

Cambridge Getting To Net Zero Task Force: Mid-Year Report

June 5, 2014

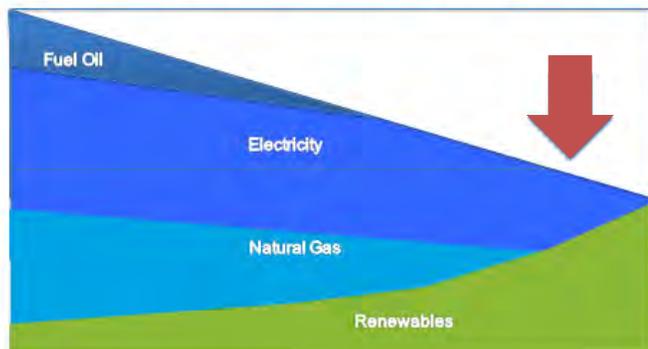
In December 2013, the City of Cambridge created the “Getting to Net Zero Task Force,” charged with advancing Cambridge’s transition to become a “net zero community.” The goal of this initiative is for buildings in Cambridge to collectively consume net zero energy.

WHAT IS NET ZERO?

For the purposes of this initiative, Cambridge has adopted the following working definition: “a community of buildings that collectively achieve net zero emissions in their operations, through infrastructure, energy efficiency, and renewable energy strategies.” The net zero target is at the community level – all buildings in Cambridge in combination - as opposed to each individual building being net zero. To achieve net zero, a combination of tactics must be implemented including:

- Use less: Reduce energy use through conservation and behavior change
- Retrofit buildings: Improve building performance through upgrades and improvements
- Shift to cleaner energy sources: Phase out carbon intensive fuels and invest in renewables
- Explore neighborhood scale solutions: Improve efficiency through district energy & land use planning

Net Zero Buildings Target



This figure illustrates a pathway to net zero energy. The general approach is to significantly reduce energy consumption through conservation and retrofits; incrementally reduce consumption of fossil-fuel based energy, replacing with renewable and low-carbon sources such as solar or heat recovery technology.

GET INVOLVED

Community members are encouraged likewise to contribute to this effort by sharing ideas with the City of Cambridge. Ideas can be submitted by email to ekokinda@cambridgema.gov. If you would like to receive updates on the Net Zero Task Force’s progress, and hear about related initiatives and events please contact Ellen Kokinda at ekokinda@cambridgema.gov.

In fall 2014, the City will host a panel discussion and there will be an opportunity for the public participate. Residents are invited to learn more about the net zero target, hear from experts and share ideas. Sign up for updates to hear details about this and related events. <http://www.cambridgema.gov/CDD/Projects/Climate/netzerotaskforce.aspx>,: #netzerocamb

THE TASK FORCE

The 15-member task force includes residents, community advocates, business and property owners, developers and representatives of local universities. The group’s objective is to develop long and short term recommendations to support the net zero target. The Task Force meets monthly through December 2014. Working collaboratively with a team of technical consultants and supported by City of Cambridge staff, the group is focused on developing strategies to achieve net zero in four key areas:

1. Planning & Regulation
2. Incentives & Financing
3. Low-Carbon Energy Supply & Offsets
4. Engagement & Behavior Change

This mid-year juncture marks the halfway point in the Task Force process. Bolstered by the work of four working groups (focused on the four areas above), and informed by research on municipal best practices in zero carbon community planning, an in-depth analysis of current and trending characteristics of how Cambridge buildings use energy, and a study on renewable energy supply options, the Task Force is positioned to make recommendations about how to set Cambridge on the path to net zero.

Ultimately, project outcomes will include identification of areas of opportunity as well as areas that require further exploration.

