MESM ACADEMY:

GHG Inventories & Net Zero Planning

July 7, 2026

10:00-11:15AM

NOTIFICATION OF RECORDING

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MESM ACADEMY:

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July 7, 2026

10:00-11:15AM

Today's Lesson

Lesson Questions

- What are the primary sources of greenhouse gas emissions in my community(ies)? How can I design and implement a net zero action plan for my municipality?

Lesson Objectives

- Differentiate between scope 1, 2, and 3 emissions.
- Learn how to develop and use GHG inventories.
- Describe the net zero planning process.

Introductory Polls

- **How familiar are you with GHG inventories?**
  - I am not familiar with GHG inventories
  - I am somewhat familiar with GHG inventories
  - I am familiar with GHG inventories but haven't conducted one
  - I have conducted a GHG inventory

- **Has your community conducted a GHG inventory?**
- **Has your community completed a net zero/climate action plan before?**

Meet the Instructor

Jeremy Koo

Assistant Director of Clean Energy Dept

MAPC

Julia Nassar

Senior Climate & Energy Planner

MAPC

Agenda

Time	Duration	Topic
10:00am	5 mins	**Welcome & Lesson Overview**
10:05am	20 mins	**GHG Presentation**
10:25am	15 mins	**Q&A**
10:40am	20 mins	**NZAP Presentation**
11:00am	10 mins	**Q&A**
11:10am	5 mins	**Next Steps**

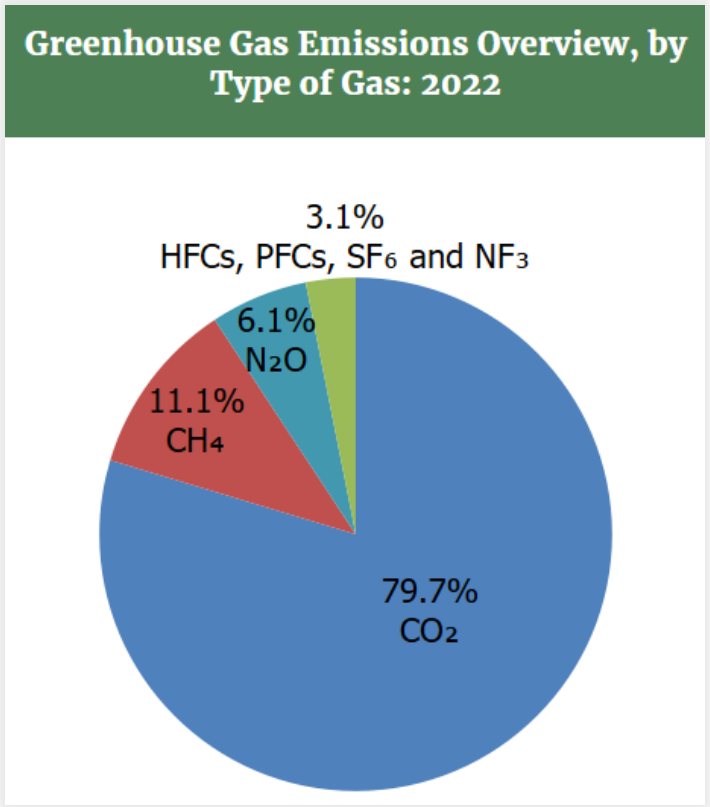
Municipal Energy and Sustainability Managers ACADEMY

Greenhouse Gas Inventories 101

What is a GHG inventory?

- A measurement of greenhouse gas (GHG) emissions related to activities within a geographic boundary
  - Emissions from production and consumption* activities within boundary
  - Emissions from outside of boundary that result from activities within boundary

*GHG inventories typically do not include emissions association with consumption of goods and services produced outside of the geographic boundary. Consumption-based GHG inventory methodologies exist but are not widely used.



(National)
Source: EPA

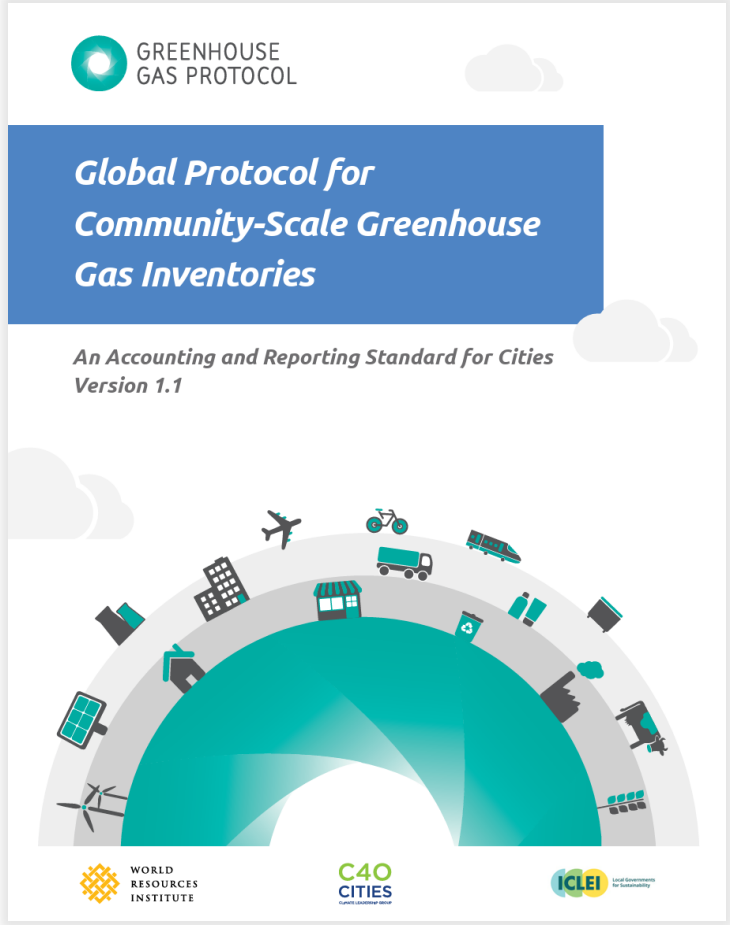
Why complete a GHG inventory?

- Fundamental step to **establish baseline** and **measure progress over time** towards reducing GHG emissions
- Inform **climate action planning**
- Motivate **community action** and establish **accountability**
- Understand what sources of GHG emissions are **within a municipality's ability to control**

Source: ICLEI

Standardization: comparing apples to apples

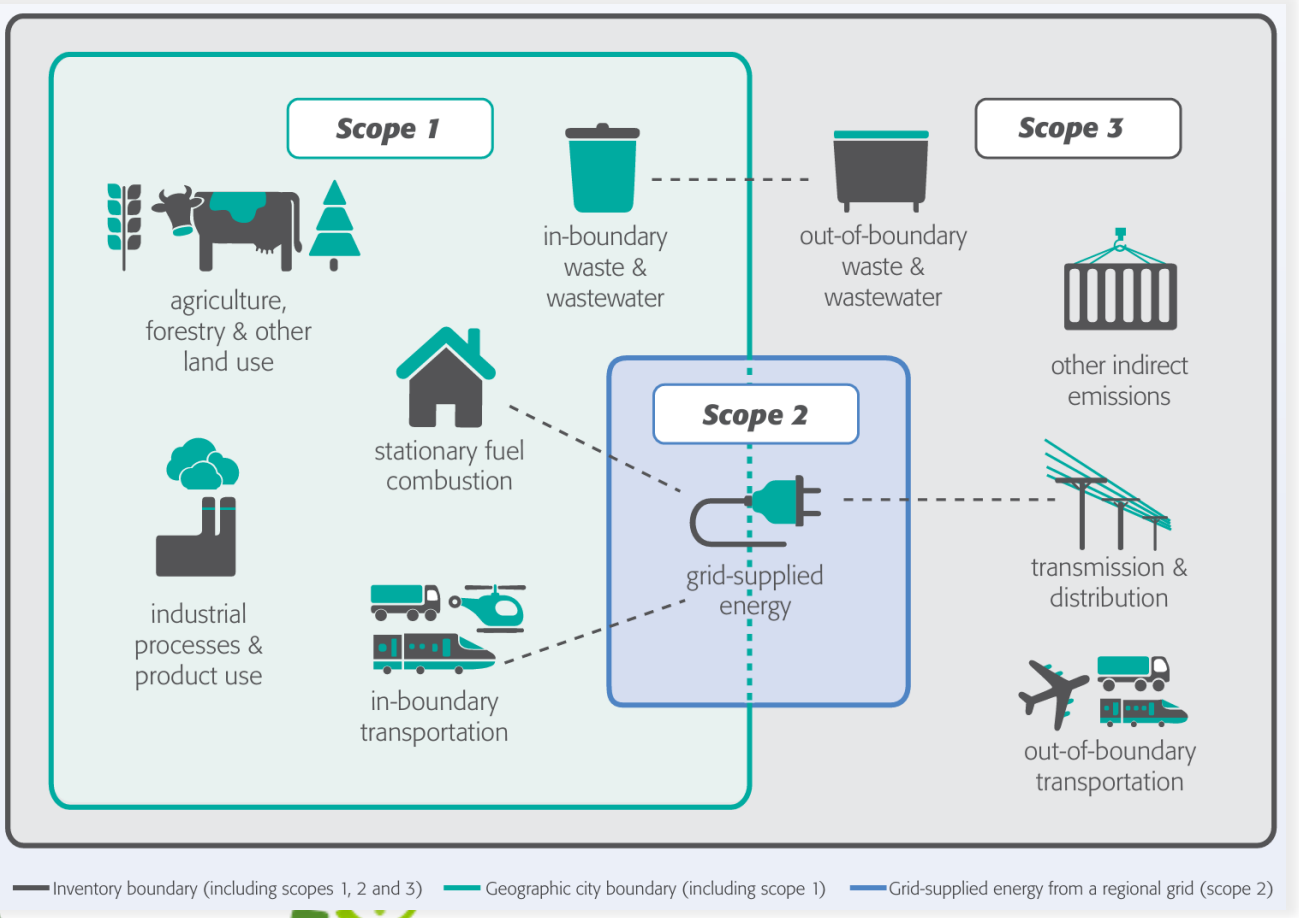
- **Global Protocol for Community-Scale Greenhouse Gas Inventories** (GPC)
  - BASIC and BASIC+ frameworks for municipality-induced emissions
- Slight variations with state and federal GHG Inventory methodology
- Does not account for variations in source data!



