

## Executive Summary

Prepared for the Cambridge Getting to Net Zero Task Force

March 16, 2015

Draft

## Contents

Contents.....	0
Executive Summary.....	2
Specific Requests from Council.....	3
Introduction .....	4
Background.....	4
Purpose of report .....	4
Defining Net Zero .....	4
Getting to Net Zero .....	5
Targets.....	5
Approach to the Work.....	5
Working Groups .....	6
Modeling Impacts.....	7
Communications and Engagement .....	7
Net Zero Action Plan .....	8
Overview .....	8
1. Energy Efficiency in Existing Buildings.....	<b>Error! Bookmark not defined.</b>
2. Net Zero New Construction .....	9
3. Energy Supply.....	11
4. Local Carbon Fund.....	12
5. Engagement and Capacity Building.....	12
Ongoing Operational Requirements and City Investment.....	14
Program Governance .....	14
Measurement & Program Review .....	14
Key Partnerships.....	14
Training and Capacity Building .....	14
Concurrent and Supportive City Initiatives.....	16
Appendix .....	17
Appendix A – Policy Best Practices Report.....	17
Appendix B – Cambridge Building Energy Primer .....	17
Appendix C – Energy Supply Primer .....	17
Appendix D – Working Group Output: Long list of actions .....	17
Appendix E – Greenhouse Gas Reduction Model .....	17
Appendix F – Cambridge Solar Potential Report.....	17
Appendix G – Carbon Fund Research Report.....	17
Appendix H – Detailed Summary of Actions .....	17
Appendix I – GHG Model.....	17

## Executive Summary

The Getting to Net Zero Task Force, convened in response to the Connolly Petition, met monthly from February 2014 through April 2015 with the mandate of creating a framework to achieve net zero emissions from buildings in Cambridge. Supported by Cambridge City staff and a team of consultants, to the Task Force produced the suite of recommended actions detailed in this report, which comprise the Net Zero Action Plan.

For the purpose of this document, the term ‘net zero’ refers to a building or a community of buildings for which, on an annual basis, all greenhouse gas emissions produced through building operations are offset by carbon-free energy production. Achieving the net zero objective relies on a combination of energy efficiency improvements, renewable energy production and, where necessary, purchase of carbon offsets or credits (that meet specific criteria).

The Task Force produced high level recommendations that are summarized under five key areas to get to net zero. The impacts of the recommended actions were modeled at the community level and are projected to achieve a 70% reduction in annual emissions from the Cambridge building stock over a 25-year time horizon. The recommendations are summarized below.

Actions
<b>1. Energy Efficiency in Existing Buildings</b>
1.1.1 Custom Retrofit Program
1.1.2 Additional BEUDO Requirements
1.1.3 Upgrades at Time of Renovation or Sale
1.1.4 Operations and Maintenance Plan Requirement for New Construction
<b>2. Net Zero New Construction</b>
2.1 Create Net Zero Targets for New Construction
2.2 Net Zero Incentives
2.2.1 Market-based Incentive Programs
2.2.2 Height + FAR Bonus
2.3 Increase Green Building Requirements in the Cambridge Zoning Ordinance
2.4 Net Zero Requirement for New Construction + Deep Retrofits of Municipal Buildings
2.4.1 Net Zero Requirement for New Construction
2.4.2 Deep Retrofits of Municipal Buildings
2.5 Removal of Barriers to Increased Insulation
<b>3. Energy Supply</b>
3.1 Low Carbon Energy Supply Strategy
3.2 Rooftop Solar Ready Requirement
3.3 Develop a Memorandum of Understanding with Local Utilities
<b>4. Local Carbon Fund</b>
Investigate Local Carbon Fund
<b>5. Engagement &amp; Capacity Building</b>
5.1 Communication Strategy
5.2 Develop Ongoing Capacity to Manage Getting to Net Zero Project
5.3 Net Zero Lab Standards

## Specific Requests from Council

- *Establish a process to provide a program-wide review of the proposed framework every five years and include participation of all stakeholders in the community*
- *Immediately authorize development of proposed language for strengthening LEED green building requirements through process that includes stakeholder participation.*

The set of recommendations is intended to form a framework by which deep emissions reductions can be achieved. The framework is designed to strike a balance between articulation of clear long term directions and targets and enabling the flexibility to manage the project in such a way that it can adapt to the evolving market, changes in energy prices and advances in technology. To achieve this, clear targets are set to provide direction for the project, and a transparent governance structure is proposed, providing oversight so that the plan can be reviewed and renewed periodically based on up to date financial analysis and technical feasibility. Ongoing engagement of key stakeholders will be required throughout the duration of the initiative as will detailed analysis of each of the proposed strategies.

