

City of Cambridge Getting to Net Zero Action Plan

Fiscal Year 2019 Progress Report

Health and Environment Committee Hearing

August 11, 2020



Carbon Neutrality by 2050



Stakeholder Engagement

- Cambridge is committed to achieving carbon neutrality: A goal widely shared among stakeholders
- **30** total stakeholder meetings held during FY19 to inform Net Zero Action Plan policy and program development
 - **45** distinct stakeholder groups included: large and medium building developer/ owner/ operators, affordable housing, universities, utilities, building designers, energy efficiency experts, advocates, residents, city departments, state and regional organizations, neighboring communities



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Report Process

- Climate Protection Action Committee Review
- City Manager Review
- City Council Presentation



Net Zero + Net Positive Targets					Net Zero Municipal		Net Zero Residential 1-3 Units			Net Zero Commercial Multi-Family Institutional	
YEAR (fiscal year July - June)		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Action 1 - Energy Efficiency in Existing Buildings											
1.1.1 Custom Retrofit Program	Residential	Feasibility	Multi-Family Pilot		Review	Potential Multi-Family Program				Review	
	All					Feasibility	Custom Retrofit Pilot		Review	Custom Retro	
1.1.2 Additional BEUDO Requirements	Comm. + MF		Design			New Building Energy Use Disclosure Ordinance Req's				Review	
1.1.3 Upgrades at Time of Renovation or Sale	All			Feasibility		Potential T.O.S/R. Requirements				Review	
1.1.4 O+M Plan Requirement	Comm. + MF (New Const.)			Design		Required O+M Plan			Review	Required O	
Action 2 - Net Zero New Construction											
2.2.1 Market Based Incentive Program	Residential	Feasibility	Pilot Residential		Review	Pot. Net0 Incentive Program		Review	Potential Net+ Incentive Program		
	Comm. + MF			Feasibility		Pilot Commercial		Review	Potential Net0 Incentive Program		
	Labs					Pilot Labs		Review	Potential Net0 Incentive Program		
2.2.2 Height + FAR Bonus		Feasibility *		Potential H+FAR Incentive Program				Review	Potential H+FAR Incentive Program		
2.3 Increase Green Building Requirements in Cambridge Zoning Ordinance		Design	Stage 1 - New LEED Requirements			Review	Stage 2 - New LEED Requirements				Review
2.4.1 Net Zero Requirement for New Construction of Municipal Buildings		Design	Net Zero Ready			Review	Net Zero Required				Review
2.4.2 Renewal of Municipal Buildings		Design Action Plan		Pilots		Stage 1 - Building Renewal Strategy					
2.5 Removal of Barriers to Increased Insulation		Design	New Policy			Review					
Action 3 - Energy Supply											
3.1 Low Carbon Energy Supply Strategy		E.S.S. Study **		Implement							
3.2 Rooftop Solar Ready Requirement		Design	Solar Ready Requirement		Study	Potential Solar Requirement Version 1					
3.3 Develop a Memorandum of Understanding with Local Utilities		Develop MOU		Utility Collaboration					Review		
Action 4 - Local Carbon Fund											
4 Investigate Local Carbon Fund			Feasibility								
Action 5 - Engagement and Capacity Building											
5.1 Communication Strategy		Design		Im							
5.3 Net Zero Lab Standards		Feasibility ***	Dev. Standard	Pilot Standard 1			Implement Potential Standard				Review

Action 1: Reduce energy use in buildings through retrofits and improved operations

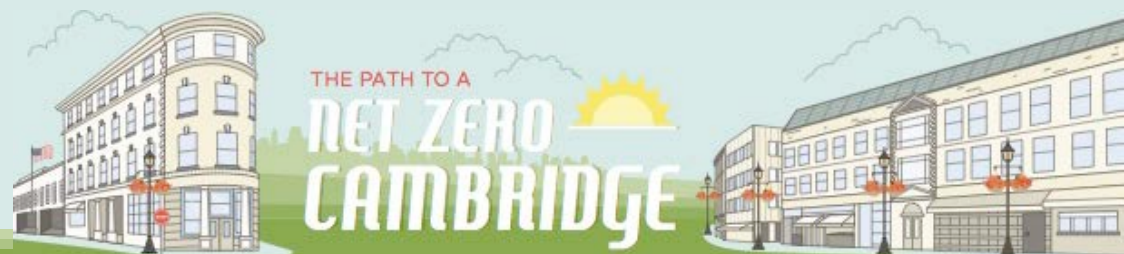
I. Energy Efficiency in Existing Buildings