https://ghgprotocol.org/ghg-protocol-cities

Scopes of GHG Emissions

- **Scope 1:** Emissions within municipal boundaries
- **Scope 2:** Emissions from grid-supplied energy used within municipality
- **Scope 3:** Emissions outside municipal boundary due to activities within municipality

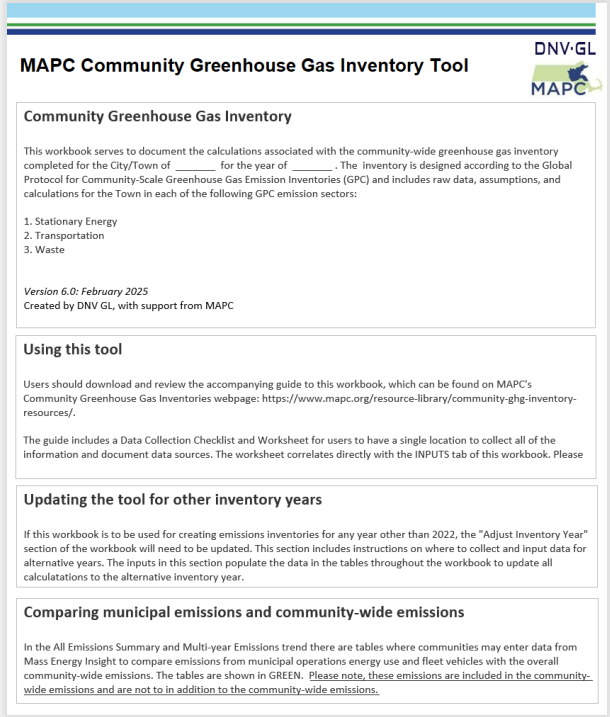


Source: Global Protocol for Community Scale Greenhouse Gas Inventories

Scope what?

Emissions from electricity supplied by a municipal aggregation program	Scope 2
Emissions from electricity lost from during transmission and distribution to the municipality	Scope 3
Emissions from municipal diesel vehicles traveling around the community	Scope 1
Emissions from municipal electric vehicles traveling around the community	Scope 2

MAPC GHG Inventory Tool



MAPC Community Greenhouse Gas Inventory Tool

DNV·GL MAPC

Community Greenhouse Gas Inventory

This workbook serves to document the calculations associated with the community-wide greenhouse gas inventory completed for the City/Town of _____ for the year of _____. The inventory is designed according to the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC) and includes raw data, assumptions, and calculations for the Town in each of the following GPC emission sectors:

1. Stationary Energy
2. Transportation
3. Waste

Version 6.0: February 2025
Created by DNV GL, with support from MAPC

Using this tool

Users should download and review the accompanying guide to this workbook, which can be found on MAPC's Community Greenhouse Gas Inventories webpage: https://www.mapc.org/resource-library/community-ghg-inventory-resources/.

The guide includes a Data Collection Checklist and Worksheet for users to have a single location to collect all of the information and document data sources. The worksheet correlates directly with the INPUTS tab of this workbook. Please

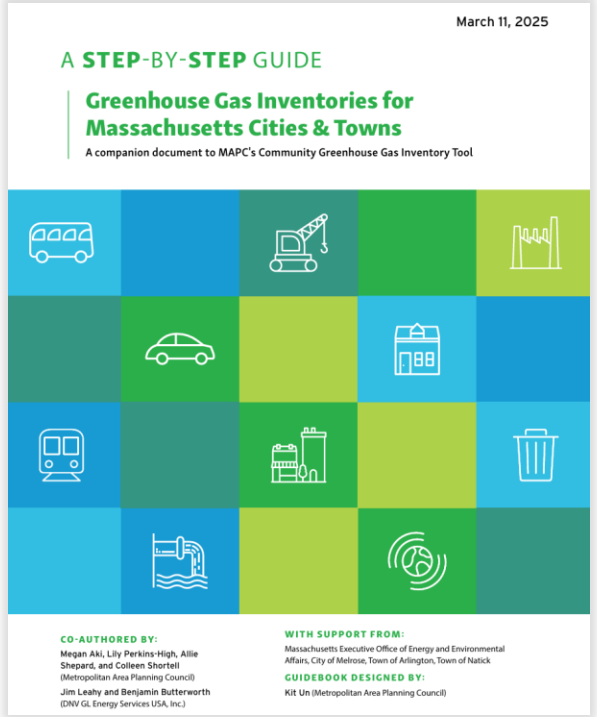
Updating the tool for other inventory years

If this workbook is to be used for creating emissions inventories for any year other than 2022, the "Adjust Inventory Year" section of the workbook will need to be updated. This section includes instructions on where to collect and input data for alternative years. The inputs in this section populate the data in the tables throughout the workbook to update all calculatations to the alternative inventory year.

Comparing municipal emissions and community-wide emissions

In the All Emissions Summary and Multi-year Emissions trend there are tables where communities may enter data from Mass Energy Insight to compare emissions from municipal operations energy use and fleet vehicles with the overall community-wide emissions. The tables are shown in GREEN. Please note, these emissions are included in the community-wide emissions and are not to in addition to the community-wide emissions.

https://www.mapc.org/wp-content/uploads/2025/04/V6.0-MAPC_Emissions_Inventory_Tool_022825.xlsx



March 11, 2025

A **STEP**-BY-**STEP** GUIDE

Greenhouse Gas Inventories for Massachusetts Cities & Towns

A companion document to MAPC's Community Greenhouse Gas Inventory Tool

CO-AUTHORED BY:
Megan Aki, Lily Perkins-High, Allie Shepard, and Colleen Shortell
(Metropolitan Area Planning Council)
Jim Leahy and Benjamin Butterworth
(DNV GL Energy Services USA, Inc.)

WITH SUPPORT FROM:
Massachusetts Executive Office of Energy and Environmental Affairs, City of Melrose, Town of Arlington, Town of Natick

GUIDEBOOK DESIGNED BY:
Kit Un (Metropolitan Area Planning Council)

https://www.mapc.org/wp-content/uploads/2025/04/V2_GHG-Inventory-Guide_2022updates-5.pdf

Local GHG Inventories

Virtual Training on Community Greenhouse Gas Inventories
Led by **MAPC** and **DNV GL Energy Insights**
June 25, 2020

ZERO to 101

Webinar:
https://www.youtube.com/watch?v=m0X2AmhG36E

Webinar Slides:
https://www.mapc.org/wp-content/uploads/2020/06/Final_MAPC-GHG-Inventory-Virtual-Training-Slides_06-25-20.pdf

What is measured by the MAPC GHG Inventory tool?

Sector	Sub-sector	Emissions sources	Energy types
Stationary Energy	Residential	Energy use in residential buildings as well as losses from distribution systems	Electricity Natural gas Heating fuel oil Petroleum Products
	Commercial, Industrial, and Manufacturing	Energy use in commercial, government and institutional buildings, manufacturing and industrial facilities, as well as losses from distribution systems.	
	Construction and Landscaping	Energy use from construction and landscaping equipment and activities.	
	Energy Industries	Stationary combustion of fuel in various equipment, such as boilers and generators.	Various – may include natural gas, propane, diesel, and waste-to-energy
Transportation	On-road vehicles	All trips taken by passenger and commercial vehicles registered in the community. Portion of trips taken within the community boundary by on-road buses and trackless trolleys.	Gasoline Diesel CNG Electricity
	Railways	Portion of trips taken within the community boundary by public light and heavy rail.	
Waste	Solid Waste	Municipal solid waste disposed in/by landfills, incineration, composting, and anaerobic digestion	Landfill gas (methane)
	Wastewater	Process and fugitive emissions from treating wastewater	Not applicable

Municipal emissions can be estimated as a proportion of commercial energy usage based on MEI inputs

Limitations of the MAPC GHG Inventory Tool

- Focuses on easily-accessible public data sources where possible while excluding more exhaustive data collection
- Meets BASIC level reporting for GPC framework but not BASIC+
- Excludes:
  - stationary energy from agriculture, forestry, and fishing
  - passenger rail/freight, waterborne, and aviation operations within boundary
  - off-road vehicles
  - industrial waste
- Manual input option for non-MBTA regional transit agencies and private waste haulers serving commercial facilities
- Not an annual tool: options for 2017 and 2022 (so far)