This set of recommendations, developed by the Task Force and working groups, was reviewed by local stakeholders from the Chamber of Commerce, the Cambridge Sustainability Compact, the Climate Protection Action Committee, and Massachusetts Biotech Council (MassBio). The recommendations were refined based on the feedback of these groups and an iterative process with the Task Force including public comment over the course of a year. The recommendations are comprehensive and work together to address all sectors in a manner that is balanced and will accelerate action.

The Task Force recognizes that charting a 25-year course of action intended to transform the local built environment will not be a one-time exercise and recommends that the action plan be reviewed every five years to ensure it remains an effective plan and reflects both the evolving state of technology and the Cambridge economy. Finally the majority of recommendations require further study and stakeholder input at the design phase and many require council action.

## Introduction

### Background

In October 2013 a group of residents brought a petition to Cambridge City Council requesting an amendment to the Zoning Ordinance that would require all new construction in Cambridge to achieve net zero annual greenhouse gas emissions. With signatures from over 500 Cambridge residents, the “Connolly Petition,” proposed a focus on energy efficient design and renewable energy production and, if necessary regional renewable energy credits (RECs).

City Council and the Planning Board supported the net zero objective, but noted that the proposed requirements for new construction could significantly impact the real estate development and overall economy of Cambridge. To address these concerns, City Council called for the creation of a “Getting to Net Zero Task Force,” with the mandate to define a measured and strategic path to net zero. Task Force members included residents, community advocates, subject matter experts, business and property owners, developers, and the two major universities<sup>1</sup>. The Task Force was to investigate and determine a pathway for Cambridge to become a community of net zero buildings (new and existing) and develop recommendations on how to achieve this objective.

### Purpose of report

The purpose of this report is threefold:

- It summarizes the process undertaken beginning February 2014 to develop recommendations, primarily driven by the Getting to Net Zero Task Force (the Task Force), the associated working groups, and the Community Development Department (CDD).
- It comprises high-level ideas and recommendations and an initial action plan for how to achieve the net zero objective. This includes a pathway to net zero emissions in new construction and strategies to achieve significant community scale emissions reductions for both new and existing buildings.
- It recommends an approach to implementation and ongoing governance of the plan over its projected 25-year scope.

### Defining Net Zero

For this project, the Task Force developed the following definition of net zero:

*An annual balance of zero greenhouse gas emissions from building operations citywide, achieved through improved energy efficiency and carbon-free energy production.*

The net zero target does not include embodied emissions generated from the manufacture of building materials, building construction activities, occupant transportation or waste. The target includes Scope 1 and Scope 2 GHG emissions sources as defined by the Greenhouse Gas Protocol.<sup>2</sup> This protocol calculates emissions related to all ongoing operations of a facility, including on-site combustion and purchased energy.

---

<sup>1</sup> See xxx for list of task force members.

<sup>2</sup> <http://www.ghgprotocol.org>

# Getting to Net Zero

## Targets

The Getting to Net Zero Action Plan includes strategies to achieve the following, as key elements of a net zero community:

- Highly energy efficient buildings (new + existing)
- The use of onsite renewables
- The use of offsite renewables
- The use of offsets and RECs<sup>3</sup> (as a temporary measure to achieve net zero).

To develop a strategy to meet the net zero objective as defined above, the Task Force developed distinct policy targets for new construction and for existing buildings. A brief explanation for this approach is as follows:

- With new construction, developers and designers can design projects to meet energy efficiency and renewable energy targets. The City of Cambridge can use tools such as the Zoning Ordinance to require incremental improvements in energy efficiency in new buildings.
- Existing buildings vary in terms of their energy performance, and require a variety of strategies to significantly reduce greenhouse gas emissions from their operations. As such, the approach to improving efficiency in existing buildings requires a broader variety of tools including both incentives and regulations.

