

Massachusetts Department of Energy Resources

2020 APS MINIMUM STANDARD REVIEW COMMENT

COMMENTS OF AEGIS ENERGY SERVICES, LLC.

Aegis Energy Services, LLC (“Aegis”) hereby submits its comments to MA DOER in the above-captioned stakeholder review.

Aegis appreciates the State’s comprehensive consideration of the value of CHP technologies in its decarbonization efforts and its review of the APS program as stipulated in 225 CMR 16.07 (3).

We are manufacturers and installers of Combined Heat and Power systems and are writing in support of the state’s continuing support of Combined Heat and Power (CHP) technology as part of its Alternative Energy Portfolio Standard (APS) because of its proven highly efficient use of natural gas and resulting reduction in carbon emissions. Aegis Energy has been in business for 33+ years and has successfully installed 900+ CHP systems throughout the Northeast, Mid-Atlantic, and California. Combined Heat and Power (CHP) is the simultaneous on-site generation of BOTH Heat and Electricity from a single fuel source.

We fully support DOER’s goal to incentivize reduced GHG technologies, which must continue to include CHP, despite what was erroneously written in the Daymark report. Combined Heat and Power (CHP) is recognized as a *clean energy* technology by US EPA¹ and enjoys widespread support from US DOE, 2012 Presidential Executive Order No. 13624² and numerous states throughout the country. States such as MA, NY, NJ, and even California provide incentives for installing on-site Combined Heat and Power systems. The demonstrated public and utility support for CHP technology comes from its myriad benefits, which include:

1. Highly efficient use of natural gas 85% versus central power plant of 33%. (While natural gas is being used as a “bridge fuel” over the coming decades, CHP essentially uses 85% of each molecule of natural gas in its simultaneous production of electricity and thermal energy.) Such efficiency implies an overall reduction in the amount of gas used when compared to the SEPARATE generation of heat and electricity.

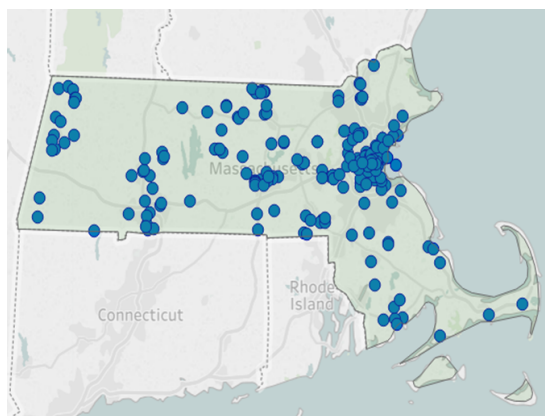
¹ <https://www.epa.gov/chp/what-chp>

² <https://obamawhitehouse.archives.gov/the-press-office/2012/08/30/executive-order-accelerating-investment-industrial-energy-efficiency>

Likewise, on site generation of electricity results in reduction of peak demand and thus overall electricity reduction.

2. Reduced pollutant and CO2 emissions when compared with separate generation of heat and electricity.³ (50% less)
3. Reduced energy costs for end-users and ratepayers.
4. Reduced loads and peak loads on central power grid.
5. Resiliency in the wake of power outages. CHP technology can be configured such that it also provides standby power during a grid outage.
6. Reduces utility's need to invest in capital intensive generating capacity thereby reducing rate base.
7. Reduces utility's need to invest in distribution lines thereby avoiding challenging distribution build out and costs, which eventually are passed to ratepayers.
8. Integrates well with micro-grids or other renewable energy sources.

Combined Heat and Power technology has already been adapted across Massachusetts by non-profits, health care, municipalities, industry, and privately-owned multi-family buildings, thereby already making it a **relevant technology** in the state's portfolio with many entities relying on the revenue streams of energy savings AND sales of AEC's. (See map below)⁴



The blue dots in the above map represent, in part, a wide range of non-profit entities such as nursing facilities/hospitals, YMCA's, local housing authorities, universities, and public schools.⁵

Mass Save, the State's electric utility efficiency program incentivizes and supports CHP because the "increased efficiency of CHP mostly leads to a lower carbon footprint because of reduced greenhouse gas

³ US Environmental Protection Agency, CHP Partnership, <https://www.epa.gov/chp/chp-benefits>

⁴ US Department of Energy
<https://betterbuildingssolutioncenter.energy.gov/sites/default/files/tools/Massachusetts.pdf>