I.1.1 Custom Retrofit Program

I.1.2 Additional BEUDO Requirements

I.1.3 Upgrades at Time of Renovation or Sale

I.1.4 O&M Plan Requirement



Action 2: Enable low carbon new construction

2. Net Zero New Construction

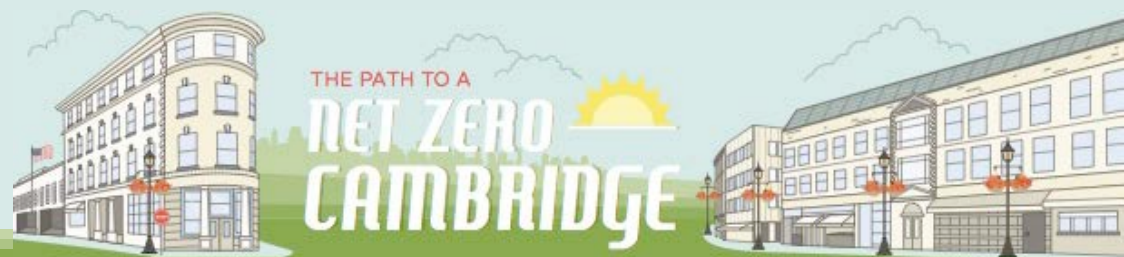
2.2.1 Market-based Incentive Programs

2.2.2 Height + FAR Bonus

2.3 Increase Green Building Requirements in Cambridge Zoning Ordinance

2.4 Net Zero Municipal Buildings

2.5 Removal of Barriers to Increased Insulation



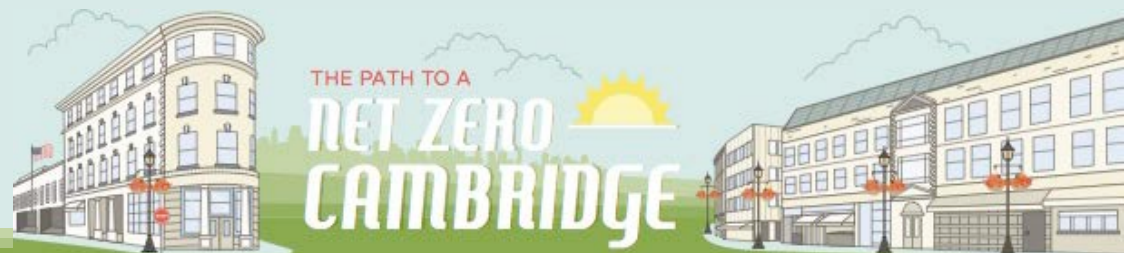
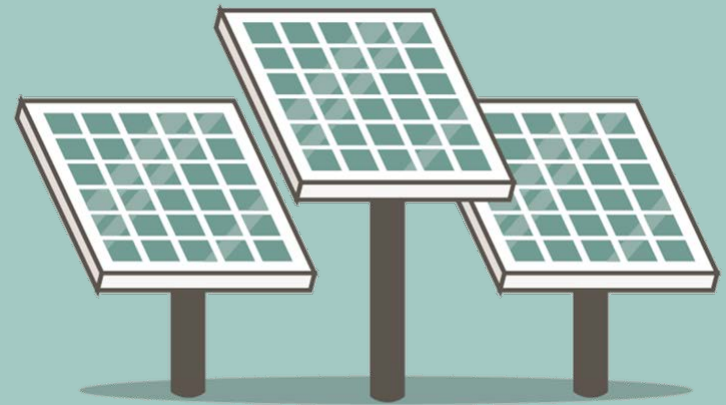
Action 3: Replace fossil fuels with low carbon energy