The target of achieving community-wide net zero emissions in Cambridge is ambitious. Actions supporting the achievement of this goal need to be balanced with other City priorities including continued economic growth, housing affordability, improved climate resiliency, historic preservation, and planning and urban design objectives. To this end, the approach to achieving net zero does not solely rely on exemplary performance in any one sector. The set of targets for net zero new construction for each sector (see Table 1) addresses these complexities and competing priorities.

A series of proposed actions to be implemented between 2015 – 2040 are detailed in this report. The projected greenhouse gas (GHG) impacts of these actions were modeled based on proposed actions being implemented beginning in 2015 through to 2040, and are projected to reduce emissions by 70% by that time. This will position Cambridge to achieve its 2007 target of reducing community GHG emissions by 80% reduction by 2050<sup>4</sup>. Further, it will set a trajectory to achieve continued GHG reductions until net zero has been achieved, while accommodating growth of the community and local economy.

## Approach to the Work

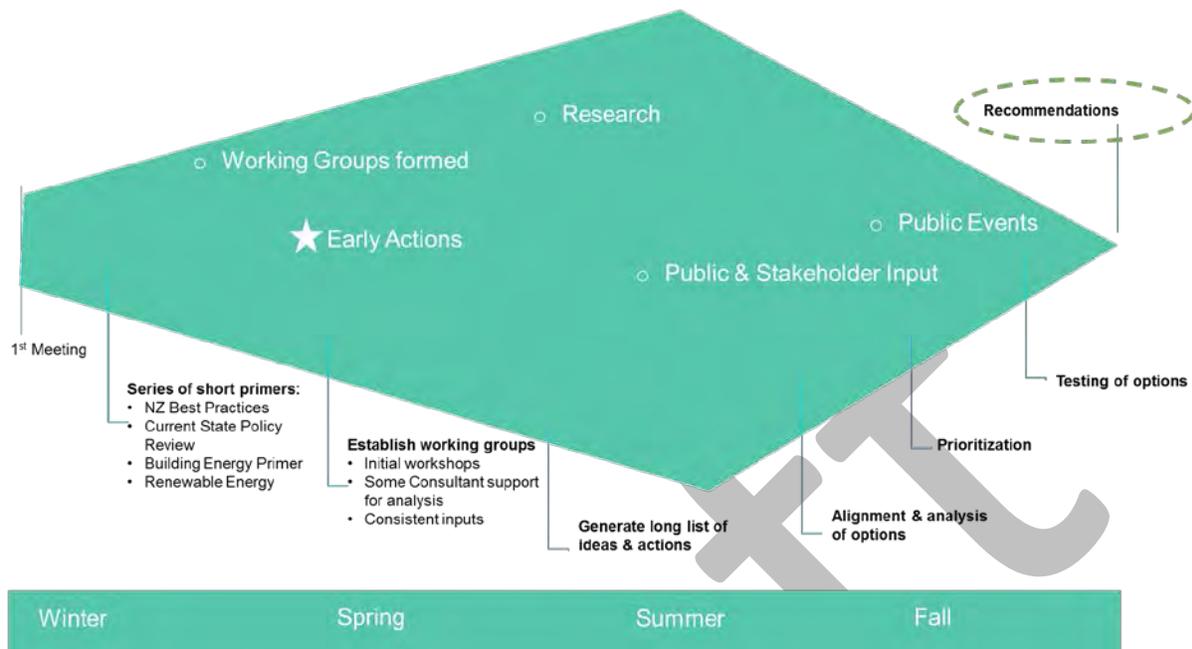
The Task Force held 13 meetings between February 2014 and April 2015 with the goal of developing and building consensus around a list of recommended actions by early 2015. Figure 1 illustrates the chronology of the work undertaken by the Task Force over the duration of its tenure.

---

<sup>3</sup> RECs can be used to offset electricity only.