EARLY ACTIONS

Part of the Task Force's mandate was to recommend a set of "early actions," which were proposed in April 2014:

- That the City of Cambridge update its zoning ordinance for design of new buildings from LEED¹ Silver to LEED Gold before the end of the year;
- That the City advocate for an update to the State 'stretch' building code which mandates better energy performance; and
- That Cambridge adopt a building energy reporting and disclosure ordinance

MUNICIPAL BEST PRACTICES

An initial consultant study presented a cross section of North American cities that are taking an aggressive approach to carbon reduction. While targets and timelines varied among the respective municipalities, the research revealed a number of patterns and trends. Success factors included strong leadership, collaboration, and a comprehensive approach including policy, incentives, engagement, measurement and capacity building.

[Policy Best Practices Report](#)

ENERGY USE IN CAMBRIDGE

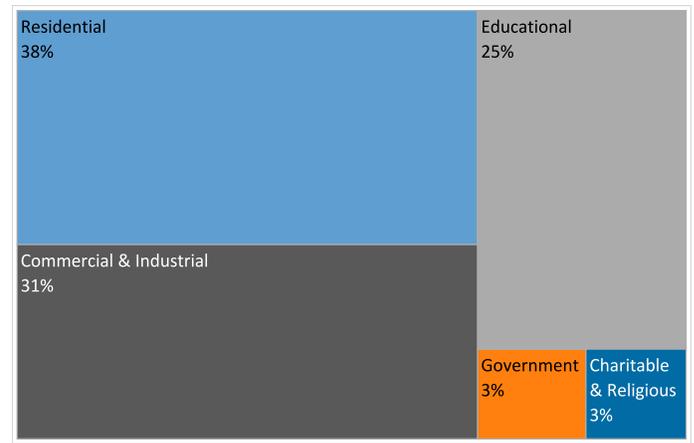
To achieve the net zero target, it is important to have a clear idea of the key characteristics of Cambridge's building stock and the amount and type of energy that is used to heat, cool and provide electricity to buildings. A research study was undertaken to provide a snapshot of how buildings in Cambridge use energy, broken down by building type, fuel mix, and patterns and trends over time. A key challenge for the Task Force is to gain a detailed understanding of energy consumption by building use type in order to propose strategies that are likely to succeed.

Below is a visual representation of the proportion of building types in Cambridge. While the total square footage is relatively evenly split between residential, commercial & industrial (C&I) and educational sectors, it is important to note that residential buildings typically produce less carbon per square foot than non-residential buildings.

One of the positive findings in this research was that while Cambridge has grown both economically and in population over the past 10 years, its GHG emissions have remained relatively constant. This means that Cambridge is slowly becoming less carbon intensive primarily as a result of efficiency improvements

and transition from oil and coal to natural gas for electricity generation. While improvements from fuel switching have been significant, the GHG impact has already been realized, and as such there is a need to explore and implement other strategies to meet

Building Square Footage by Sector



carbon neutrality targets.

RENEWABLE ENERGY SUPPLY OPTIONS

Boosting Cambridge's supply of renewable energy is key to achieving a net zero energy balance. Renewable energy technologies typically found in an urban environment include solar heating and solar electricity, geo-exchange and heat recovery, and organics combustion and gasification.

Renewable energy systems can be applied at different scales: at the building level (e.g. rooftop solar), at the district scale, where a local energy plant feeds heat or electricity to buildings within a finite geographical area (e.g. Kendall Square); or, less common in a dense urban environment, a renewable energy plant that feeds energy into the grid (e.g. a solar farm).

NEXT STEPS

This project is a community-driven initiative, involving industry experts, the business community and research institutions. In addition to the Task Force meetings, 25 working group participants meet regularly to discuss specific tools and tactics that will ultimately feed Task Force recommendations. Both Task Force and working group meetings are open to the public.

This summer, the Task Force and working groups will be developing a set of scenarios for how to achieve the net zero target, which will then be vetted and prioritized in the fall. At this point that the Task force will start to formally integrate public comments, noting that there is opportunity for the public to provide input throughout the process (see GET INVOLVED). The final recommendations are scheduled to be delivered by the end of 2014.

¹ LEED, or Leadership in Energy and Environmental Design, is a rating system for green buildings. See USGBC.org.