



# Commonwealth Organics-to-Energy

## Massachusetts

### Program Description

The Commonwealth Organics-to-Energy program, offered through the Massachusetts Clean Energy Center (MassCEC), began in September 2011. Since the program's inception, it has provided grants for anaerobic digester projects. Anaerobic digestion is the process of recovering renewable biogas through the fermentation of wastes and biodegradables. For anaerobic digestion to work efficiently, the process typically requires supplemental heat to reach optimal temperatures. A CHP system can supply the necessary thermal energy to the fermentation process while simultaneously producing electricity with the renewable biogas, which significantly reduces costs and emissions.

Under the Organics-to-Energy program, grants for anaerobic digesters are available to customers of electric utilities that pay into the Massachusetts Renewable Energy Trust Fund: Fitchburg Gas and Electric Light (Unitil), Massachusetts Electric (National Grid), Nantucket Electric (National Grid), and Eversource. Customers of any municipal light plant department that pays into the Renewable Energy Trust are also eligible. Three separate solicitations under the program have specific eligibility requirements and are summarized below.

#### Technical Services/Technical Study Grants

Only public entities (i.e., government or not-for-profit) are eligible. Grants of up to \$50,000 per entity are available, with a 10% cost-share responsibility. Eligible activities include:

- Technical assistance in the development, evaluation, and procurement of contracts through a request for qualifications/request for proposals process
- Technical assistance for proposals to site Organics-to-Energy facilities within a public entity's jurisdiction
- Public engagement processes for matching community needs with organics processing options
- Pre-feasibility studies for sites, generator clusters, or technical approaches to handling identified organic waste streams

#### Feasibility Studies

Both public and private entities are eligible. Grants of up to \$45,000 per entity are available, with a 5% cost-share responsibility for public entities and 20% cost-share responsibility for private entities. Eligible activities include:

- Evaluating feedstock
- Determining technical and engineering feasibility
- Assessing interconnection requirements
- Identifying community impacts or issues, among other activities

**Commonwealth Organics-to-Energy Program:**  
<https://www.masscec.com/program/commonwealth-organics-energy>

#### Implementation and Pilot Projects

Both public and private entities are eligible. Pilot projects may be eligible for up to \$250,000, and implementation projects may be eligible for up to \$500,000. Cost-share responsibilities are a minimum of 25% for design-phase costs and a minimum of 50% for construction-phase costs for both private and public entities. Eligible activities include:

- Designing, permitting, and construction
- Equipment installation and/or commissioning

## Program Outcomes



**The Greater Lawrence Sanitary District**

SOURCE: MASSACHUSETTS CLEAN ENERGY CENTER

With financial assistance from the Commonwealth Organics-to-Energy program, the Greater Lawrence Sanitary District (GLSD) wastewater treatment plant implemented many improvements. The GLSD converted the three existing digesters, built in 2002, to accept liquefied food wastes. The District also built a fourth digester and installed 3.2 MW of CHP in the form of two 1.6 MW Caterpillar engines. Each digester holds 1.4 million gallons of sludge and can store 48,500 cubic feet of methane gas. The project brings in source-separated organics<sup>1</sup> to mix into the sludge fed to the digester. This new feedstock increases the amount of methane produced and is used to generate enough electricity to make the facility a net-zero energy user. In total, the digesters can produce 400,000 cubic feet per day of methane, which is equivalent to 260,000 cubic feet of natural gas.

This innovative project, completed in December 2019, is estimated to recover 10 MMBtu/hour of heat from engine exhaust. This heat is routed to the digesters' heat exchangers and to the operations building, when needed. The project allows GLSD to continue operating at full-scale waste processing rates in "island mode" during grid outages caused by hurricanes, snowstorms, or other events. Assuming normal operations, the improvements generate up to \$2.5 million in annual power cost savings. The Massachusetts Department of Energy Resources estimates that the project will reduce GLSD's greenhouse gas emissions by 20%, equivalent to the emissions produced by roughly 1,000 cars.

## Additional Support for Wastewater Treatment Plants in Massachusetts

Wastewater treatment plants in Massachusetts may be eligible for support from programs beyond Organics-to-Energy. Several organizations in the region support feasibility studies and technology implementation. For example, the Massachusetts Clean Energy Center (previously called the Massachusetts Technology Collaborative) provided the wastewater treatment plant in Pittsfield, Massachusetts, with a \$~40,000 grant for an initial feasibility study of CHP and digester technology. The Massachusetts Clean Water Revolving Fund, or State Revolving Fund, provided the plant with \$16 million in stimulus grants, of which \$1.67 million went toward upgrading existing digesters and installing three 65 kW microturbines. The plant estimates that 29% of its total energy needs can now be generated on-site, reducing electricity costs.

## Benefits of Anaerobic Digestion with CHP

Anaerobic digestion combined with a CHP system has several benefits:

- Using renewable biogas to generate electricity, while also recovering and utilizing the thermal energy, can help make a facility a net-zero energy user.
- Thermal energy can be used onsite for the fermentation process and/or to dehydrate the biogas, which removes any moisture that could damage the engine.
- Nutrients can be converted from waste into more accessible forms for plant use, increasing crop yield and productivity.
- Greenhouse gas emissions are significantly reduced compared to flaring of built-up landfill gas.

## For More Information

**U.S. DOE NEW ENGLAND CHP TECHNICAL ASSISTANCE  
PARTNERSHIP (CHP TAP)**

[www.nechptap.org](http://www.nechptap.org)

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<sup>1</sup> Organic material such as food scraps, food processing residue, and soiled or unrecyclable paper that has been separated at the point or source of generation from nonorganic material: <https://portal.ct.gov/DEEP/Waste-Management-and-Disposal/Organics-Recycling/Commercial-Organics-Recycling-Law#SSOM>