<sup>4</sup> Cambridge adopted a target to reduce emission by 80% by 2050 in 2007. The net zero action plan modeled 70% reduction over 25 years based on 2014 emissions data.

Figure 1 - Task Force Work Plan



To support the development of a roadmap to net zero, the following research was provided to Task Force members:

- Policy Best Practices in Energy Efficiency: a summary of best practices from other jurisdictions that have introduced leading energy efficiency and green building programs (see Appendix A)
- Cambridge Building Energy Primer: an analysis of the building stock in Cambridge including energy sources and energy consumption by building type and sector (see Appendix B)
- Low Carbon Energy Primer: an overview of what renewable energy technologies and low carbon energy applications could be deployed in Cambridge in various contexts (see Appendix C).

### Working Groups

Working groups were established early on in the process. The mandate of the working groups was to study action areas in more detail and develop a list of ideas that would support the target. Four working groups were created to focus on:

- Engagement and behavior change
- Incentives and financing
- Regulation and planning
- Energy supply and offsets

The working groups met regularly between May and September 2014. Each produced a report identifying a long list of actions to be explored or integrated into the final recommendations for the Task Force.

## Modeling Impacts

A model was developed to measure the projected GHG reductions<sup>5</sup> associated with each of the proposed actions. The purpose of modeling emissions and potential reductions was to help the Task Force prioritize actions to be included in the recommendations, based on the relative impact of each. In designing the model, the following variables were taken into account:

- Growth in building square-footage by sector over time
- Transitions to natural gas as a replacement for coal
- Improvements in energy efficiency based on market adoption of new technology
- Continued growth in the supply of green power in accordance with the Massachusetts Renewable Portfolio Standard (RPS).

The following variables were identified as having potential impact on GHG emissions reduction potential, however were excluded from the model as the degree of their impact is not well understood at this time:

- Changing heating and cooling loads resulting from climate change
- The effect of advancements in renewable energy technology
- Continued price volatility in the energy sector.

For a more detailed methodology on how GHG emissions were calculated see Appendix I.

## Communications and Engagement

To keep Cambridge stakeholders informed and engaged throughout the process of developing the recommendations, the Engagement and Behavior Change working group began by mapping all of the stakeholders that would potentially be impacted by this process.

The following engagement activities were initiated throughout 2014:

- All working group and task force meetings were open to the public
- Meeting materials and minutes were posted on the CDD's webpage
- A mid-year report was published and circulated publically
- A public panel discussion featuring external net zero expert's panel and offering the audience an opportunity to review and discuss preliminary task force recommendations.
- Meetings with key stakeholders such as:
  - MassBio
  - Cambridge Sustainability Compact Steering Committee
  - Climate Protection Action Committee
  - Cambridge Chamber of Commerce
  - Historical Commission Staff

---

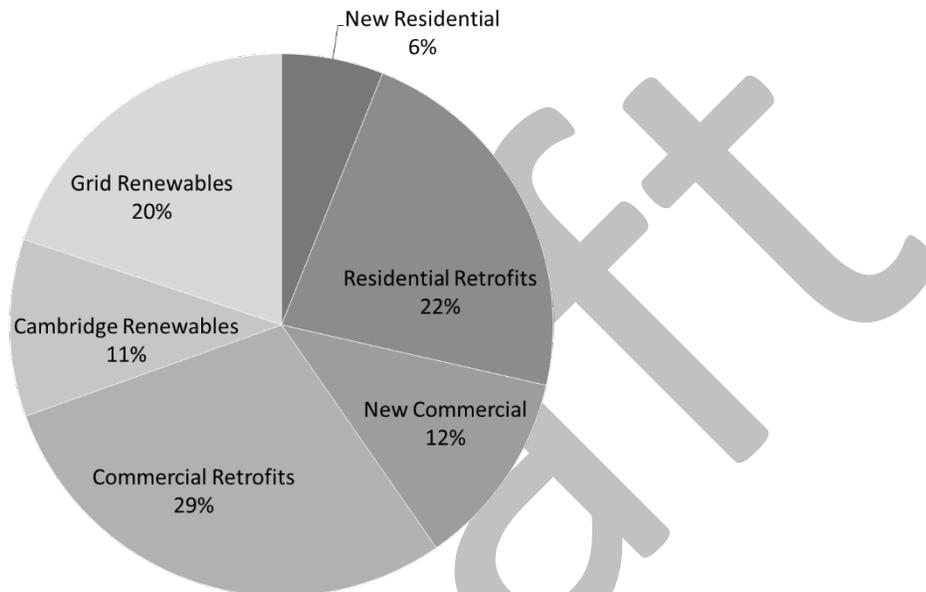
<sup>5</sup> The model was created as a resource to help guide the decisions of the Task Force. It is not intended to be used as a precise tracking or measurement tool.