3. Energy Supply

3.1 Low Carbon Energy Supply Strategy

3.2 Rooftop Solar Ready Requirement

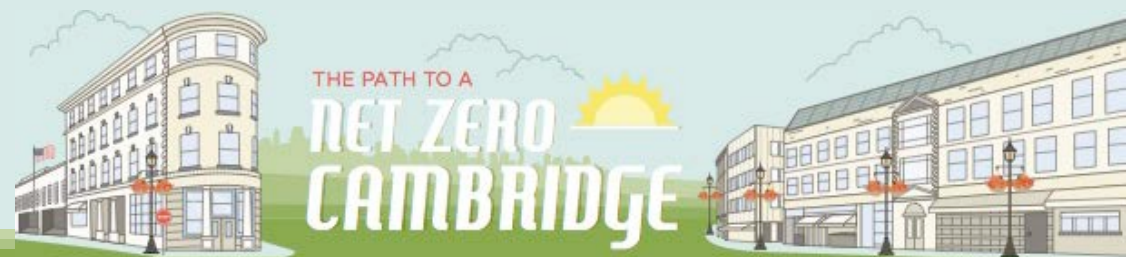
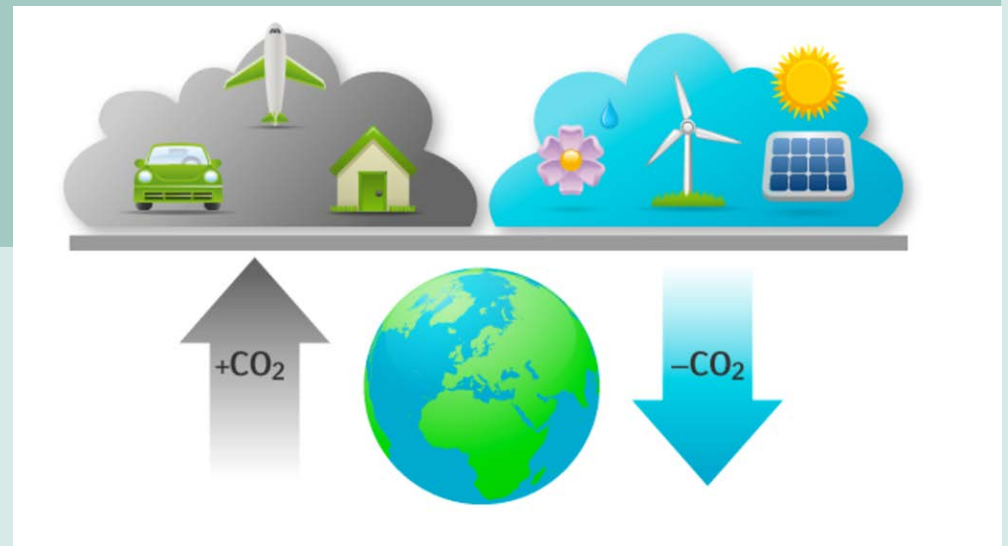
3.3 Develop a Memorandum of Understanding with Local Utilities



Action 4: Option to invest in a net zero community

4. Local Carbon Fund

Investigate Local Carbon Fund



Action 5: Community engagement and capacity building

5. Engagement & Capacity Building

5.1 Communication Strategy

5.2 Develop Ongoing Capacity to Manage Getting to Net Zero Project

5.3 Net Zero Lab Standards and Maintenance Plan Requirement for New Construction



Key Actions Since FY18 Report

- *Action 1.1.1:* Launch a Custom Retrofit Program for BEUDO buildings
- *Action 1.1.2:* Submit Building Energy Use Disclosure Ordinance amendments to introduce performance requirements for BEUDO buildings
- *Action 1.1.3:* If feasible, propose policy recommendations for Upgrades at Time of Renovation or Sale
- *Action 2.2.2:* Propose a recommended Height and FAR Bonus through zoning for buildings that achieve net zero emissions ahead of the required schedule
- *Action 2.3 & 2.5:* Amend Article 22 of the Zoning Ordinance to Increase Green Building Requirements and Remove Barriers to Increased Insulation
- *Action 2.4:* Adopt Net Zero Requirement for New Construction of Municipal Buildings
- *Action 3.1:* Implement recommendations of the Low Carbon Energy Supply Strategy
- *Action 3.2:* Propose a rooftop solar installation requirement for new buildings
- *Action 5.2:* Conduct a program-wide review of the Net Zero Action Plan to evaluate progress to date and recommend adjustments moving forward