GHG inventories tell you…

- Where emissions are coming from
- Changes in emissions from year-to-year
- Whether emissions are being reduced

GHG inventories *don't* tell you…

- How to reduce emissions from sectors/activities
- Why emissions changed from year-to-year
- Whether your municipal actions are having a direct impact

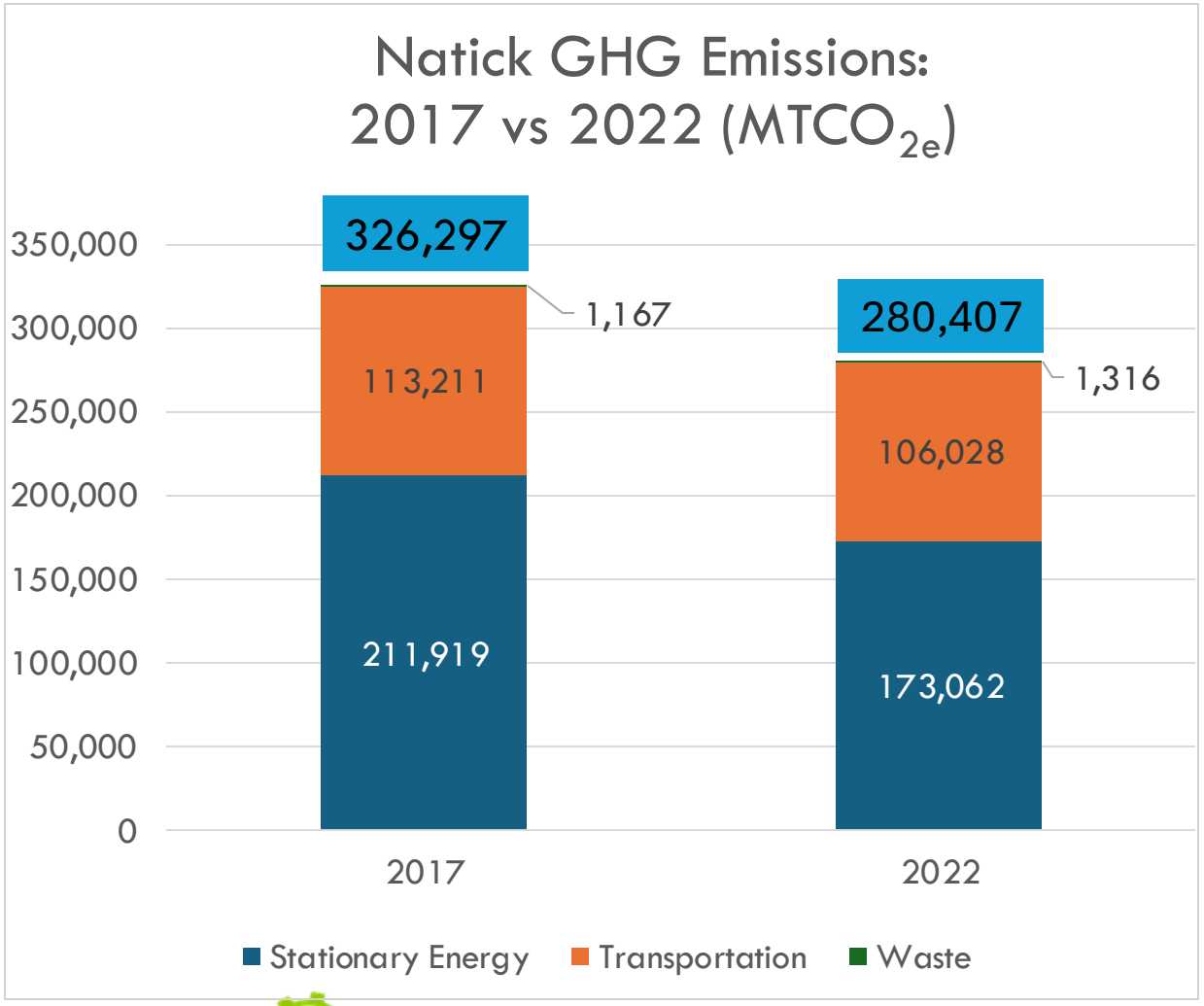
Using GHG inventories to tell a narrative

- The data only tells part of the story
- Connect the data to the community's experience
- Need to **show *and* tell** the impact of local initiatives
  - Certain community members/stakeholders/elected officials may strongly support a particular local effort: how do you demonstrate that impact?

Example: Natick

- -14% between 2017 and 2022
- -18% from stationary energy
- -6% from transportation
- +13% from waste

Where did the reductions come from and how much of it can we attribute to Town actions?



Example: Natick

Sector	Subsector	Source	2017 Emissions (MT CO2e)	2022 Emissions (MT CO2e)	% Change
Stationary Energy	Residential Buildings	Electricity	24,321	20,783	-15%
		Fuel Oil	28,179	24,377	-13%
		Natural Gas	37,464	36,208	-3%
		T&D Losses	11,402	10,662	-6%
	Commercial & Institutional Buildings & Manufacturing Industries	Electricity	38,708	29,907	-23%
		Fuel Oil	8,158	2,487	-70%
		Natural Gas	32,202	31,441	-2%
		T&D Losses	10,715	9,930	-7%
		Off-Road	10,058	6,731	-33%
	Construction	Off-Road	10,712	537	-95%

- Overall MA grid electricity emissions came down
  - Natick expanded community aggregation with higher default Class I RECs
- Residential usage increased

Note: Simplified for presentation readability

Example: Natick

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- GHG inventories are not weather-adjusted: by heating degree days, 2022 was 3% warmer than 2017
- Residential probably reflects some fuel switching and energy efficiency
  - Limitations with primary heating fuel data collection by Census
- Commercial likely reflects methodology and data sources
  - E.g. CBECS used in 2017 tool is from 2012 vs. 2018 in 2022 tool, potentially reflecting older oil-to-gas conversions

Note: Simplified for presentation readability

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- Look at gas data in comparison with oil
- 3% warmer winter, some energy efficiency gains, but # of housing units increased by 9%
- Offroad construction based on % share of square footage of statewide new construction off-road emissions (aka significantly fewer projects in Natick in 2022 vs. 2017)

Note: Simplified for presentation readability

Example: Natick

Sector	Subsector	Source	2017 Emissions (MT CO2e)	2022 Emissions (MT CO2e)	% Change
Transportation	On-Road	CNG	0	3	
		Diesel	2,921	4,570	+56%
		Electricity	6	256	++
		Gasoline	106,889	99,726	-7%
	Rail (MBTA)	Diesel	3,394	1,461	-57%
		Electricity	0	0	
Waste	Incineration	Incineration	158	202	28%
	Wastewater Treatment	Effluent	1,009	1,114	10%

- 5,000 more gasoline vehicles from 2014-2022
- # of diesel vehicles more than double from 2014-2022
- Daily passenger VMT dropped by 20+%, drops in commuter rail usage (post-COVID commuting patterns?)
- Potentially some changes in MA Vehicle Census methodology

Note: Simplified for presentation readability

So what can we say about Natick's reduction in GHG emissions? (illustrative)

- Municipal aggregation program having a significant impact on electricity emissions.
- Even though # of housing units increased by 9%, fossil fuel usage in buildings is declining (and electricity usage increased by 5%), reflecting improving building energy efficiency and some electrification.
- Transportation emissions have declined despite daily vehicle miles traveled increasing by 5%.
  - The share of electric and hybrid passenger vehicles in Natick increased from <3% to over 7%.
  - Commuting patterns seem to still be affected by COVID; commuter rail usage is still lower than pre-COVID

Questions?

For additional questions on using the GHG inventory tool in your community, email cleanenergy@mapc.org

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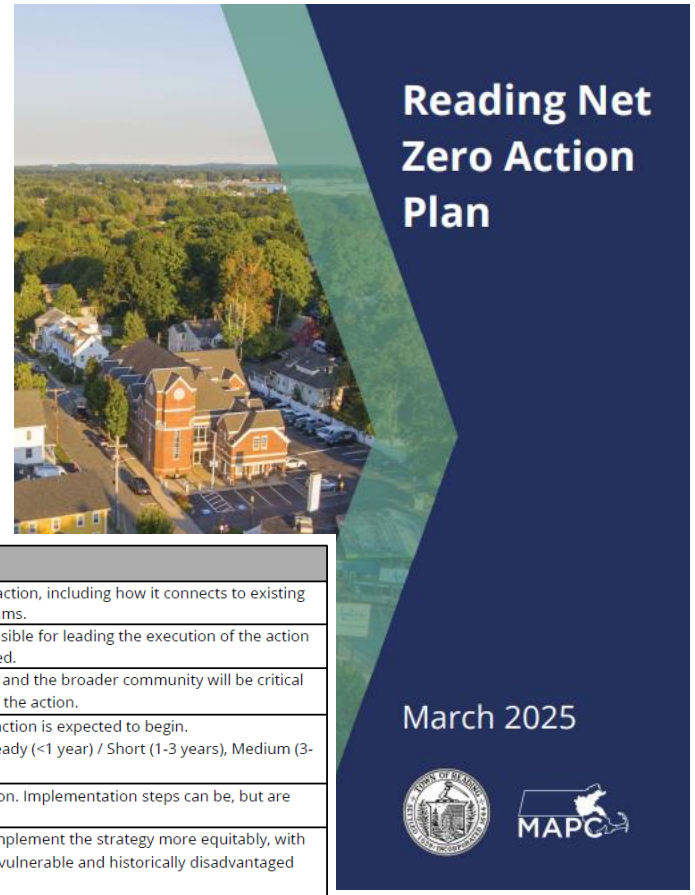
Net Zero Action Planning 101

Net Zero Planning

Net Zero Planning means the development of community-wide multi-sectoral goals, strategies, and processes to enable a municipality to achieve net zero carbon emissions.