# Net Zero Action Plan

## Overview

The intent of this plan is to introduce an approach that is balanced not only among sectors but also among new buildings, existing buildings, and renewable energy supply. Figure 2 presents a breakdown of the proportion of GHG reductions projected from each sector.

Figure 2 – GHG Savings by Sector



## 4.2 Key Actions

The proposed actions to meet the net zero objective are categorized into five key areas:

1. Energy Efficiency in Existing Buildings
2. Net Zero New Construction
3. Energy Supply (low carbon and renewable energy)
4. Local Carbon Fund
5. Engagement & Capacity Building (communication and resources)

These five areas and their associated actions are outlined below and in further detail in Appendix H of this report. The subcategories simplify the approach while not losing the comprehensiveness of the Task Force’s efforts.

### 1. Energy Efficiency in Existing Buildings

The goal of this category is to ensure that existing buildings are operating optimally and, where necessary, are retrofit to maximize efficiency. Building energy data collected by way of the Building Energy Use and Disclosure Ordinance (BEUDO) will be a key tool to catalyze these actions. In 2015 the City will be in possession of the first year of benchmarking data. This data will lay the groundwork to support a targeted approach to building improvements. For building types that will not be subject to the BEUDO, other tools and approaches such as mandatory upgrades at time of renovation or sale will be explored.

The recommendations<sup>6</sup> for existing buildings are as follows:

#### 1.1.1 Custom Retrofit Program

*Explore and develop retrofit incentive programs*

Continue to work with the utilities to adapt current incentive programs to take a performance-based approach, where the incentive amount is determined by the relative GHG reductions associated with a given retrofit project. There are currently incentive programs offered by the utility that are well utilized but different approaches could yield better results. City staff are currently in discussions with NSTAR regarding a retrofit pilot program for multi-family buildings that could potentially serve as a pilot for this performance-based approach.

#### 1.1.2 Additional BEUDO Requirements

*Require owners of buildings covered under BEUDO to submit energy management plans and to undertake retro-commissioning where appropriate.*

The intent of requiring energy management plans for energy in new construction and major renovations is similar to Cambridge's current practice of requiring transportation demand management plans. Compelling owners to consider how they and their tenants operate their buildings will save energy and set them on a trajectory of continuous savings. Institutional level plans should be accepted for companies or institutions with a clear institution-wide GHG emissions or energy reduction goal.

#### 1.1.3 Upgrades at Time of Renovation Or Sale

*Explore a requirement for energy efficiency upgrades at time of renovation and/or sale*

This action is to introduce a requirement for building energy upgrades at the time of permitting. An initial step will be to undertake a review of how best to implement new retrofit requirements, including whether upgrades should be required at time of property sale or major renovation or both. The tradeoffs associated with each path are to be reviewed in detail and in consultation with industry during the program design phase. Energy efficiency retrofit requirements will for BEUDO buildings be based on BEUDO data findings in order to target the least efficient buildings (as compared to their peers) for upgrades.

#### 1.1.4 Operations and Maintenance Plan Requirement for New Construction

*Require submission of operation and maintenance plans as a condition of permitting*

As a condition of occupancy, developers will be required to submit an operations and maintenance plan for the building. The plan will follow a simple template and ensure that the building is operated to a specified level of energy efficiency. While the requirement would apply to new construction, its objective is to ensure future existing buildings are operated optimally.