Action 1.1.1: Custom Retrofit Program

FY19 Progress, Barriers, and Next Steps:



Multi-Family Energy Pilot in implementation. Custom Retrofit Program for BEUDO buildings now being implemented



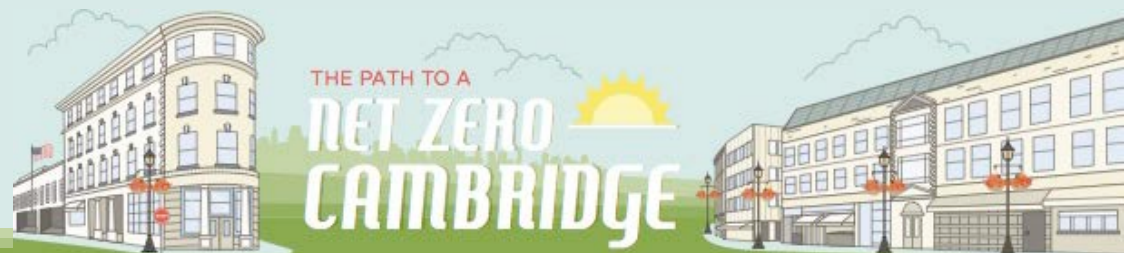
Ongoing program tracking and evaluation



Custom Retrofit Program tracking and adjustment

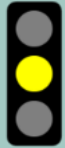
FY19 Key Considerations:

- 50 Properties, encompassing 1,450 units, have enrolled in the program
- Multi-family Pilot scaling up in FY20 thanks to support from a state grant
- Cambridge Building Energy Retrofit Program for BEUDO buildings launched 10/25/19



Action 1.1.2: Additional BEUDO Requirements

FY19 Progress, Barriers, and Next Steps:



Amendment proposal is ready to move forward pending further legal and stakeholder review



Determining policy details and implementation logistics

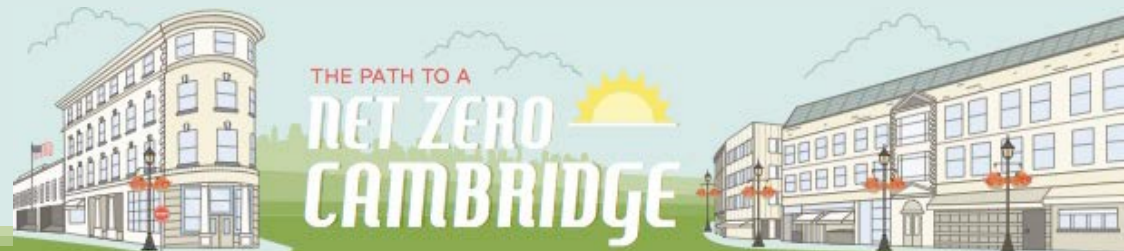


Finalize proposal

Legislative action: City Council to adopt amendments to BEUDO Ordinance

FY19 Key Considerations:

- Proposal based on analysis and stakeholder engagement includes:
 - Science-based GHG performance targets
 - Flexibility for unique buildings including labs and campuses
 - Exemptions for net zero buildings and those demonstrating hardship



Action 1.1.3: Upgrades at Time of Renovation or Sale

FY19 Progress, Barriers, and Next Steps:



Time of Renovation or Sale requirement feasibility assessment ongoing through Zero Cities project



Assess equity impacts to avoid unintended consequences



Complete stakeholder engagement to inform policy recommendations

Legislative Action: If feasible, propose policy recommendations following BEUDO amendments

FY19 Key Considerations:

- Zero Cities project through USDN is supporting analysis of technical and economic feasibility
- Additional equity analysis through USDN is being pursued, and could inform time-of-lease policy pathway
- Next steps will be dependent on complete assessment results and interaction with other policies



Action 2.2.2: Height and FAR Bonus

FY19 Progress, Barriers, and Next Steps:



Determined not to be desirable as standalone policy



Competing priorities for density and proximity of NZ requirements



Seek net zero principles through Urban Design and additional Green Building Requirements

FY19 Key Considerations:

