



Mass Save®

Micro-CHP Program

Massachusetts

Program Description

The Commonwealth of Massachusetts offered an incentive for the installation of qualified micro-combined heat and power (mCHP) systems through the Mass Save® program. An “mCHP” system is defined in this program as *thermally led* [i.e. thermal load following] and capped at an electrical generating capacity of 50 kilowatts (kW_e). Mass Save® was a statewide energy efficiency program for the Commonwealth of Massachusetts, administered by participating electric and gas utilities referred to hereafter as Program Administrators.

Due to the likely higher cost-per-dollar basis for mCHP systems compared to CHP systems above 50 kW_e, the Program Administrators offered an incentive of \$2,000/kW_e for systems up to 50 kW_e of electrical output. The incentive was focused on thermally led systems that produced electricity and was not available to mechanical systems that offset electricity. Eligible systems were defined to have a combined electric and thermal efficiency of 60% or above on a Higher Heating Value (HHV) basis and conform to certain standards set by Mass Save®.

Recommended facilities noted in the program documentation included smaller non-hospital health care facilities, supermarkets, restaurants, hotels and dormitories, large multi-family residential buildings, gyms and health clubs, colleges and universities, small manufacturing facilities, and greenhouses/hydroponic farms.¹ Micro-CHP systems are optimal in facilities with high annual run hours and consistent thermal loads. Specific technologies include reciprocating engines, microturbines, and back-pressure steam turbines. The program was fuel agnostic while recognizing that most systems use natural gas.

Quick Facts

LOCATION: Massachusetts
MARKET SECTOR: Commercial
PROGRAM TYPE: Capacity Incentive
GEOGRAPHY: Massachusetts, state-wide
OVERVIEW: \$2,000/kW up to 50 kW_e
REQUIREMENTS: 60% or greater combined efficiency (HHV), thermally led, BCR > 1
PROGRAM START: 2017

Program Specifics

Commercial and industrial program incentives under Mass Save® began in 2010, however, they were targeted primarily towards larger customers. In 2016–2017, an evaluation study was completed by a Mass Save® evaluation, measurement, and verification consultant and subsequent stakeholder collaboration under the Massachusetts Energy Efficiency Advisory Council where the mCHP incentive was recommended.² The mCHP incentive program was introduced in 2017 to remove barriers to CHP adoption by reducing the upfront capital costs. The program was sundoned in 2022.

The program offered a detailed guidebook (which can be found in the “For More Information” section) describing the requirements for application for this incentive. The guidebook recommended the customer establish a dialogue with the Program Administrator during the early stages of developing the CHP project. By doing so, the customer would receive feedback and be notified whether their proposed system met the minimum criteria for this incentive.

¹ <https://www.masssave.com/-/media/Files/PDFs/Business/A-Guide-to-Submitting-mCHP-Applications-for-Incentives-in-Massachusetts.pdf>

² https://ma-ceac.org/wp-content/uploads/MA-CIEC-Stage-5-One-Page-Report-Summary-P60-CHP-Process-Evaluation_final-2.pdf

The requirements to qualify for incentives included the system directly producing electricity and not simply offsetting the use of electricity, while still being thermally led. In addition, the mCHP equipment was required to have an annual combined electrical and thermal efficiency greater than or equal to 60% with fuel energy input expressed on a HHV basis. The system also needed to achieve a benefit cost ratio (BCR) test score greater than 1 using methodology prescribed by the Department of Public Utilities.

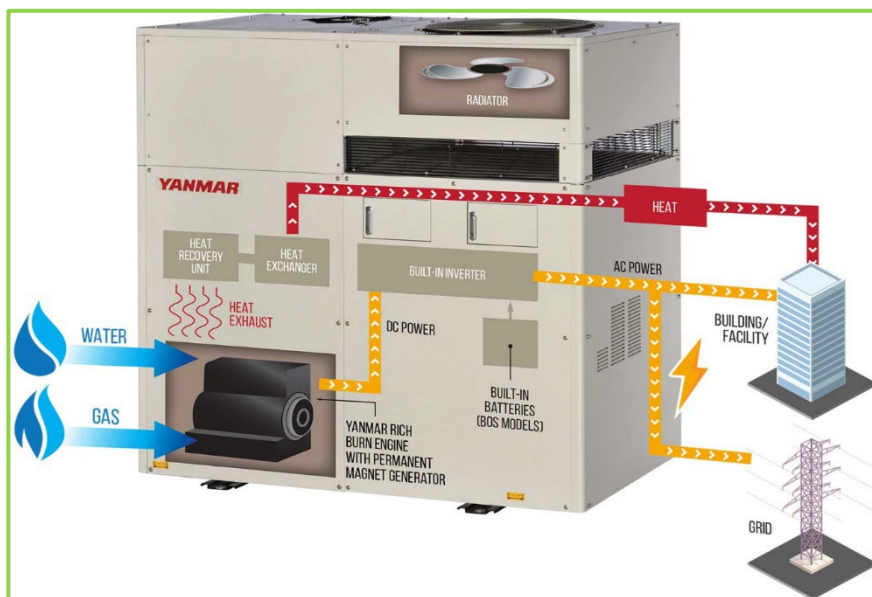
If the project qualified, the facility received up to \$2,000 per kW_e at the discretion of the Project Administrators. This incentive was limited to a maximum of 50 kW_e per site in aggregate distributed generation behind one meter.

Example of Program Outcome

In 2017, Equity Residential contracted Dalkia Aegis EDF Group in partnership with their local utility, Eversource, to install and commission a 35 kW_e Yanmar mCHP system in each of their three properties in Cambridge Massachusetts: Third Square Apartments, The Lofts at Kendall Square, and Church Corner apartments.³ Eversource provided \$102,000 in incentives through the mCHP program to offset the upfront costs of the project.

The electrical energy provided by the mCHP systems displace building loads previously supplied by the local utility, while the thermal energy supplies the apartments with domestic hot water and comfortable space heating. These systems have managed to lower Equity Residential's costs by more than \$90,000 annually since their installation in 2017 resulting in a 5-year payback. The systems also benefit the environment, reducing 430 tons of CO₂ annually.

After seeing the benefits of this project, Equity Residential has since installed similar mCHP systems at various properties across the country. After gaining experience with mCHP systems and the Mass Save[®] program, Equity Residential saw that these projects not only aligned to their commitment of sustainability, but it also made business sense.



35 kW Yanmar mCHP Model
PHOTO COURTESY OF Dalkia Aegis EDF Group

For More Information

U.S. DOE NEW ENGLAND CHP
TECHNICAL ASSISTANCE
PARTNERSHIP (CHP TAP)
www.nechptap.org

mCHP Guidebook:
<https://www.masssave.com/-/media/Files/PDFs/Business/A-Guide-to-Submitting-mCHP-Applications-for-Incentives-in-Massachusetts.pdf>

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³ <https://www.dalkiasolutions.com/en/big-results-for-equity-residential-s-micro-chp-project>