## 2. Net Zero New Construction

The recommendations for new construction are as follows<sup>7</sup>:

---

<sup>6</sup> For detailed recommendations, see Appendix H.

<sup>7</sup> For detailed recommendations, see Appendix H

## 2.1. Create Net Zero Targets for New Construction

*Set targets for net zero new construction in Cambridge by building type/sector.*

Table 1 includes a preliminary set of target dates for different building types to achieve net zero. These target dates are proposed as policy goals for both industry and Cambridge staff to work towards. Cambridge staff will consult with industry and other key stakeholders at least two years in advance of proposing regulations requiring buildings to be net zero. The variation in target years reflects the varying degree of complexity associated with achieving net zero in different building sectors.

Table 1 - Targets for net zero new construction by sector

1. Sector:	Municipal	Residential	Multi-Family	Commercial	Institutional	Labs
Target year:	2020	2022	2025	2025	2025	2030

### Note on Net Zero Laboratories

It is recommended that regular meetings be held with stakeholders to evaluate the evolving state of technology and construction practices and to explore the viability of moving the target date for labs to 2025 if key economic indicators are satisfied. These would include but not be limited to:

- Number of existing net zero buildings of that building type in Cambridge and Northeast
- Technical feasibility/industry capacity
- Access to renewable energy supply on-site or in the region
- Economics including a 'net present value' analysis
- Contribution to other goals such as resiliency

## 2.2 Net Zero Incentives

*Provide a compelling incentive package to encourage private developers to exceed energy efficiency requirements.*

The following incentives to catalyze transformation of the market to net zero construction are recommended for further exploration:

- Floor area ratio (FAR) bonuses
- Height relaxation
- Market-based incentive program

FAR bonuses and height relaxation should be explored in the context of the Cambridge citywide planning process and within the full spectrum of other programs such as affordable housing that currently use these as tools.

It is recommended that a study be undertaken to assess the feasibility of a performance fee and rebate program. If it proves feasible, the next step would be to initiate a pilot program in the residential sector to test its practicality and effectiveness. Additionally, a wider review of other market-based solutions that help developers overcome first costs and encourage innovation in green building design and construction is also recommended.

### 2.3 Increase Green Building Requirements in Cambridge Zoning Ordinance

*Increase minimum green building requirements on a regular basis starting in 2015*

The Task Force recommends the incremental scaling up of green building requirements, benchmarked with real-world examples and cost benefit analysis, over time leading up to the specific net zero target dates identified for each building type. The green building requirements in the Cambridge Zoning Ordinance currently apply to buildings 25,000 square feet or larger. Requiring incremental improvements in advance of the net zero targets sets industry on a trajectory to realize deep energy efficiency savings and better equips them to achieve the referenced targets. For more specific information on how green building requirements are proposed to be amended see Appendix H.

### 2.4 Net Zero Requirement for New Construction + Deep Retrofits of Municipal Buildings

*Introduce bold targets for new construction and deep retrofits to municipal buildings*

To demonstrate leadership, establish a policy that new construction of municipal buildings target net zero in the near term. Introduce a building renewal strategy for existing municipal buildings based on benchmarked energy performance data, targeting the least efficient at the outset.

### 2.5 Removal of Barriers to Increased Insulation

*Resolve policy barriers to improving insulation of buildings.*

Develop an approach to remove barriers in the Zoning Ordinance to enable the addition of exterior insulation and improve efficiency of buildings.

## 3. Energy Supply

To achieve net zero and improve community resiliency will require a significant shift in the supply of energy to Cambridge buildings away from fossil fuel based sources and toward low- or zero-carbon sources. This will include realizing the city's full solar potential (both PV and thermal), taking advantage of opportunities to harvest waste heat from large commercial or industrial facilities, and expanding and developing additional district energy capacity.

To meaningfully address energy supply the Task Force has three recommendations:

### 3.1 Low Carbon Energy Supply Strategy

The objective of this strategy is to define how the City will support the broad implementation and development of renewable and low carbon energy in Cambridge. This includes identifying what role(s) Cambridge can play in generation, distribution, and storage.