- Zero Cities consultant study addressed key questions around definition of efficiency and renewable energy to qualify as “net zero”
- Net Zero requirements for new construction due to take effect 2022-2025 for most buildings
- Needs to be coordinated with other Envision Cambridge density priorities such as affordable housing in context of NZAP timing



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Action 2.3: Increase Green Building Requirements in Cambridge Zoning Ordinance

FY19 Progress, Barriers, and Next Steps: FY19 Key Considerations:



Previously delayed requirements were adopted by City Council 12/9/2019



Delay in round 1 amendments likely to delay round 2 due FY21



Begin study of next round of green building requirements

- Requirements include LEED Gold (or Passive House, Enterprise Green Communities); Enhanced Commissioning; “Pathway to Net Zero” narrative
- Base energy code to be increased to IECC2018 in 2020
- Consider performance-based pathway for FY21 implementation; or state net zero stretch code may become an option



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Action 2.5: Removal of Barriers to Increased Insulation

FY19 Progress, Barriers, and Next Steps:



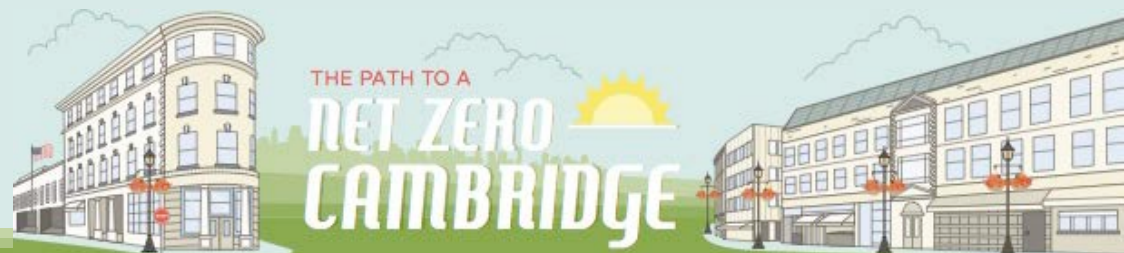
Previously delayed requirements were adopted on 12/9/2019



Ongoing monitoring of policy impact and adjustments as needed

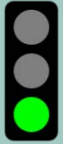
FY19 Key Considerations:

- Adopted policy allows exterior insulation up to 8" thick (vs. 4"), as long as there is at least 3' setback from the property line (vs. 7'2")
- Allows for exceptions by Special Permit (vs. zoning variance)



Action 2.4.1: Net Zero Requirement for New Construction of Municipal Buildings

FY19 Progress, Barriers, and Next Steps: FY19 Key Considerations:



New municipal buildings being constructed to achieve net zero-ready and designed for net zero emissions

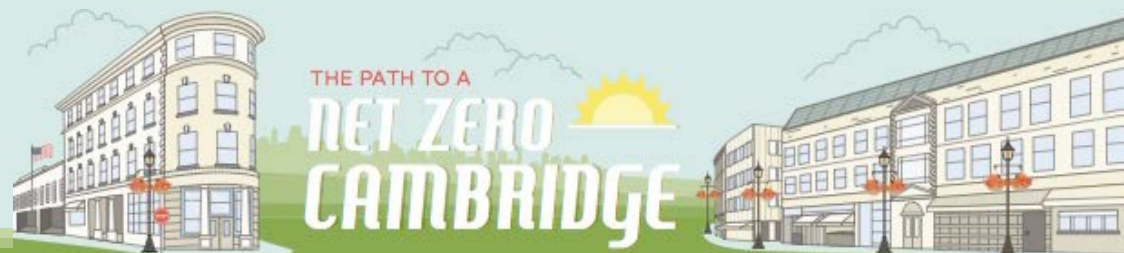


Detailing aspects of net zero definitions



Complete definitions for net zero standard

- Net zero-ready: high energy efficiency + fossil fuel-free
 - King Open School, Foundry
- Net zero emissions: all energy supplied by carbon-free sources
 - Tobin/VLUS
- Inter-departmental working group coordinating definition of “net zero” with other policies in development



Action 3.1: Low Carbon Energy Supply Strategy

FY19 Progress, Barriers, and Next Steps:



Implementation of multiple study recommendations in progress



Transition away from fossil fuel energy supply system



Complete and implement recommendations of Resilient and Renewable Thermal Analysis

