Climate and Environment Working Group Meeting 5
April 10, 2018
Today’s agenda

Meeting objective: Discuss draft indicators and targets, select up to 5 indicators that the City will measure on an ongoing basis

- Joint Working Group Meeting recap 10 mins
- Indicators and Targets discussion 75 mins
- Climate Action Plan update 25 mins
- Next steps 10 mins
What we heard at the Joint Working Group meeting
## Top voted actions across focus areas

<table>
<thead>
<tr>
<th>Focus Area</th>
<th>Action</th>
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<tbody>
<tr>
<td>Climate</td>
<td>Develop disaster preparedness plans at the neighborhood level…</td>
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<td></td>
<td>Develop a Green Infrastructure Action Plan</td>
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<tr>
<td>Economy</td>
<td>Undertake targeted business recruitment efforts to attract firms that offer low barrier-to-entry jobs…</td>
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<td></td>
<td>Change zoning to increase density and achieve a mix of uses in targeted areas…</td>
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<td>Increase existing City funds dedicated to affordable housing…</td>
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<td>Establish new City funding sources…to support affordable housing at the project or district scale.</td>
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<td>Establish or expand the use of taxes that provide dedicated revenue for affordable housing…</td>
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<td>Change zoning to enable more housing, including affordable housing, to be built along major corridors…</td>
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<td>Mobility</td>
<td>Develop an implementation plan and increase funding to complete gaps in the Bicycle Network Plan…</td>
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<td>Prepare transportation infrastructure to be more resilient to periodic flooding…</td>
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<td>Change zoning to allow low maximum parking requirements near transit nodes…</td>
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<tr>
<td>Urban Form</td>
<td>Build the connections to integrate “Alewife Square” into the fabric of the City…</td>
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Other high priority climate & environment actions

• Procure 100% of municipal electricity from renewable sources
• Offer a density bonus incentive through zoning for net zero projects
• Leverage new communication technologies to alert residents and workers, by geography, of risks in the event of an emergency (e.g. text message, smartphone app)
• Purchase additional land reserved to be used as open space
Development Requirements and Incentives

- Support to incentivize affordable housing beyond 20% inclusionary requirement and incorporate family-sized units with density bonuses
- Support to incentivize public gathering spaces (community rooms, childcare facilities, library)
- Support to incentive net zero construction ahead of required schedule
- District energy to be incentivized as part of large-scale developments (as part of PUDs).
- Increased trees and additional open space should be required rather than incentivized.
Indicators and Targets
Essential Definitions

**GOAL**
- Broad, aspirational statement of what we want to achieve

**Strategy**
- Approach or approaches that we take to achieve a goal

**Action**
- Specific policy, program, or tool we take to achieve a strategy

**Target**
- Desired level of performance

**Indicator**
- Quantitative measure(s) used to assess performance against goal
## Proposed Indicators and Targets

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Existing / Target</th>
<th>Category</th>
<th>Potential Source</th>
<th>Recommendation</th>
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</table>
| **Vulnerable populations at risk of displacement due to flooding (% of households)** | - Baseline: TBD w/ CCPR  
- 2025: 5% reduction  
- 2030: 10% reduction | Goal A. Preparedness and Resilience | City of Cambridge Community Development Department | **Recommended**: This indicator provides insight into the City’s actions to protect vulnerable populations from the impacts of flooding, one of the major climate hazards that are expected to intensify in the future. |
| **Heat-related hospitalizations (annual hospitalizations per 100,000 people)** | - Baseline: ~1.5 hospitalizations per 100,000 people per year (1991-2006)  
- 2025: Zero hospitalizations  
- 2030: Zero hospitalizations | Goal A. Preparedness and Resilience | City of Cambridge Public Health Department | **Recommended**: This indicator provides insight into the City’s actions to protect Cantabrigians from the impacts of heat events, one of the major climate hazards that are expected to intensify in the future. |
| **Green-collar jobs (growth rate)** | - Baseline: To be determined from existing employment statistics*  
- 2025: 10% faster growth than national average  
- 2030: 10% faster growth than national average | Goal B. Engagement and Benefits Sharing | Massachusetts Executive Office of Labor and Workforce Development | **Recommended**: Cambridge can ascertain what percentage of the workforce (by NAICS job codes) is in green-collar jobs. The rate of improvement can then be compared against the national trend.  
*This indicator will require additional budgetary resources to acquire 6-digit NAICS code data provided by a commercial third party. |

*Vulnerable households are those located in Census block groups with high vulnerability score (V4 or V5) as defined by CCVA.  
Areas subject to inundation are all Census block groups that partially or fully overlap with the 0.2-percent-annual-chance flood hazard map.
## Proposed Indicators and Targets