Additionally the City will review what role(s) it can play in the procurement of additional green power supply through lobbying the State to increase the RPS, and by reviewing the potential of customer aggregation as a tool to further increase the supply of renewables to meet Cambridge municipal and residential needs, potentially in combination with non-profit or commercial energy users.

### 3.2 Rooftop Solar Ready Requirement

*Develop "solar ready" requirements and explore renewable energy requirements.*

Recognizing that during construction is the most economically efficient time to prepare a roof to support solar energy, the Task Force recommends that Cambridge design a solar ready ordinance that considers structural design, building and roof orientation and impact on landscape or vegetation objectives. The

ordinance has to recognize that some roofs will be unsuitable for solar energy, due to overshadowing, orientation, roof top mechanical requirements etc. and should therefore be excused from the requirements.

Further the Task Force recommends that over the medium term, the City explore requiring that some portion of renewable energy be generated on site for new buildings. This is similar to what some local governments in the United Kingdom have enacted over the last decade.

### 3.3 Develop an Memorandum of Understanding with Local Utilities

This recommendation recognizes that the success of this initiative is greatly impacted by how well the City and stakeholders can work constructively with the utilities to be more efficient and switch to lower carbon forms of fuel and also address cost considerations.

## 4. Investigate Local Carbon Fund

Where it is not possible or is exceptionally challenging for individual projects to achieve net zero emissions through the combination of efficiency and renewable energy generation, a recommended alternative approach is to introduce locally managed carbon fund<sup>8</sup>. The carbon fund would be a voluntary mechanism available as an alternative path to achieving net zero at the building level.

A carbon fund would introduce the option, as an alternative to achieving net zero, to purchase carbon credits to offset a project's emissions. The fund could further be used by local institutions that have separate sustainability goals which could be addressed by the purchase of offsets. The money collected through sale of carbon credits would go into a local carbon fund, the proceeds of which will support Cambridge-based greenhouse gas reduction initiatives and renewable or low-carbon energy projects. Ideally, a locally based carbon fund would be developed and operated independently or at arm's length of the City.

The objective of the fund should be to create a vehicle that is easy to use as a method to achieve net zero emissions over the short and medium term. Administrative costs should be kept to a minimum to ensure the maximum proportion of the fund is invested directly into emission reduction project development. The carbon credits need not be "gold level" certified offsets, but the accreditation methodology should be robust. For example a program with defined parameters could qualify once but be used on several buildings. Further, in contrast to traditional offset frameworks, which typically are limited to supporting large-scale projects, a local carbon fund should be structured such that it can support a range of Cambridge-based emission reduction projects regardless of the scale of the project.

## 5. Engagement and Capacity Building

The Task Force strongly recommends that a comprehensive long-term communications strategy around the Cambridge Net Zero objective be developed. The strategy will ensure that key stakeholders including

---

<sup>8</sup> Note that the proposed carbon fund should not be confused with what is typically called a 'carbon tax,' which is a different tool both in structure and how the funds are used. The carbon fund will not interfere, nor will there be overlap with the proposed state level carbon tax (Massachusetts House Bill 2532), proposing the enactment of a carbon tax, at a rate of \$5 per ton charged to the customer upon sale of carbon-based fuel. A carbon tax that assigns a price to carbon and would create a source of revenue to fund emission reduction projects does not provide a financial tool by which projects can achieve net zero emissions.

City officials, the building industry, and Cambridge residents remain aware of the progress toward net zero and engaged with the initiative as needed or desired.

To meaningfully address engagement and capacity building the Task Force has three recommendations:

- 5.1 Develop a Communication Strategy.
- 5.2 Develop ongoing capacity to manage getting to net zero project.
- 5.3 Develop Net Zero Standards for Laboratories.

The strategy will examine how the City can leverage tools such as community based social marketing, citizen challenges, and recognition programs to promote action on net zero and make it common practice. There is already significant leadership being demonstrated by the building industry locally with regard to developing highly efficient commercial office and laboratory buildings. Harvard and MIT have also shown significant leadership on GHG emissions and energy reductions. Any successful communications strategy will have to build on and celebrate these successes.

The Task Force recommends that the City conduct a thorough policy analysis and stakeholder engagement review for all of the key regulatory ideas suggested in this report.