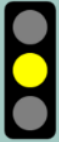
FY19 Key Considerations:

- Resilient and Renewable Thermal Analysis
- Renewable Thermal Marketplace
- Off-Site RE Criteria
- Cambridge Community Electricity Community Solar and 100% RE Supply Strategy
- CCPR: Energy Resilience
- Advancing district energy



Action 3.2: Rooftop Solar Ready Requirement

FY19 Progress, Barriers, and Next Steps: FY19 Key Considerations:



Solar installation requirement technical analysis completed but policy adoption behind



Ensure no equity issues



Develop policy proposals for City Council consideration
Legislative Action: Pursue recommended solar installation requirements in 2020

- Technical study included multiple potential approaches for new buildings
- Stakeholder feedback favorable with off-site compliance pathways
- Studying cost and potential equity impacts
- Precedent in Watertown

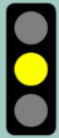


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Action 5.2: Develop Ongoing Capacity to Manage Getting to Net Zero Project

FY19 Progress, Barriers, and Next Steps: FY19 Key Considerations:



Program Wide Review delayed due to COVID-19

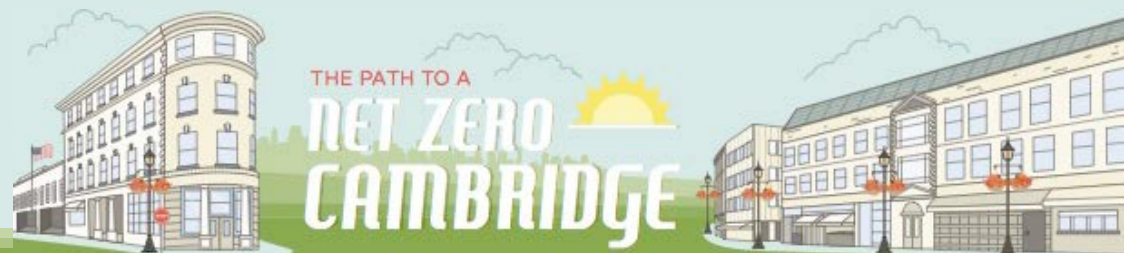


Ensure continued coordination among partner institutions



Complete the Program Wide Review and implement recommendations

- 5-Year program review in progress:
 - Evaluate current science, policy, and technology context for NZAP
 - Analyze data sources and create past and future evaluation method
 - With stakeholders, develop an equity-centered NZAP update



Net Zero Action Plan 5-Year Review

The Net Zero Action Plan should be reviewed every five years to adjust the overall strategy based on changing economics, technology and stakeholder needs.

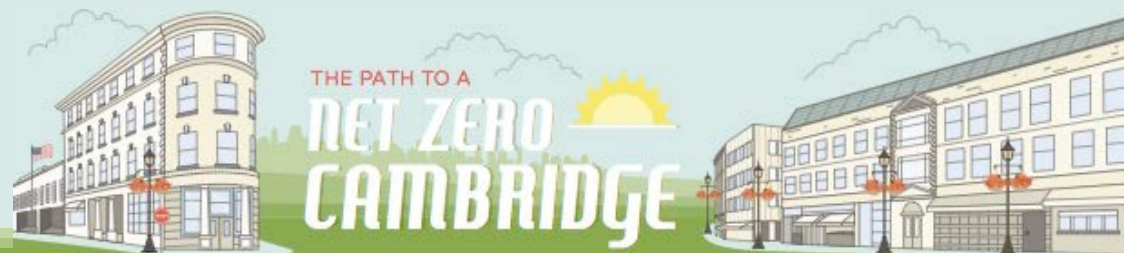
Principles:

- Supports **climate goals** and **healthy economic** strategies
- Uses **science, market, and data-driven** analysis to inform decision making
- Support an openness **to new ideas** when circumstances change
- Commitment to allowing the principle of **offsets**
- Commitment to **measuring and monitoring** impact over time
- Ensures consultation is comprehensive and engages affected **stakeholders**
- Commitment to developing informative and **replicable models**
- **NEW:** Commitment to implementing the Net Zero Action Plan through a **racial equity and social justice lens**