Action #. Action Title	
Description	A Description summarizing the action, including how it connects to existing Town policies, plans, and programs.
Implementation Lead	Municipal department(s) responsible for leading the execution of the action and any decision-making involved.
Implementation Partner	Partners within the municipality and the broader community will be critical to successful implementation of the action.
Target-Start Date / Timeframe	Target Start Date: The year the action is expected to begin. Timeframe: Ongoing / Shovel-Ready (<1 year) / Short (1-3 years), Medium (3-5 years) / Long-term (5+ years)
Implementation Steps	Clear steps to achieving the action. Implementation steps can be, but are not necessarily, sequential.
Equity Considerations	Recommendations for how to implement the strategy more equitably, with considerations for the needs of vulnerable and historically disadvantaged populations.
Connection to Community Needs Assessment	Where relevant, how the action aligns with the goals and findings of the Town's recent Community Needs Assessment.
Resources	Technical resources and/or case studies from other communities.
Co-Benefits	Co-benefits, in addition to reducing greenhouse gas emissions. - Equity - Health - Economic - Environmental - Energy
Costs, Funding, & Financing	Information on the types of costs that might be incurred (e.g., staff time, capital costs, operations cost) and cost savings potential, as well as information on relevant funding opportunities and/or financial tools.
Measures of Success	Suggested metrics to track success and impact during implementation of the action.

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Key Players

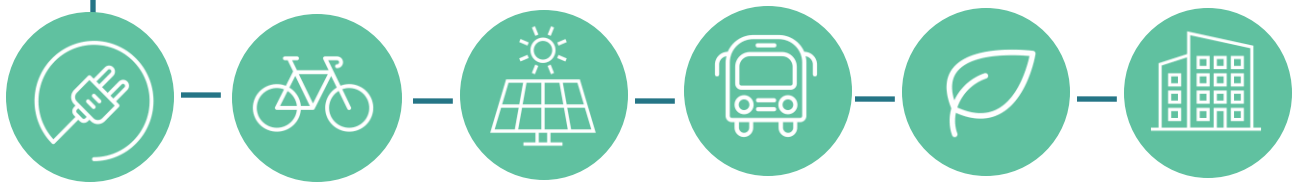
Who is involved?

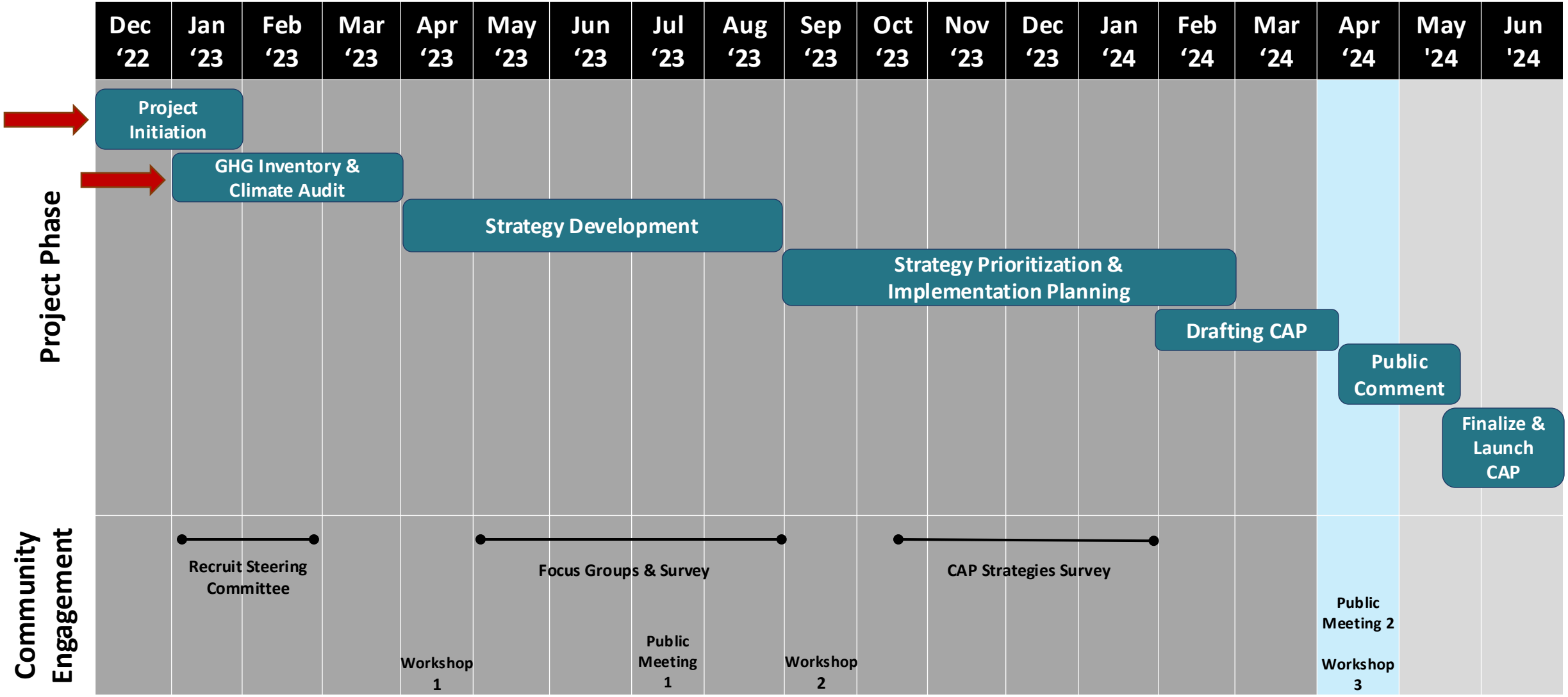
Project Manager	City of Malden Office of Strategic Planning & Community Development
MAPC	Technical Consultants
Resident Steering Committee	7 Malden residents leading on community engagement
Municipal Sustainability Working Group	Municipal staff: Public Facilities, Communications, City Engineer, Tree Warden, Building Commissioner, Emergency Mgmt.

Goal Setting

Goal		Today	2050
Champion Good Governance	Strengthen community partnerships, transparency, and accountability in city leadership, while boosting municipal capacity and collaboration, to effectively and equitably tackle climate change.	Most municipal buildings and vehicles use fossil fuels.	All municipal vehicles are zero-emission. All municipal buildings are fossil-fuel-free.
Achieve Net Zero in Buildings & Energy	Transition to clean energy sources and make homes and buildings more efficient, ensuring equitable access to affordable renewable energy options for all residents.	5%-15% of Malden's electricity comes from carbon-free sources.[14] 14% of Malden households have participated in Mass Save.[15] Approximately 75% of homes are heated with fossil fuels.[16]	100% of Malden's electricity comes from carbon-free sources. 100% of homes have been weatherized. 100% of homes and most businesses are fossil-fuel-free.

