OFFICE OF TECHNICAL ASSISTANCE & TECHNOLOGY

KEEPING MASSACHUSETTS GREEN AND LEAN

What You Should Know About Installing On-site Renewable Energy for Your Massachusetts Business

An increasing number of businesses in the Commonwealth are taking an interest in renewable energy. Reasons include wanting to cut energy costs, reduce dependence on fossil fuels, minimize greenhouse gas emissions, stay competitive, and be a responsible neighbor within their community. The Office of Technical Assistance and Technology (OTA) is committed to helping businesses achieve these goals and has provided this fact sheet to address some of the most common questions regarding renewable energy systems in Massachusetts.

An OTA survey of businesses that installed on-site renewable energy systems and found the following: paybacks were 5-10 years; management support was critical to project success; project installation timelines were generally longer than expected; and every business representative interviewed said if they had it to do over again, they would.

State Financial Incentives

The SMART program is available for solar photovoltaic installation.[1] The highest SMART incentive rates are available to those who apply to the program first and to projects that qualify for incentives above base-level. Massachusetts Clean Energy Center (MassCEC) provides grants and rebates for several other renewable energy types including wind and solar hot water.[2] Eligibility criteria can be found on the MassCEC website. Customers of municipally owned electric utilities are not eligible for state incentives unless their utility has chosen to participate in these or other similar programs.

Solar Hot Water at Fresh Hair Salon
Photo Courtesy MassEnergy

Federal Financial Incentives

Tax incentives, grants, and loans are also available from the federal government for renewable energy projects.[3] A combination of tax credits and accelerated depreciation can fund significant portions of some types of renewables projects (such as solar) and are a common source of funding. In addition, companies meeting the definition of a small, rural business are eligible for grants and guaranteed loans from the USDA for most types of renewable energy projects. All federal funding is subject to periodic re-appropriations or expiration; therefore, future funding could be expanded or possibly reduced or eliminated. Federal incentives have remained largely unchanged for over a decade; however, they are currently scheduled to decline in future years.

Production-Based Incentives

A renewable energy system can provide energy, reduce expenses for electricity or fuel, and provide an additional source of revenue. Renewable energy certificates, net metering, the ISO forward capacity market, and the federal renewable electricity production tax credit are on-going sources of money that businesses may be able to receive for producing renewable energy. Note, however, that forgoing certain production-based incentives may be a condition of receiving other types of financial incentives.

Wind Turbine at Jiminy Peak
Photo Courtesy Jiminy Peak

Implementation of Renewable Energy Systems

- Implementing energy efficiency measures should precede any renewable energy project. Energy efficiency can result in energy savings comparable to renewable energy and often has a payback of 2 years or less whereas most renewable energy projects will have at least a 4-5 year payback after funding incentives.
- For businesses not wanting to incur capital costs, a number of renewable energy system integrators offer third party ownership and operation of equipment through a power purchase agreement (PPA). With a PPA, integrators install, own and operate the system; and the host facility purchases the power generated through a contract with the integrator.

Updated: March 2019

The keys to successful renewable energy projects are top-level management commitment and appropriately selecting a renewable energy technology based on your area's natural resources and your business's demand for energy. The following gives some points to consider when evaluating some of the main renewable technologies in Massachusetts.

Wind

Where sufficient wind resources exist, wind turbines can have among the best payback of any renewable energy source and have the potential to produce very large amounts of electricity.[4] Ideal locations have average wind speeds of at least 6.5 m/s (14.5 mph), 24/7 operations, and are not in close proximity to an airport. There should also be enough land area so that the turbine is a sufficient distance from buildings, property lines, and residences. Note that permitting issues vary significantly and can impact the viability of a wind turbine project.

"Jiminy Peak's wind turbine helps our company stay ahead of our competition by providing safe, stable, and consistent renewable energy."
- Jim Van Dyke, Jiminy Peak, 1.5 MW wind

Solar (PV) at Bixby Intl. Corp.
Photo Courtesy Bixby Intl. Corp.

Solar

Solar energy can be used to produce electricity, heat, or hot water. As solar energy is a relatively diffuse resource, these systems have the potential to take up a considerable amount of space. Ideal sites for solar projects have high energy use (or charges) around mid-day, particularly in summer. They also have large amounts of low-cost, structurally sound, obstruction-free space that will allow panels to receive direct sunlight between 9am and 4pm with little to no shading. Usually this is a flat or south-facing rooftop that will not need replacement soon or that will be replaced in conjunction with the solar installation.

Biomass

Biomass (e.g., wood), biofuels (liquid fuels derived from agricultural products), and biogas can be good energy sources for businesses with significant heating needs. Businesses that already produce bio-based waste streams can most directly benefit, though these fuels are also readily procured throughout the Commonwealth. Bio-based projects require significant space for equipment and fuel storage. Bio-based energy projects can also incorporate combined heat and power, often improving system economics and environmental benefits.

"Alternative energy solutions offer valuable economic and environmental benefits to small and large companies alike."
- Dean Cycon, Dean's Beans Organic Coffee Co., 10 kW solar (PV)

Hydropower at Riverdale Mills
Photo Courtesy Riverdale Mills

Small Hydroelectric

Businesses that own an existing dam or water conduit at their facility may benefit from on-site hydroelectric generation. Dam owners are already required to properly maintain dams. Therefore, adding, refurbishing, or upgrading a hydroelectric system in conjunction with dam repair can be cost effective. Actual energy production is based on the water flow rate (which can be seasonal) and height, but a few hundred kilowatts is typical. Installing on-site hydroelectric generation requires licensing or an exemption from licensing from the Federal Energy Regulatory Commission (FERC), which can be a lengthy process unless FERC's advice for expediting the process is followed.[5]

[1] http://masmartsolar.com/
[2] https://www.masscec.com/get-clean-energy/business
[3] http://www.dsireusa.org/
[4] http://massgis.maps.arcgis.com/apps/MapSeries/index.html?appid=96092ccc12814f30b4133fedca086b2c
[5] https://www.ferc.gov/industries/hydropower/gen-info/licensing/small-low-impact.asp

The Office of Technical Assistance and Technology (OTA) provides a range of non-regulatory assistance services to help businesses cut costs, improve chemical use efficiency, and reduce environmental impact in Massachusetts. For further information about renewable energy or about OTA's technical assistance services, contact Michelle Spitznagel at (617) 626-1065 or Michelle.Spitznagel@mass.gov.

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