Net Zero Action Plan 5-Year Review

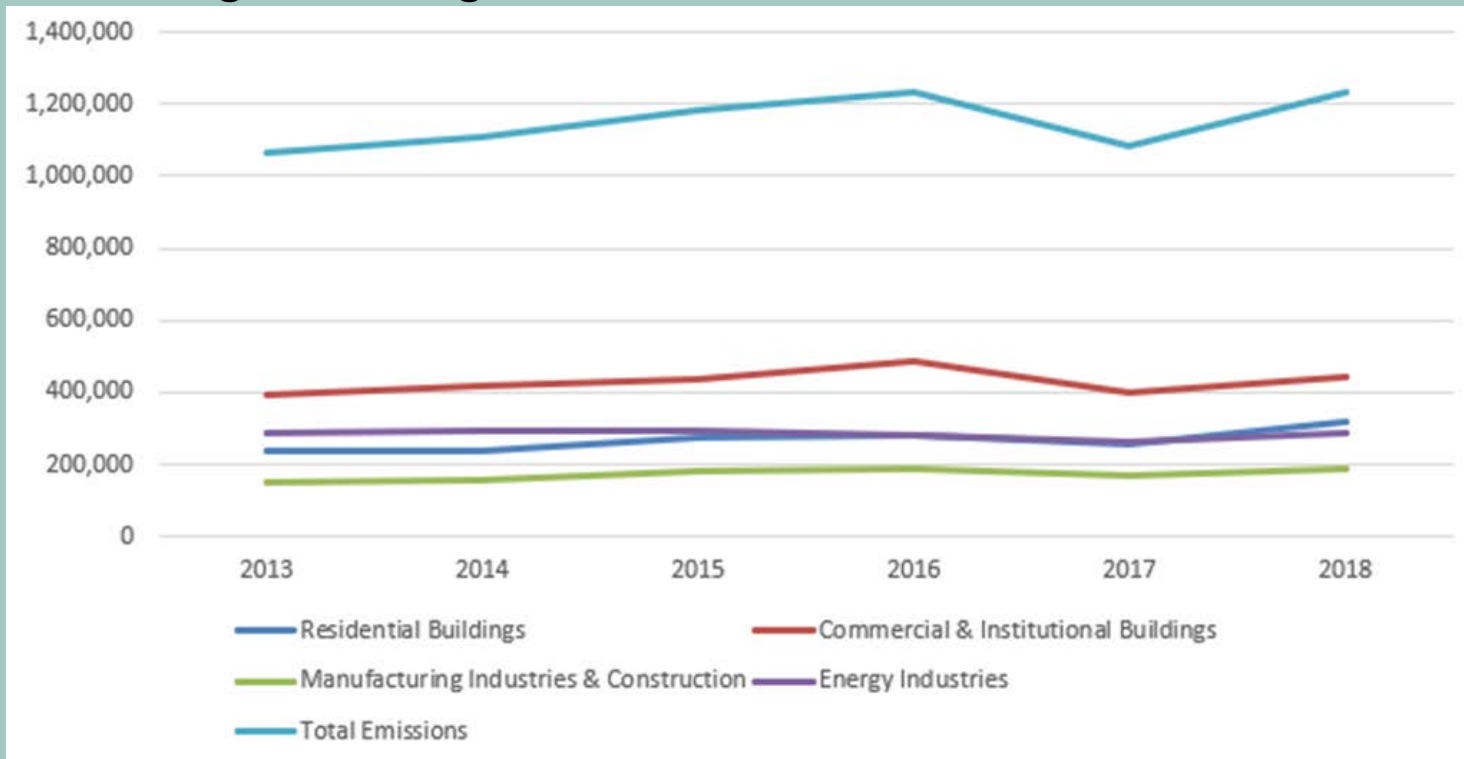
- *Part 1: Program Measurement and Evaluation (February-June, 2020)*
- *Part 2: NZAP Revision Recommendations (September-December, 2020)*
- *Part 3: Stakeholder Engagement and Implementation Plan (September 2020-March, 2021)*



Net Zero Action Plan 5-Year Review

Part 1: Program Measurement and Evaluation (February-June, 2020)

