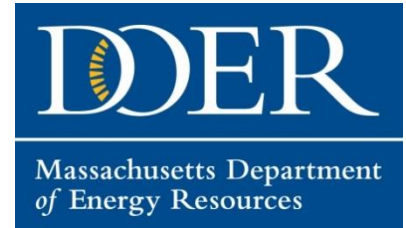


High Performance Building Resources in Massachusetts

High Performance Buildings

Commercial and residential buildings are major contributors to greenhouse gas emissions. Buildings consume 40 percent of primary energy used annually in the United States and 54 percent of energy used annually in Massachusetts.



Municipal buildings serve the citizens of the community as schools, meeting spaces, emergency shelter, offices; they are community centers and are an asset to a community in good times as well as challenging ones. High performance buildings, specifically zero energy buildings and buildings built to passive standards, are significantly more comfortable, resilient, and better able to survive power outages because they incorporate robust building envelopes, on-site renewables and quality windows.

How to Get Started constructing a High Performance Building

1. Talk to the community about the benefits of high performance buildings.
2. Establish energy efficiency, renewable energy and resiliency as a goal early in the project to focus the project team and drive cost efficiency.
3. Select a design team and OPM with experience in high performance buildings.
4. Contact Mass Save early in the design phase to be eligible for financial incentives and technical assistance
5. Do the math – for example if a \$1m up-front investment in energy efficiency and renewables will save the community \$3m in energy costs over the next 30 years, does that align with the community's goals?

Zero Energy Buildings

The U.S. Department of Energy released *A Common Framework for Zero Energy Buildings* in 2015 which defines zero energy buildings as one “where, on a source energy basis, the actual annual delivered energy is less than or equal to the on-site renewable exported energy.”¹

- **Zero Energy Building Case Studies:** The Pathways to Zero Grant Program was launched by the Massachusetts Department of Energy Resources (DOER) in 2014 to support the development of the zero energy building market in Massachusetts. Completed construction projects have posted case studies to the NESEA Case Study Database which can be found here: <http://nesea.org/search-case-studies>

Passive Buildings

Passive buildings follow a rigorous level of energy efficiency which focuses on minimizing energy loss and maximizing solar gain and energy recovery. By using airtight continuous insulation, high performance windows, and energy-recovery ventilation, Passive buildings require minimal, near negligible, heating and cooling, reducing energy consumption by up to 90%. Passive design has been successfully used on many building types and sizes, including single family homes, offices, multifamily apartment towers, and schools.

- **Resources**
 - Passive House Institute (PHI) <http://www.passivehouse.com/>
 - Passive House Institute U.S. (PHIUS) <http://www.phius.org/home-page>

¹ Read the full U.S. Department of Energy released *A Common Framework for Zero Energy Buildings Report* at https://energy.gov/sites/prod/files/2015/09/f26/bto_common_definition_zero_energy_buildings_093015.pdf

Mass Save® - <http://www.masssave.com>

Mass Save provides no-cost energy efficiency audits, as well as trainings, rebates, incentives and financing for both existing buildings and new construction. Visit MassSave.com and enter in your zip code to find your program administrator and start taking advantage of energy savings opportunities for your home or business.



Mass Save New Construction Resources:

- Residential New Construction (3 stories or lower)
 - <https://www.masssave.com/en/saving/residential-rebates/new-construction/>
- Multi-Family High-Rise New Construction (4 stories or higher)
 - <https://www.masssave.com/en/saving/residential-rebates/multi-family-high-rise-new-construction/>
- Commercial New Buildings and Major Renovations
 - <https://www.masssave.com/en/saving/business-rebates/new-buildings-and-major-renovations/>

MassCEC – <http://www.masscec.com>

- Mass CEC funds studies and provides rebates for the assessment and installation of clean energy projects
- Generate your own power with renewable energy
- Speak with a solar installer to find out if solar electricity is right for you.
- Contact MassCEC at (617) 315-9355 to find out about MassCEC incentives available to homes and businesses.



EnergyCENTS - The DOER manages the EnergyCENTS database where you can find information on rebates, loans and financing for electric vehicles, appliances, home energy assessments, and solar electricity available in the Commonwealth. <http://www.mass.gov/energycents>

Green Communities

The Department of Energy Resource's Green Communities Division strives to help all 351 Massachusetts cities and towns find clean energy solutions that reduce long-term energy costs and strengthen local economies. The division provides technical assistance and financial support for municipal initiatives to improve energy efficiency and increase the use of renewable energy in public buildings, facilities and schools.

Four regionally-based clean energy experts are available to help answer your questions, provide advice, and assist your municipality with energy efficiency and renewable energy initiatives.

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Kelly.brown@state.ma.us

Phone (508) 767-2703

Mobile (617) 780-8144

Neal Duffy – Northeast Region

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