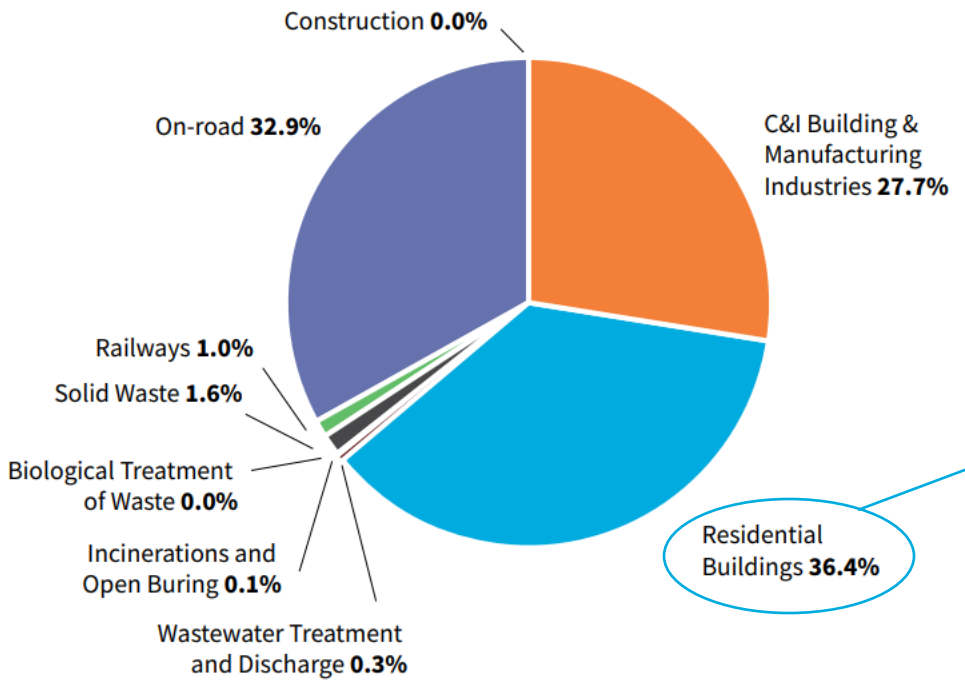
CAP Timeline



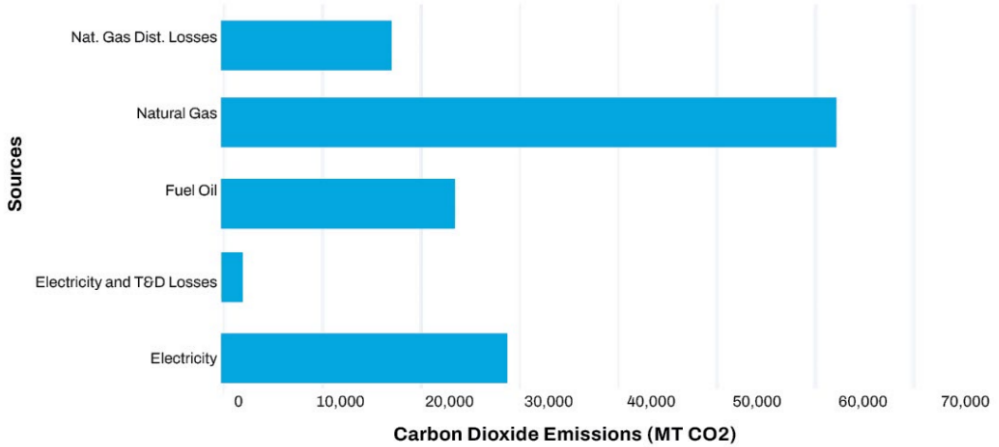


Understanding Local Context – GHG Inventory

Total Community-wide Emissions by Category (2017)



Residential Buildings Emissions (2017)



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Understanding Local Context – Audit

Reading Climate Audit: Climate Strengths & Opportunities

The aim of this tool is to help inform the municipality's Climate Action Plan by identifying: 1) where the municipality is currently implementing best practices in climate action, 2) existing initiatives that can be expanded, extended, or accelerated, and 3) gap may be needed. The Focus Areas under 'Climate Mitigation' were informed by MAPC's Net Zero Playbook, located here: https://www.mapc.org/net-zero-playbook/

Focus Area	Focus Area Summary	Question	Answer (Yes/Completed, In Progress/ Partial, No/Not Started)	Explanatory Notes	Link
Clean Energy Supply	Transition to 100% renewable sources of energy across a community.	Has the muncipality implemented municipal green aggregation?	No/Not Started	not applicable; however, RMLD offers Renewable Choice for customers interested in purchasing higher percentages of non-carbon/renewable energy	RMLD Renewable Choice
		Has the municipality developed a community shared solar program?	Yes/Completed	RMLD offers a Community Shared Solar program, Solar Choice. There are currently two Solar Choice projects in Reading.	RMLD Solar Choice Program
		Has the municipality aligned zoning and permitting to support public and private sector centralized clean energy systems	Partial	The Town adopted a Zoning bylaw which provides as-of-right siting in designated locations for renewable/alternative energy generation, research & development, or manufacturing facilities and an expedited application and permit process for as-of-right energy facilities. Certain zoning districts may also allow for density bonuses to be sought by new development that achieves higher energy standards.	Town Counsel Letter: As of Right Siting & Expedited Permitting
		Has the local government assessed the feasibility of microgrids/energy storage on public buildings and critical infrastructure? and/or economic centers?	Partial	RMLD operates several energy storage systems, though none are located in Reading. The Town has not assessed the feasibility of micrgrids or energy storage on public buildings or economic centers.	RMLD Energy Storage
		Has the municipality participated and invested in demand management programs?	Yes/Completed	RMLD has a "Shred the Peak" demand response program for residential and commercial customers and a Commercial Peak Demand Reduction pilot program for C&I customers	RMLD Shred the Peak
		Has the municipality coordinated with utilities to address major gas leaks?	Yes/Completed	The Town completed a gas leak audit in 2019-2020	Reading Gas Leak Audit
		Has the muncipliaty developed municipal renewable energy generation?	In Progress	RMLD has developed several renewable energy projects in the Town, but no renewable energy projects have been sited on/at municipal buildings	
		Is the municipality SolSmart designated?	No/Not Started		SolSmart Designation List
		What else is the municipality leading on in the Energy Supply Sector?	Other/Unknown		
Net Zero Buildings	Make buildings highly efficient and optimize clean energy for electricity, heating, and cooling.	Has the municipality developed an emissions performance standard for buildings?	No/Not Started		
		Does the municipality have a building energy use disclosure policy in place?	No/Not Started		
		Are there strategies in place to create and preserve efficient, affordable housing in the municipality?	In Progress	The Housing Production Plan includes several strategies to create and preserve affordable housing. In 2022 Town Meeting approved a new Affordable Housing Trust for future use of creating, preserving and enhancing affordable housing.	Housing Production Plan, 2020
		Has the municipality partnered with organizations to implement clean energy outreach programs?	Yes/Completed	RMLD leads outreach efforts for energy saving and clean energy programs	RMLD Energy Efficiency Programs
		Is the municipality leading by example in terms of improving the energy performance of its existing municipal buildings?	Yes/Completed	Reading has an Energy Savings Performance Contract with NORESCO to complete energy efficiency upgrades and building maintenance in all municipal buildings. The Town also adopted the Energy Reduction Plan as part of its Green Communities designation seeking.	NORESCO article
		Are there incentives in place for building owners to electrify their properties?	Yes/Completed	RMLD offers rebates to customers for heat pumps, heat pump water heaters, electric vehicle chargers, electric panel upgrades, electric yard equipment, and more.	RMLD Energy Efficiency, Conservation, and Electrification Programs
		Has the municipality set a net zero standard for municipally-owned and funded buildings?	No/Not Started		
		Does the municipality have building design guidelines for energy efficient and resilient buildings?	Partial	The Zoning Bylaw has Sustainable design and construction principles that "shall be considered for all buildings and site design elements to the maximum extent practical. Sustainable design elements intended to reduce energy consumption may include skylights and "day lighting," windows with low solar-gain factors, landscaping, as well as system and	Zoning Bylaw

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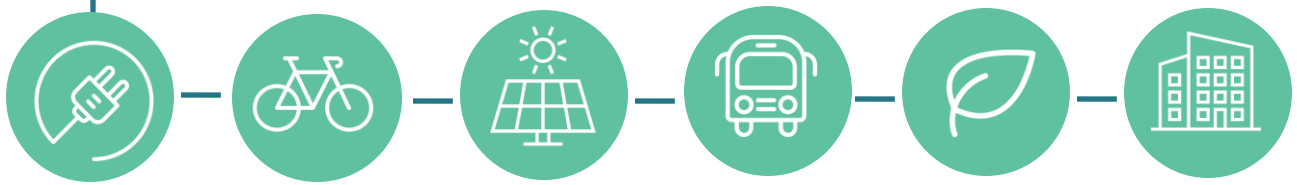
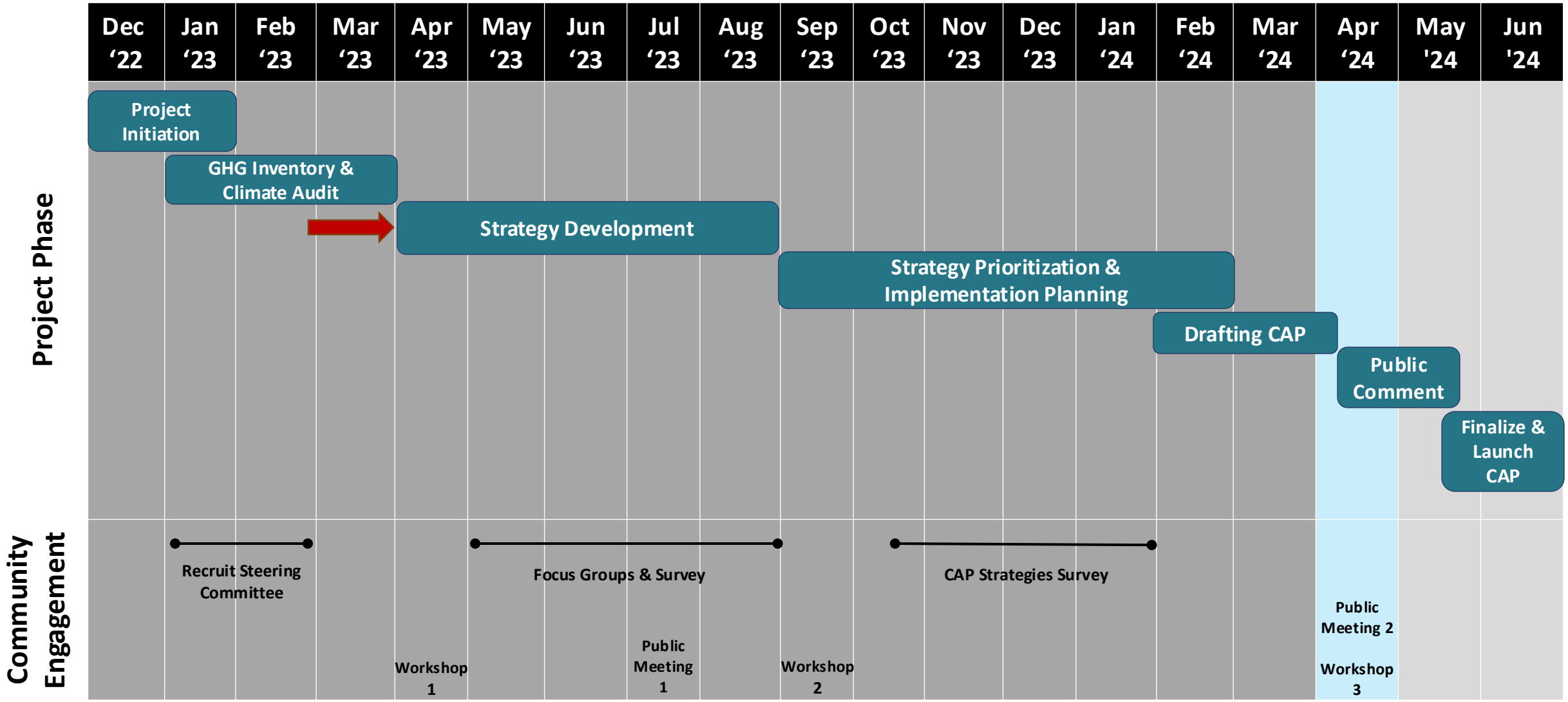
CAP Timeline