Cambridge Building Sector Emissions Trends 2013-2018



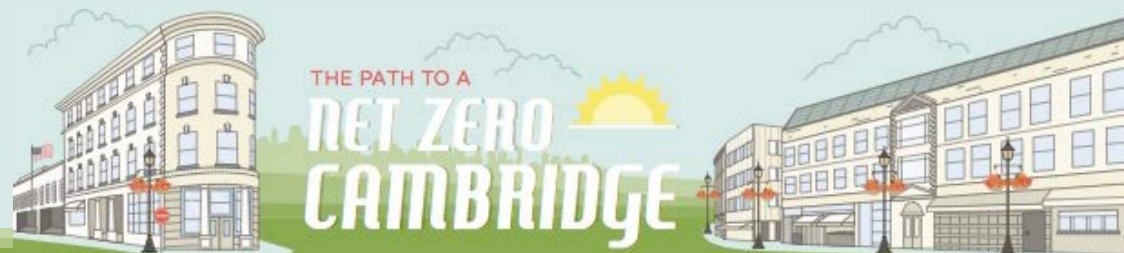
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Net Zero Action Plan 5-Year Review

Part 2: NZAP Revision Recommendations (September-December, 2020)

- a. Review the current status of climate change science, the policy context for Cambridge, and the technical and economic feasibility of GHG-reduction technologies
- b. Based on program evaluation results, recommend an initial set of potential adjustments to NZAP targets and actions for Task Force input
 - *New Policy Example: Fossil Fuel-Free Requirements for New Construction*
- c. Evaluate the potential GHG impact and economic feasibility of potential changes

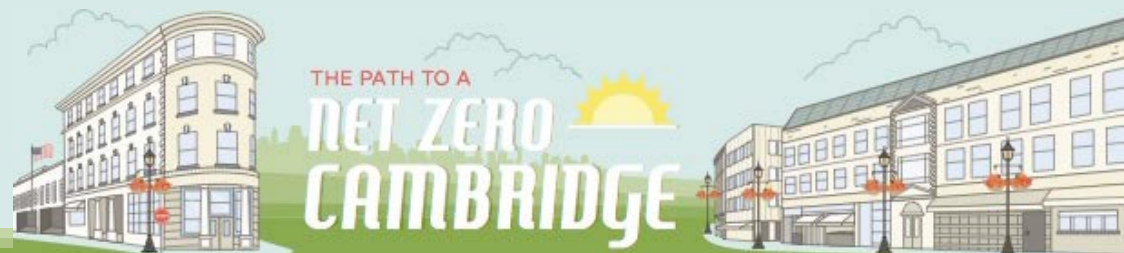


Net Zero Action Plan 5-Year Review

Part 3: Stakeholder Engagement and Implementation Plan (September 2020-March, 2021)

Five Taskforce Meetings to Discuss:

- a. Context and goal-setting
- b. Existing data sources and program evaluation approaches
- c. NZAP strategy and action update recommendations
- d. Equity assessment and updated implementation plan

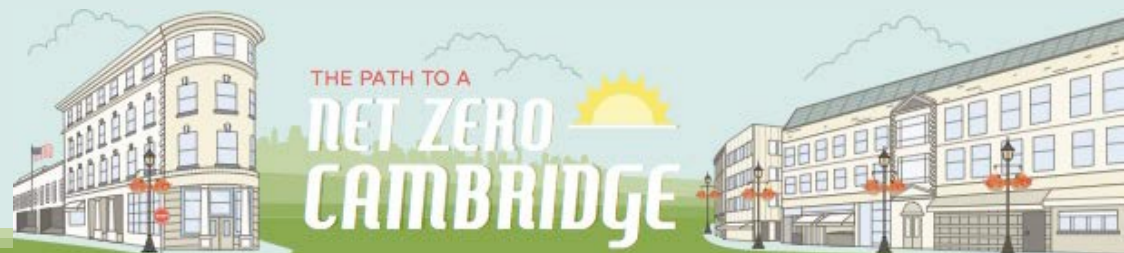


Net Zero Action Plan 5-Year Review

Key Outcomes

Implementation plan for recommended **new and/or revised actions** (focusing on the next 5-year period), including specific:

- Timelines
- Budgetary needs and other resources
- Stakeholder commitments
- Equity impacts and opportunities



Thank You!

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