston's air, water, land, and other natural resources are clean and protected – for us and for the rest of the ecosystem.
Solutions will involve many systems
**Action is already starting...**

**Statewide Policies & Investments**
- Global Warming Solutions Act
- Green Communities Act
- Executive Order #569 - Establishing an Integrated Climate Change Strategy for the Commonwealth.
- State Hazard Mitigation and Climate Adaptation Plan

**Regional Projects**
- Metro Mayors Coalition Climate Preparedness Taskforce and Net Zero by 2050 Commitment
- South Shore Climate Coalition
- MAGIC Climate Resilience Plan
- Multi-Town Gas Leaks Initiative

**Community-led Plans and Efforts**
- Chelsea Greenroots Project on Community Choice Energy
- MassEnergize - Wayland and Concord organization helping neighbors take climate action
- Marblehead Climate Action Plan Framework
- Cooler Communities Playbook

**Municipal Policies and Initiatives**
- Climate Ready Boston
- Town of Brookline Emergency Preparedness Buddies Program
- Green Municipal Aggregation
- Net Zero Action Planning in Arlington, Melrose, and Natick
- Newton Climate Action Plan
- Duxbury Climate Vulnerability Assessment
- Watertown Solar Requirement
Mitigating climate change is much bigger than the Boston region. It will require worldwide action. But, there's a lot WE can do.

A resilient Metro Boston will require deep collaboration and agile decision-making. Municipalities in the region mostly function independently.

Both climate mitigation and resilience will require funding at a time of competing priorities.

Our society is organized in ways that maximize energy use – from where we live and work to what is least expensive to eat, wear, and travel by.

The racial and other inequities that heighten the climate risks for low income communities and communities of color are deeply embedded.
Adaptation...

**Scituate Harbor (2020)**
District Master Plan focused on coastal resilience exploring flooding solutions that will impact the entire harbor, and other nature-based solutions, that would have synergies with economic vitality and public realm improvements.

**Medford Parks & Open Space (2020)**
Evaluated the climatic, geomorphological, and environmental conditions of Medford’s park system; spatially analyzed how it intersects with key components of the City’s infrastructure, vulnerable populations, and ecological resources, and created design recommendations that enhanced climate resilience across Medford.
Ashland (2018)
Leveraging an Energy Services Company (ESCO) procurement, Ashland has developed solar photovoltaic (PV) projects on the Middle School roof, High School parking lot, and a capped municipal landfill.

Somerville (2018)
One of the first communities to commit to a carbon neutral goal, Somerville’s Climate Forward plan and Zoning Overhaul promote net zero ready buildings.
What are the key **challenges/opportunities** we'll need to address to reach our goals for 2050?

**Challenges:**
- **Time scale**
  long term, evolving impacts, yet short time to act and need for urgency
- **Scale of need**
  significant funding required for old buildings and infrastructure
- **Politics**
  global, federal, and under-resourced local
- **Property rights**
  managed retreat/dislocation and resiliency on coastlines; disconnect between building owners, insurers, and renters

**Opportunities:**
- **Technological changes** (e.g. more competitive renewables, teleworking)
- **State, regional and municipal-level leadership**
  can collaborate and innovate, stepping into the void left by the federal government
- **Growing consensus and ethic around taking action**
  visible and understood threats plus changing demographics, with willingness to act among broader swaths of the population
- **Greener economy**
  job creation and healthier, more livable communities
What are the **hard** questions?

- Who will be most impacted by changes to flood insurance and retreat? How do we prevent this from perpetuating existing racial and social injustices?
- Given that renewable energy sources currently provide a small percentage of our supply, how can we realistically shift away from fossil fuels as quickly as possible?
- How do we make sure our remedies to climate change actively advance a racial and social justice framework? How can our transition to a new economic system dismantle existing societal systems of injustice?
- How do we pair growth and development with a fossil-fuel-free future?