Planning Process

How were the CAP strategies identified?

Studies & Assessments

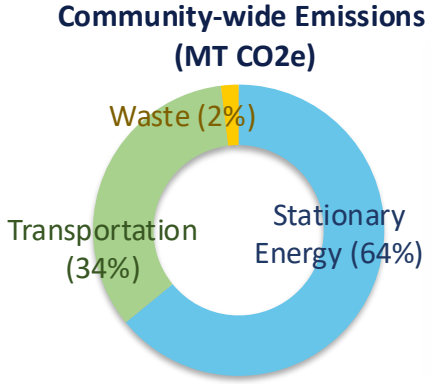
- Community - wide GHG Inventory
- Climate Audit of Policies, Plans, and Programs
- Net Zero Playbook / MAPC Expertise

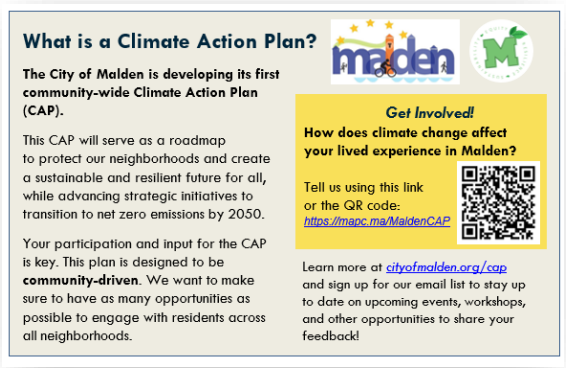
Community Engagement

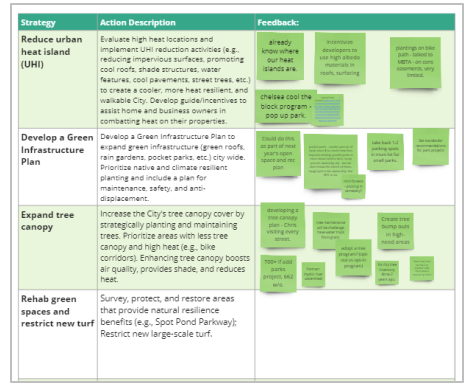
- Surveys
- Focus Groups w/ Non-English Speakers
- Focus Group w/ Local Service Providers
- Public Meetings & Workshops
- Steering Committee

Municipal Engagement

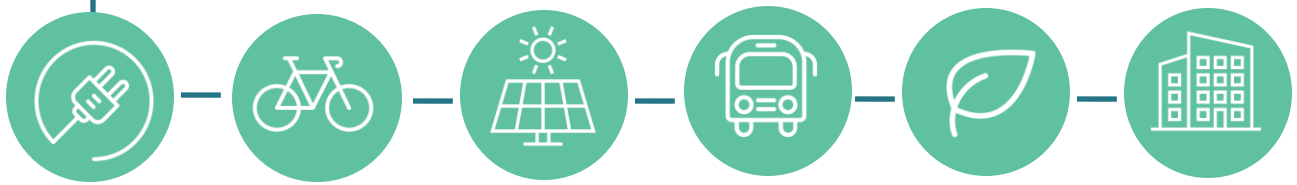
- Co-Wrote Strategies w/ Implementation Leads

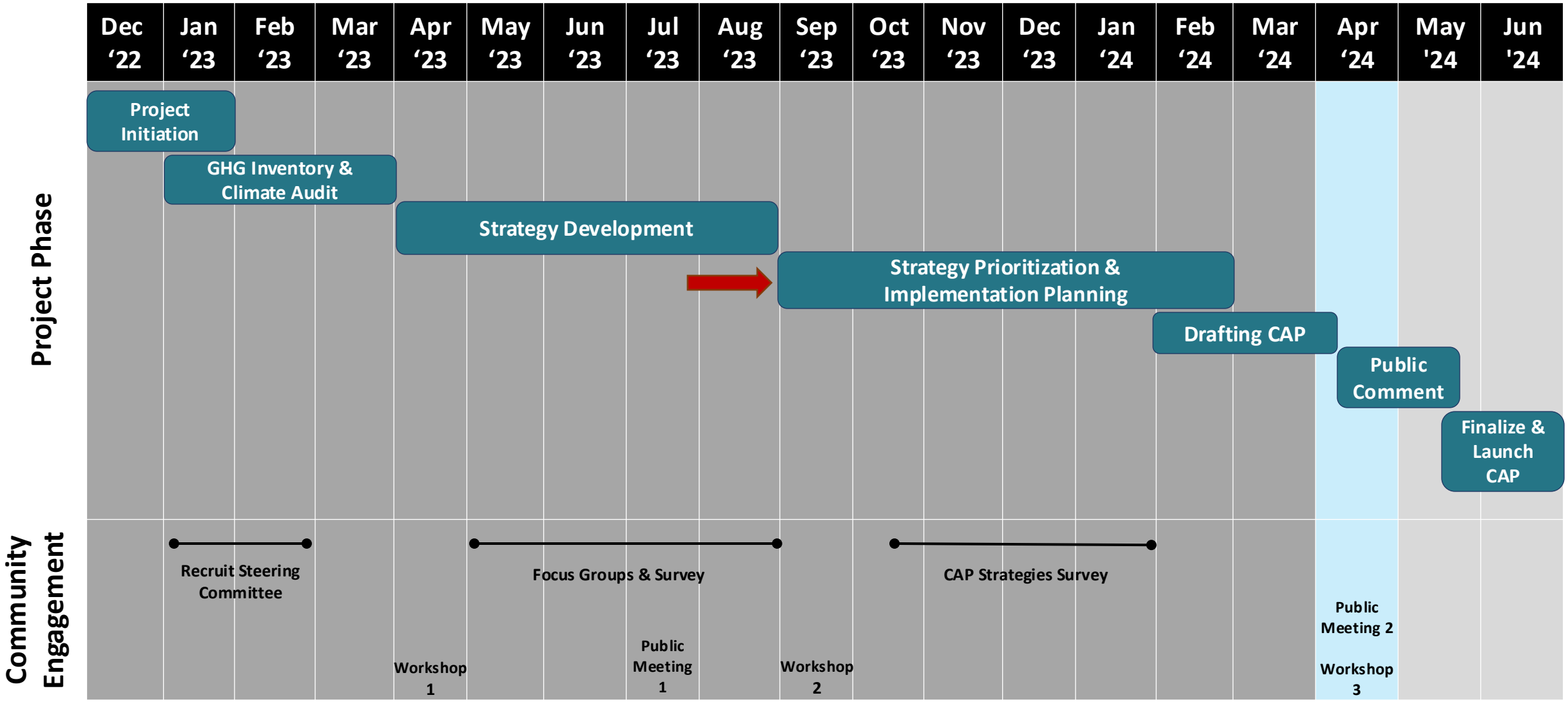






CAP Timeline





Sample Prioritization Criteria

- GHG reduction potential
- Cost to implement
- Level of effort to implement
- Centers equity and environmental justice
- Has co-benefits
  - Produces local energy
  - Improves air quality
  - Supports "green" workforce developments
  - Improves local resilience
  - Improves public health
  - Protect or enhance biodiversity
  - Preserves green and open spaces
  - Scalable or transferable to other neighborhoods