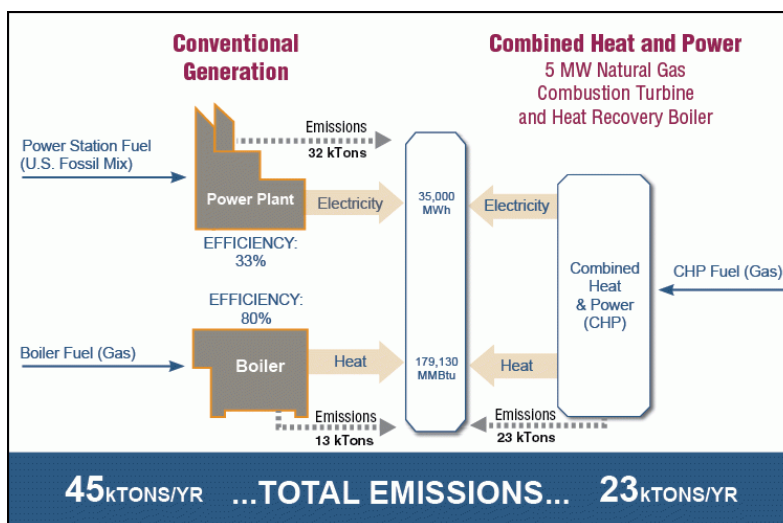
⁵ <https://doe.icfwebservices.com/chpdb/state/MA>

emissions”. Other significant benefits of the CHP system may include standby power capability at the facility and better control of power factor, depending on type of generator and controls used.”⁶

Challenges to the Daymark Study

The Daymark Study incorrectly assumes that CHP has zero GHG reduction benefits and models its study as such. “Natural gas fueled CHP does not provide GHG emission reductions.”⁷ This is undeniably incorrect as indicated by several leading authorities including EPA, DOE, and Mass Save, and thus leads to faulty conclusions and ultimately faulty recommendations.

The classic diagram from the EPA is shown below, which clearly outlines the resulting reduction in GHG emissions as a result of deploying on-site CHP.



US Environmental Protection Agency, CHP Partnership, <https://www.epa.gov/chp/chp-benefits>

The Daymark study approach looks at the average grid emissions when evaluating technologies which understates the value of CHP in reducing carbon emissions.

However, there is an even more compelling approach called, “marginal grid emissions” which looks at the role that Distributed Energy Resources (DER), including CHP play in displacing the marginal, dispatchable, gas and fossil fueled grid technologies, which are more carbon intensive. Since renewables are not dispatchable, they are used in the baseload mode and then other fossil fueled plants are brought online as demand increases. In this way, electric peaks may be moderated by CHP dispatchment and thus avoid the more carbon intense marginal utility resources that would have to be brought online during seasonal and daytime peaks. A report by ITC elaborates on this concept and advocates the carbon emission savings of CHP at least through the year 2050, and possibly beyond. “Using all-source average emissions rates would underestimate the potential for emission savings from CHP as the all-source rate includes generation from non-emitting resources such as solar, hydro, wind and nuclear that would not be displaced by CHP systems, and that are therefore static regardless of the CHP system’s installation. The average fossil and non-baseload emission factors, on the other hand, are representative of units on the

⁶ <https://www.masssave.com/-/media/Files/PDFs/Business/A-Guide-to-Submitting-CHP-Applications-for-Incentives-in-Massachusetts.pdf?la=en&hash=150554F73A76F9FD51E0D6C766BF33F25941D569>, p. 2

⁷ Daymark Energy Advisors, *Alternative Energy Portfolio Standard Review*, October 30, 2020, p.7

margin and reflect the emissions of units that would most likely be displaced by CHP systems, and which can therefore be compared to CHP emission rates to estimate savings.”⁸

Given the above, the conclusion drawn by Daymark that CHP does not provide GHG emissions reductions, leads to the fallacy that it does not contribute an environmental benefit and is not worthy of incentives.

Our recommendations include the following:

Short-Term:

- 1) Increase the requirement of electric LSE’s to purchase AEC’s.
- 2) Investigate the model used by RPS program, which incorporates floors and auto-correcting functions within the market.

Long Term:

- 1) Investigate the impact of requiring natural gas LDC’s to purchase AEC’s and the pathway for doing so.

In summary, we support DOER efforts to decarbonize electric/thermal sources in Massachusetts and we and other authorities continue to believe that natural gas CHP plays an excellent “bridge function” as part of this effort. In addition to the environmental, efficiency, and cost benefits noted above, a CHP installation has many benefits for the State of Massachusetts, which we hope you will consider when evaluating these comments. CHP installations can help keep electric rates in check over the long run as utilities do not have to build additional capital-intensive generating capacity and distribution lines, the costs for which are passed down to commercial and residential customers, thus contributing to stable utility rates for a business-friendly environment. Likewise, these installations employ local skilled trades labor both for installations and on-going maintenance of these systems, which contributes to local employment. Supplies for the installations and maintenance are sourced from local businesses, as well.

⁸ Combined Heat and Power Potential for Carbon Emission Reductions, National Assessment 2020-2050, ICF Group, July 2020, p.11