A working group should be convened to work on building energy efficiency operations within labs. The purpose of this group would be to work with tenants to explore ways in which research work can be optimized to be more energy efficient. The Cambridge research community is uniquely suited to take a leadership role on this issue and create 'made in Cambridge' solutions.

## A. Ongoing Operational Requirements and City Investment

It should be noted that these goals and actions are being proposed at a time of great change in the green building sector: energy prices are increasing, renewable energy costs are decreasing, and there is great volatility in commodity prices globally. While there is a need to demonstrate bold leadership and set goals today, there is also a need for ongoing management of this initiative to ensure that the targets remain relevant and achievable for industry.

To this end, the Task Force has proposed that the whole suite of recommendations be reviewed every five years throughout implementation. These reviews will allow for the overall strategy to adjust based on changing economics, technology and stakeholder needs. The review process will be similar to the initial work of the Task Force in that it will be supported by staff and be informed by a similar group of stakeholders.

The Task Force recommends that the City continue to invest staff time and resources into identifying resources, tools, innovative ideas, training opportunities, grants and other resources to support residents and commercial property owners in working toward this aggressive goal.

### Program Governance

To be completed by Cambridge staff

### Measurement & Program Review

The ongoing management and reporting on the City's progress toward net zero will become easier by way of the collection and analysis of BEUDO data. This effort will also be aided by a closer working relationship with the utilities and major institutions to help understand data for buildings that are currently not included in the BEUDO.

The data and accomplishments communicated in the proposed annual reporting on this project should be informed by the communications strategy. There was strong consensus on the Task Force that a concerted effort to make emissions more understandable to the general public and key stakeholders is vital to keeping the community engaged on this topic.

### Key Partnerships

Cambridge staff will continue to work through the Cambridge Sustainability Compact to ensure that the institutions, and development community in Cambridge are not only consulted, but also central to the evolution of the project over time. Specifically the work that Harvard and MIT are currently undertaking to develop and execute plans to lower their emissions will be central to this initiative being successful.

### Training and Capacity Building

Building a workforce and a professional services community that is capable of delivering net zero buildings will have to be a regional initiative. Working with neighboring communities that are also targeting deep emissions reductions to bring training and knowledge to the greater metropolitan area will help to accelerate the development of net zero emissions buildings.

The Task Force also recommends the City develop a detailed staffing and resource plan for how they will support the community in this effort, and how they will efficiently and effectively execute on the

proposed ideas in this report, and provide resources and support to the residential and business community around implementation.

Draft

## B. Concurrent and Supportive City Initiatives

The achievement of net zero interfaces with a number of other City objectives and concurrent planning initiatives:

- Citywide plan – will both inform and be informed by the recommended actions noted above. Specifically the energy supply strategy should be done concurrently in order to ensure that land use and density is also informed by renewable energy availability. The citywide plan will further inform the feasibility of providing height and density bonuses as incentives.
- EcoDistricts – The Kendall Square EcoDistrict energy study will serve to inform the broader citywide energy study as well as serve as powerful platform for cooperating on building energy retrofits and exploration of micro-grids.
- Climate change vulnerability assessment/preparedness plan – While the proposed actions, such more efficient buildings, local renewable energy, and micro grids generally support resiliency objectives, there is a need to review potential conflicts such as whether solar panels have any adverse impact on the urban heat island effect.
- Cambridge Sustainability Compact – As noted above the compact and specifically the building sub-committee will be a key stakeholder that will help to guide and support the implementation of these recommendations.
- Climate Protection Action Committee (CPAC) – CDD staff will ensure that annual progress updates proceed and are reviewed by CPAC to ensure accountability and transparency.

## Appendix

Appendix A – Policy Best Practices Report

Appendix B – Cambridge Building Energy Primer

Appendix C – Energy Supply Primer

Appendix D – Working Group Output: Long list of actions

Appendix E – Greenhouse Gas Reduction Model

Appendix F – Cambridge Solar Potential Report

Appendix G – Carbon Fund Research Report

Appendix H – Detailed Summary of Actions

Appendix I – GHG Model

Draft