ID	Action	Co-Benefits	Action Type	Implementation Timeline	Municipal Lead Implementers	Potential Community Partners
M1	Advocate to electrify the Massachusetts Bay Transportation Authority (MBTA) Commuter Rail and other public transit.	• Improves air quality • Improves public health • Centers equity and environmental justice	Advocacy	Long	• Sustainability • Transportation • Green Advisory Board • Select Board	• MBTA • MassDOT
M2	Work with local businesses to support public transportation needs and co-fund innovative transportation initiatives.	• Improves air quality • Improves public health • Centers equity and environmental justice	Feasibility assessment/ Pilot program	Short	• Sustainability • Transportation • Transportation Advisory Committee • Planning	• Local businesses • Micro-mobility companies • E4TheFuture
M3	Participate in regional discussions on transportation and increase coordination with neighboring towns; support the linkage of north and south commuter rail lines.	• Improves air quality • Improves public health • Centers equity and environmental justice	Advocacy	Medium	• Sustainability • Transportation • Transportation Advisory Committee	• MAGIC communities
M4	Restart and expand the service region of the Cross-Acton Transit (CAT).	• Improves air quality • Improves public health • Centers equity and environmental justice	Feasibility assessment/ Pilot program	Short	• Sustainability • Transportation • Transportation Advisory Committee • Planning	• Transportation services • MassDOT
M5	Promote electric vehicle adoption.	• Improves air quality • Improves public health • Centers equity and environmental justice • Scalable or transferable to other neighborhoods	Training /Education/ Outreach	Short	• Sustainability	• Local car dealerships • Green Energy Consumers Alliance • Energize Acton
M6	Create an incentive program to help provide increased access to EVs for low-income residents in Acton.	• Improves air quality • Improves public health • Centers equity and environmental justice	Financing	Short	• Sustainability • AHA • ACHC	• Car dealerships; • Car-sharing services • E4TheFuture
M7	Implement an income tiered EV car sharing program in partnership with community organizations and affordable housing developments.	• Improves air quality • Improves public health • Centers equity and environmental justice • Scalable or transferable to other neighborhoods	Financing	Short	• Sustainability • Building • AHA • ACHC	• Car-sharing services • E4TheFuture

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Implementation Plans (or "Blueprints")

Action #. Action Title	
Description	A Description summarizing the action, including how it connects to existing Town policies, plans, and programs.
Implementation Lead	Municipal department(s) responsible for leading the execution of the action and any decision-making involved.
Implementation Partner	Partners within the municipality and the broader community will be critical to successful implementation of the action.
Target-Start Date / Timeframe	Target Start Date: The year the action is expected to begin. Timeframe: Ongoing / Shovel-Ready (<1 year) / Short (1-3 years), Medium (3-5 years) / Long-term (5+ years)
Implementation Steps	Clear steps to achieving the action. Implementation steps can be, but are not necessarily, sequential.
Equity Considerations	Recommendations for how to implement the strategy more equitably, with considerations for the needs of vulnerable and historically disadvantaged populations.
Connection to Community Needs Assessment	Where relevant, how the action aligns with the goals and findings of the Town's recent Community Needs Assessment.
Resources	Technical resources and/or case studies from other communities.
Co-Benefits	Co-benefits, in addition to reducing greenhouse gas emissions. - Equity - Health - Economic - Environmental - Energy
Costs, Funding, & Financing	Information on the types of costs that might be incurred (e.g., staff time, capital costs, operations cost) and cost savings potential, as well as information on relevant funding opportunities and/or financial tools.
Measures of Success	Suggested metrics to track success and impact during implementation of the action.

STRATEGY 10: Increase the adoption of electric vehicles

ACTIONS

M1: Promote electric vehicle adoption.

Create an outreach campaign to connect residents and businesses to state and federal incentives that make zero emission vehicles more affordable. Combined federal and state tax credits can reduce purchase costs up to $10,000.

Action Type: Training /Education/ Outreach

Co-benefits

- Improves air quality
- Improves public health
- Scalable or transferable to other neighborhoods

Equity Considerations

- Ensure equitable distribution of charging stations in various community locations, housing types, etc.
- Create financial resources and/or incentives to help reduce economic barriers to EV adoption, and at-home charging station installation.

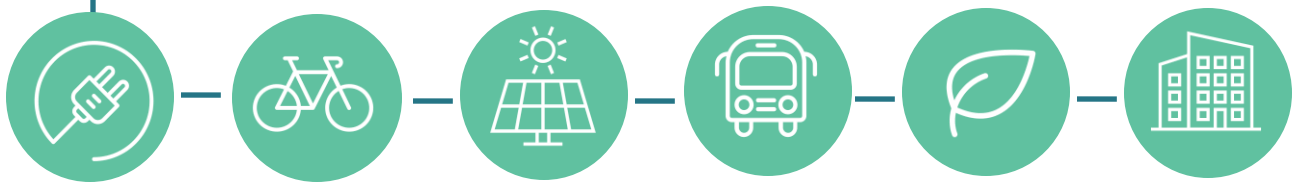
Partners for Implementation

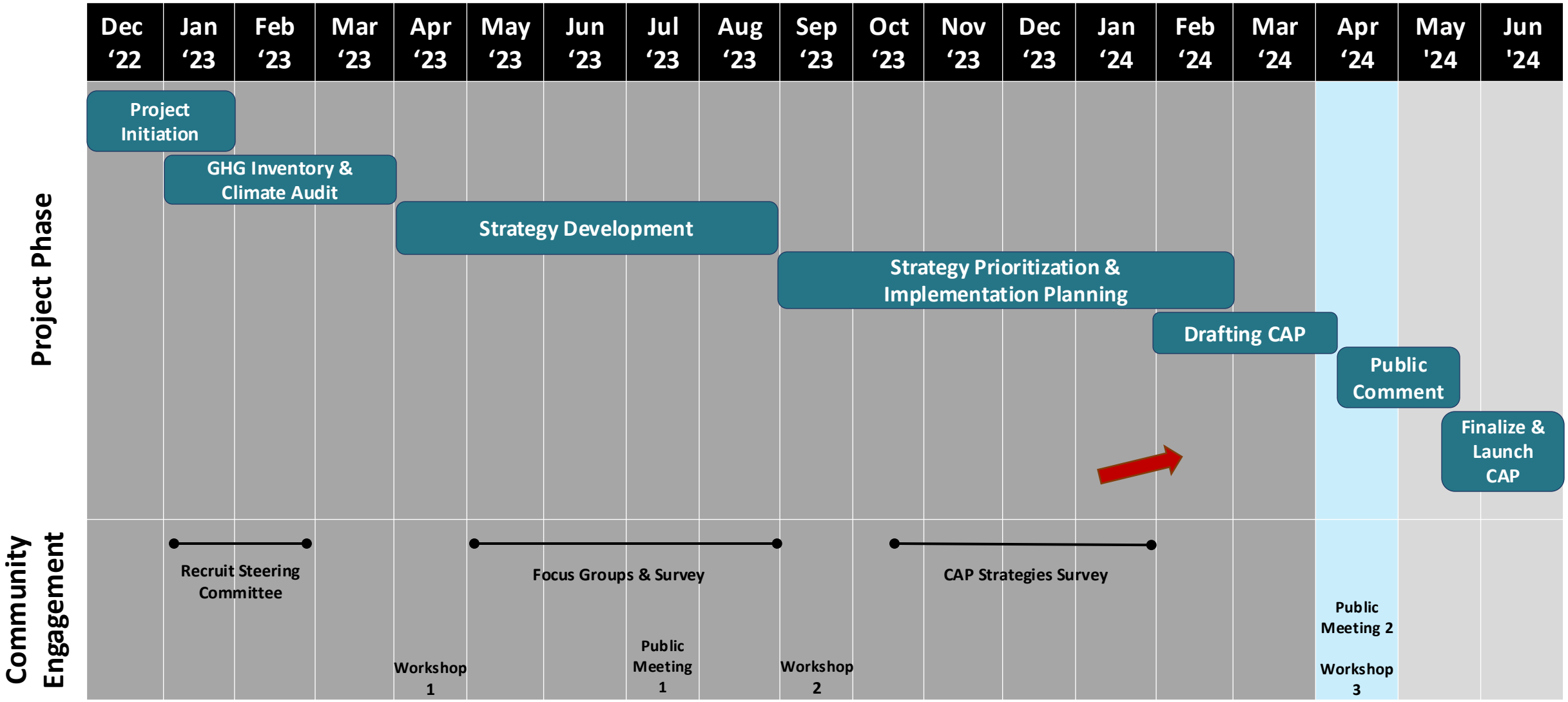
- Local car dealerships
- Green Energy Consumers Alliance
- Energize Acton
- Eversource