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| **Tree canopy coverage (% by neighborhood)** | • **Baseline:** 30% tree canopy coverage citywide (2009)  
• Targets to be established as the Urban Forestry Master Plan is developed | Goal C. Natural Environment | City of Cambridge Department of Public Works | **Recommended:** This indicator provides insight into the success of actions to expand Cambridge’s tree canopy, particularly in neighborhoods that currently lack trees. |
| **Community-wide greenhouse gas emissions (mt CO2e)** | • **Baseline:** 1.46 million mt CO2e (2012)  
• **2025:** 0.95 million mt CO2e  
• **2030:** 0.80 million mt CO2e (Inventory target path) | Goal D. Carbon Neutrality | City of Cambridge Community Development Department | **Recommended:** This indicator demonstrates the City’s efforts to mitigate greenhouse gas emissions. The community-wide greenhouse gas emissions inventory is updated on a regular basis. |
| **Potable water use (gallons per resident)** | • **Baseline:** ~50 gallons Residential Gallons per Capita Day (2016)  
• **2025:** 5% reduction  
• **2030:** 10% reduction | Goal E. Sustainable Water Resources | Cambridge Water Department | **Recommended:** This is a direct indicator that tracks the per capita consumption of potable water, providing insight into conservation and efficiency efforts. |
## Proposed Indicators and Targets

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<tbody>
<tr>
<td><strong>Water quality in local water bodies (A-F Grade)</strong></td>
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<td></td>
<td>• Baseline: “B” grade for water quality in the Charles River and “D+” for Alewife Brook during 2016</td>
<td>Goal E. Sustainable Water Resources</td>
<td>U.S. Environmental Protection Agency</td>
<td><strong>Recommended:</strong> This provides insight into long-term efforts to improve water quality; it is influenced and impacted by other communities that share the same watersheds.</td>
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<td></td>
<td>• 2025: “A-” grade for Charles River; “C” grade for Alewife Brook</td>
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<td></td>
<td>• 2030: “A” grade for Charles River, “B” grade for Alewife Brook</td>
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<tr>
<td><strong>Trash collection (pounds per household per week)</strong></td>
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<tr>
<td></td>
<td>• Baseline: 23 lbs/HH/week (2008)</td>
<td>Goal F. Zero Waste</td>
<td>City of Cambridge Department of Public Works</td>
<td><strong>Recommended:</strong> This indicator provides insight into the City’s efforts to reduce and divert waste from landfill via recycling and separation of organics and other waste streams.</td>
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<td>• 2025: 14 lbs/HH/wk</td>
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<td></td>
<td>• 2030: 12 lbs/HH/wk</td>
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Climate Action Plan
2018 Climate Action Plan

The Climate Action Plan will provide an umbrella framework for reducing greenhouse gas emissions, including the reductions expected to be achieved by the City’s existing climate-related plans and initiatives, including:

- Envision Cambridge
- Net Zero Action Plan
- Zero Waste Master Plan
- Transportation Plans (multiple)
- Climate Change Preparedness & Resiliency Plan (CCPR)
2018 Climate Action Plan

**Engagement**
- Developing vision
- Validating assumptions
- Discussing targets and actions

**CPAC**
- Monthly meetings
- Policies and objectives

**Envision Cambridge**
- Community Engagement
- Working Groups

**CCPR**
- Focus Groups
- Public meetings

**Analysis**
- Forecasting GHG emissions to 2050
- Estimating impact of existing & new actions

**2012 Community GHG Inventory**

**CAP GHG Analysis**
- More detailed forecasting
- Analysis of new actions

**Planning**
- Identifying actions
- Setting targets
- Developing implementation details

**Getting to Net Zero Action Plan**
**Envision Cambridge**

**Transit Strategic Plan**
**Bicycle and Ped Plans**

**Zero Waste Master Plan**
**CCPR**
Carbon Neutrality Target

- 80x50, Carbon Neutrality, and Climate Positive targets were evaluated
- Climate Positive at a city-scale requires offsite renewable assets (Copenhagen)
- **Carbon Neutral by 2050** (100x50) was recommended by the Climate Protection Action Committee (CPAC). Metro Mayors Coalition has jointly committed to this in 2017.
Emissions Forecast: Buildings

- Grid improvements significantly reduce GHG emissions.
- Implementing low carbon energy supply strategies helps narrow the gap, particularly with electrification of heating and hot water systems, but some fossil fuels remain as energy sources for power, heating, and cooling.

*Note: Business-as-usual (BAU) assumptions include existing plans and baseline performance targets.*
Emissions Forecast: Transportation

A national move toward electric vehicles allows for a BAU with significant emissions reductions. Combined with a cleaner grid and new mode shift targets (below), 2050 emissions are 95% lower than 2015 levels.

### Transport Mode Type

<table>
<thead>
<tr>
<th>Mode Type</th>
<th>2015 (%)</th>
<th>2050 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-motorized: Walking</td>
<td>19%</td>
<td>20%</td>
</tr>
<tr>
<td>Non-motorized: Biking</td>
<td>6%</td>
<td>20%</td>
</tr>
<tr>
<td>Private Passenger Vehicles</td>
<td>43%</td>
<td>10%</td>
</tr>
<tr>
<td>Commuter Rail</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Heavy Rail</td>
<td>12%</td>
<td>20%</td>
</tr>
<tr>
<td>Light Rail</td>
<td>2%</td>
<td>4%</td>
</tr>
<tr>
<td>Bus</td>
<td>8%</td>
<td>20%</td>
</tr>
<tr>
<td>Other</td>
<td>11%</td>
<td>5%</td>
</tr>
</tbody>
</table>

[Graph showing transport emissions forecast with BAU, Grid Improvements Alone, and Mode Shift Target lines for years 2015 to 2050.]
Emissions Forecast: Waste

- Even with implementation of all Zero Waste Master Plan (ZWMP) actions, emissions rise at a faster pace than reductions due to population/job growth.

- ZWMP actions address municipal solid waste only. The City has limited data about and influence over commercial waste – but this could change with commercial waste zones (franchising).

- Switching from landfill to incineration drastically reduces GHG emissions.
Climate Action Plan Proposed Framework

<table>
<thead>
<tr>
<th>Sectors</th>
<th>BUILDINGS</th>
<th>TRANSPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Efficiency in Existing Buildings</td>
<td></td>
<td>Active Transportation and Promote Public Transit</td>
</tr>
<tr>
<td>Net Zero New Construction</td>
<td></td>
<td>Low and Zero Carbon Mobility Solutions</td>
</tr>
<tr>
<td>Energy Supply</td>
<td></td>
<td>Reduce Vehicle Miles Traveled and Single Occupancy Vehicles</td>
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<tr>
<td>Local Carbon Fund &amp; Engagement and Capacity Building</td>
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**Strategies**
- Explore the development of a custom rebate program that offers cash incentives determined by the total GHG savings.
- Develop a market-based Incentive program.
- Create and enact a carbon energy supply strategy.
- Undertake feasibility study to solicit third-party proposals to administer program.
- Develop a zero emissions transportation plan, addressing both mode shift and zero emissions vehicles.
- Promote Transit-Oriented Development and decreased travel distances to work, home, retail, and other services.

**Actions**
- Introduce additional requirements to DEEDO.
- Explore the potential impact of offering additional floor area allowance and extra height to projects that achieve net zero emissions.
- Introduce requirements on energy efficient new office generation with DEEDO.
- Implement bus priority treatments and key bus corridors.
- Mandate EV charging infrastructure for large-scale development.
- Lower parking requirements, especially near transit nodes and key university and corridors.

**Enablers**
- Explore a requirement for energy upgrades at the time of renovation or sale.
- Increase Green Building Requirements in Cambridge Zoning Ordinance.
- Develop a memorandum of understanding with local utilities to work closely with the City on taking action towards net zero emissions.
- Engage with stakeholders to develop new standards for lab operations that support lower energy use.
- Collaborate with MBTA to support bus-only lanes, off-board fare payment, and all-door boarding on key corridors.
- Develop public EV charging infrastructure.
- Work to expand PTIP Programs and incentives citywide.
# Climate Action Plan Proposed Framework

## Sectors

<table>
<thead>
<tr>
<th>Sector</th>
<th>Waste</th>
<th>Environment</th>
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<tbody>
<tr>
<td>Source Reduction and Reuse</td>
<td>Implement a standard trash container</td>
<td>Implement a maintenance program</td>
</tr>
<tr>
<td>Recycling and Composting</td>
<td>Implement a recycling program</td>
<td>Implement a carbon sequestration potential of the City's tree canopy and ground cover</td>
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<td>Sustainable Materials Management</td>
<td>Implement a material recycling program</td>
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<tr>
<td>Natural Resources and Climate Friendly Development</td>
<td>Implement a carbon sequestration potential of the City's tree canopy and ground cover</td>
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## Strategies

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Waste</th>
<th>Environment</th>
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<tr>
<td>Support sharing libraries</td>
<td>Implement a standard trash container</td>
<td>Implement a maintenance program</td>
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<td>Support reuse events</td>
<td>Implement a recycling program</td>
<td>Implement a material recycling program</td>
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<td>Explore opportunities for waste exchange, including the DPW facility as a Resource Recovery Center</td>
<td>Implement a carbon sequestration potential of the City's tree canopy and ground cover</td>
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## Actions

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## Enablers

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<tr>
<th>Enabler</th>
<th>Community Engagement</th>
<th>Awareness</th>
<th>Behavior Change</th>
<th>Research</th>
<th>Innovation</th>
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</thead>
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**Sample Actions**

- Implement a standard trash container.
- Implement a maintenance program.
- Implement a recycling program.
- Implement a carbon sequestration potential of the City's tree canopy and ground cover.
- Implement a material recycling program.
Next steps
Next steps

- Finalize targets and indicators based on today’s discussion.
- Assign an implementation timeframe for actions based on the priority discussion at the Joint Working Group meeting.
- Share final targets and indicators for C&E and a draft implementation schedule for comments.