Measures of Success

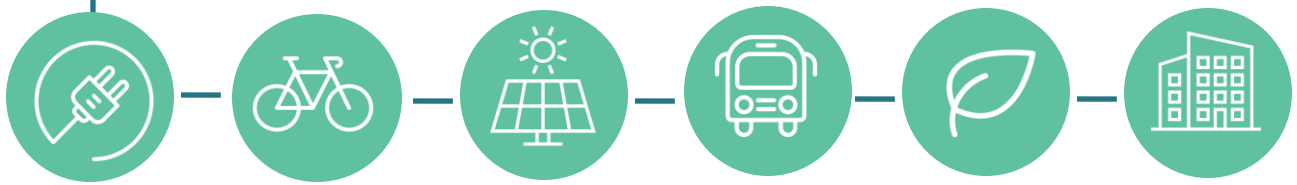
- Number of EVs registered in Acton

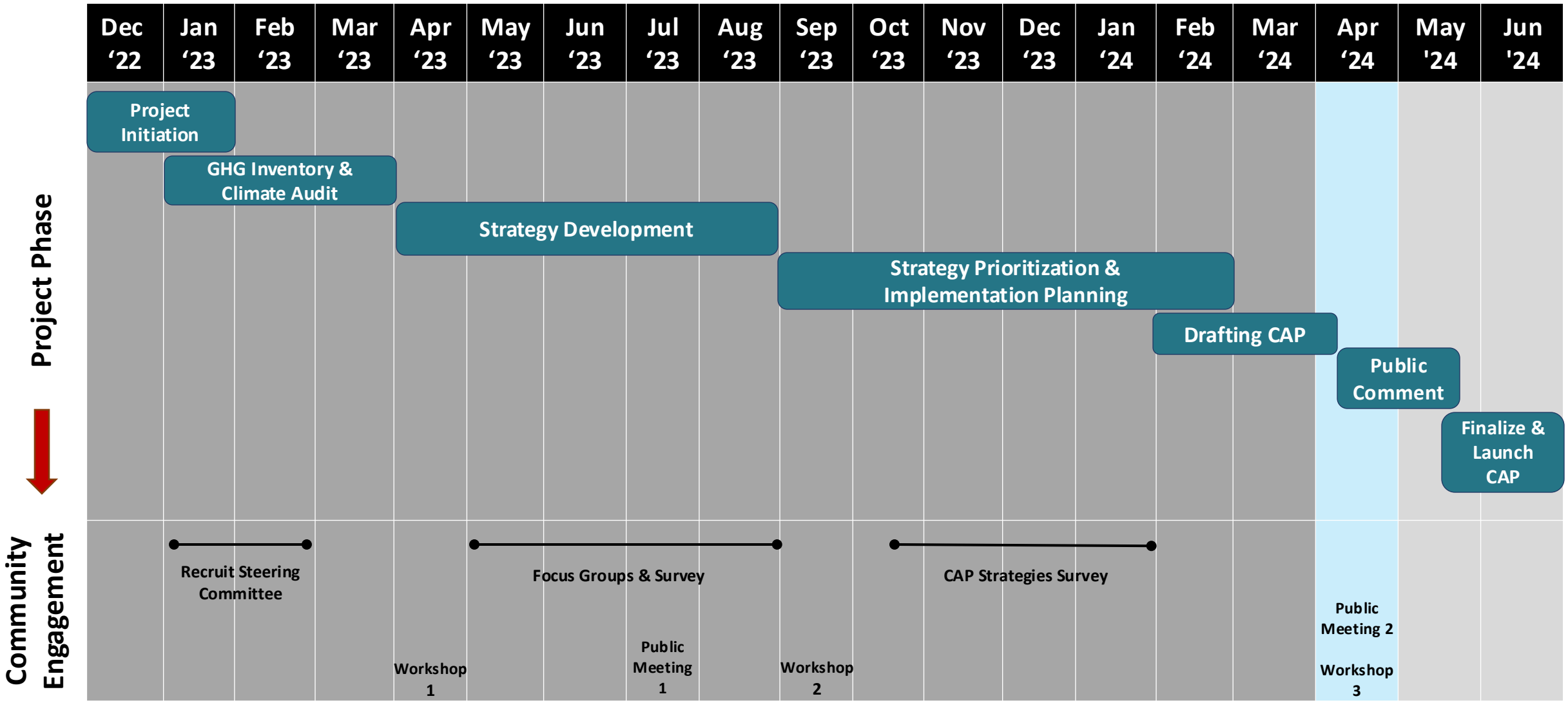
CAP Timeline





CAP Timeline





Community Engagement Activities

Purpose of Engagement
(What, Who, How goals)

Engagement Methods **Creative Activities**

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Community Engagement Activities: Malden

Resident-led Steering Committee

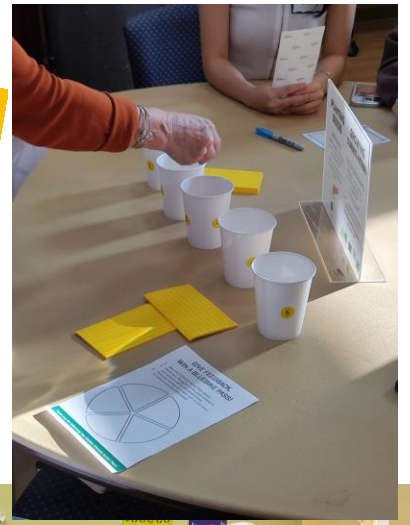
CHINESE CULTURE CONNECTION

華夏文化協會

The Immigrant Learning Center

Focus Groups: Haitian Creole, Brazilian Portuguese, Mandarin Chinese

Community Dinners with CBOs



Community Workshops & Meetings

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What's Next? NZAP/CAP Implementation.

- Publicly track progress & regularly update the public.
- Form/maintain a local board or commission to oversee implementation of the NZAP/CAP and keep municipal leads accountable.
- Regularly convene municipal leads to share progress and collaborate on implementation.

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ZERO to 101

Clean Energy Supply

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Contents

Deploy energy storage at critical facilities.

Energy storage refers to a suite of technologies that allow for energy to be stored for later use. At the building level, storage can provide demand management services, allowing a building to scale back its grid energy use at peak times and supply energy to the grid at times when more is needed. Energy storage can also increase resiliency by providing power during outages and make onsite renewable energy more efficient when paired together. Most building-level storage solutions are comprised of different types of batteries; lithium ion, lead acid, and flow are the most common, with new types such as highly efficient iron-air batteries nearing market viability as well. Energy storage systems can work with electric or thermal energy.

- Identify key priorities for energy storage, how long that storage would ideally provide power during an emergency or regular basis, and critical facilities in the community, either municipal or privately-owned, that might be well-suited to host a storage system.
- Reach out to staff who own and operate a prioritized building to discuss the potential for energy storage paired with renewables onsite. Coordinate with the Fire Chief and Inspections Department.
- Draft and release an RFP for a vendor to conduct a feasibility study for the project. A good feasibility study will respond to the goals for the system and review energy load and variation onsite, logistics of interconnection, system size, design, lifespan, approximate cost, past energy usage (up to one year of previous data), safety, and appropriate opportunities for funding.
- Identify funding and financing opportunities for the project (see more information on page 40).
- With funding secured, release an RFP for engineering and construction of the project.

Immediate Next Step

Municipalities should convene key staff and partners – planning staff, sustainability staff, the Fire and Police Chiefs, the Building Inspector, the School Superintendent, and medical center leaders – to review priorities for energy storage and discuss potential project sites.

Equity Considerations

Energy storage projects can be designed to improve shelters and services for populations who are most vulnerable during climate events, such as hurricanes and nor'easters, severe rain events, and high heat days when power outages are most likely. When identifying priorities for a project and potential sites, a municipality should consider prioritizing buildings that can serve as emergency shelters and that provide critical services to community members during extreme weather events.

Next Steps

- Please take 3-5 mins to please complete the anonymous evaluation form (link in chat)

Upcoming Events:

- **July TBD:** Building Decarbonization & Energy Efficiency Strategies for Residents & Businesses
- **July 22, 1pm:** Office Hours
- **July 28:** MESM Academy Cohort 1 Celebration and Reflection!

Q&A Notes on GHG Inventory

- Winchester completed a GHG inventory before these tools were developed. Tried to keep a synopsis of all the ECMs completed. Difficult to quantify the emission reduced from projects. Could Mass Save share data on audits done in the town?
  - Program Administrator is generally supposed to have the participation rates by zip codes at the muni level.
  - Lori can check what information is available.
  - https://www.masssavedata.com/
- Q: In the example shared about Natick, were the additional 500 cars net cars added?
  - It was based on vehicle census. Used that data and made some assumptions based on make and model of the vehicles.
- It is difficult to measure progress across the municipality. Sharing progress made on the municipal side alone can be uplifting. When interacting with people in the community, whether it is in town meetings or with school boards, share data on emissions and the progress made even if it is just at the municipal side.

Q&A Notes on NZAP

- There are differences between completing a Net-Zero Climate Action Plan for an institution (such as UMass Lowell) and a municipality. The main difference noted is in the community engagement and the process adopted to get to the final list of measures.
- Q: Should this be a part of MEM's responsibility, especially if working in a municipality with limited capacity and funding? What is the one-liner that we can use to sell the idea of completing a NZAP?
  - The actions/measures to come out of a NZAP can set the stage for the muni to start implementing the projects. It can be a document that can add credibility to sustainability/decarbonization pursuits, as it is developed with input from the community. Codified climate goals are valuable.
  - Can also focus on co-benefits (public health, economic development, etc) to make the case.
- Q: Is there a list of communities that have completed NZAP/CAP?
  - MAPC keeps a list of their planning area.
  - For other regions, it is worth checking with your Regional Planning Agency.
- There is an increasing need to keep a publicly accessible list of initiatives/projects that are being completed in the clean energy/decarb sector.

Municipal Energy and Sustainability Managers ACADEMY

Thank you!