



December 3, 2020

SUBJECT: VERGENT POWER SOLUTIONS, INC. COMMENTS IN SUPPORT OF COMBINED HEAT AND POWER IN MASSACHUSETTS' AEC PROGRAM

Vergent Power Solutions is the distributor for Capstone Turbine Corporation for New England, the Midwest and Eastern Canada. Our company develops Combined Heat and Power (CHP) projects across North America and provides service to our existing microturbine fleet of over one hundred fifty operating plants.

Our New England sales and service facility is in Woburn. In Massachusetts, we have CHP systems operating with many end users in the Commercial, Industrial and Institutional markets, such as Mass Maritime Academy, South Shore Hospital, MathWorks, Northampton Veterans Affairs hospital, Garelick Farms, and National Grid LNG, among others. We currently have dozens of new projects under development in the Commonwealth.

We are commenting because, like many other allies of energy efficiency, we are troubled by the Daymark report, which makes numerous erroneous claims disparaging CHP based on inaccurate emissions and financial data. Our responses to some of the questions posed by DOER are included in our comments, but overall our position is the following:

1. The Daymark report relies on wildly inaccurate costing data for CHP projects to make its argument that CHP does not need programmatic support from the AEC program;
2. The Daymark report does not use the correct carbon emissions data for the grid power that CHP plants can offset, namely that of non-baseload power plants;
3. The effectiveness of the AEC program has been negatively impacted by price volatility and lack of price support that deters investment in CHP projects.

We also support the comments of the New England CHP Initiative and the US Combined Heat and Power Alliance.

Thank you.

A handwritten signature in black ink, appearing to read 'Justin Rathke'.

Justin Rathke
President
Vergent Power Solutions

1. What are the benefits of the APS program to ratepayers, including but not limited to economic, environmental, and societal benefits?

Combined Heat and Power (CHP) systems are eligible under the Massachusetts APS program. CHP has myriad economic, environmental, and social benefits, including:

- Delivering energy savings to commercial, industrial and institutional users across the entire economy. Stable and low natural gas prices have resulted in a positive “spark spread” between the cost to generate power and heat using natural gas versus grid power. Grid electricity in Massachusetts and other states have continued to rise as utilities are confronted with investments in aging grid infrastructure, renewable energy and other capital costs. Natural gas CHP represents a vital hedge against rising grid prices for many businesses and communities. CHP as a hedge provides an economic lifeline to users in Massachusetts allowing them to better compete in the wider economy.
- CHP has become even more needed in the COVID era as businesses and communities are faced with falling revenues and profits. Many industries have not been, and likely will not be, bailed out by government subsidies. Lowering operational costs with measures such as CHP can be these users’ only means to counter the pandemic’s economic toll. In light of the pandemic, the DOER should be looking at ways to increase, not decrease, support for CHP through the AEC program.
- CHP reduces particulate emissions and carbon emissions. When designed properly as highly-efficient CHP, a CHP system lowers emissions compared to non-baseload power generation and separate production of thermal energy. For example, a 70 percent efficient CHP system using Capstone Microturbines emits approximately 625 lbs/MWh of CO₂ whereas the Massachusetts grid’s non-baseload sources emit 914 lbs/MWh, according to the EPA’s egrid data from 2018. Particulate emissions reductions from other pollutants such as NO_x are even more significant when comparing low emission CHP to the grid. The Daymark made significant errors in quantifying carbon intensity for the generation that would be offset by CHP systems.
- CHP can provide valuable locational grid support to constrained utility infrastructure. The new UL1741SA grid interconnect standard rightly identifies DER’s ability to support grid insecurity.
- CHP is among the only DER’s that are truly capable of making facilities more resilient. CHP is often used as the backbone for microgrids for this reason. The DOE has identified CHP having advantages over traditional backup systems.
(www1.eere.energy.gov/manufacturing/distributedenergy/pdfs/chp_for_reliability_guidance.pdf)
- The CHP industry, like the clean energy industry as a whole, is a valuable generator of jobs and economic growth. Unlike static and established industries such as the utility industry, CHP can provide job expansion in Massachusetts if properly supported. Right now, this expansion is under threat from the pandemic and economic recession.

2. Do you believe the APS program should prioritize technologies which provide the most benefits, such as greatest greenhouse gas emissions reductions?

The APS program should look at the spectrum of benefits when assessing technologies, including economic, social and environmental. It is important to note that not all users can install solar PV or heat pumps due to limitations in size or location. CHP is in many ways a more universally employable technology because CHP does not require significant space outside and on rooftops, whereas solar PV does, and the waste exhaust can be converted into multiple high quality heat streams (steam, hot or chilled water).

CHP projects are also much more complex than solar projects, requiring significant engineering and design work and skilled construction to integrate the CHP system with the building's electric and thermal systems. Unlike commodity costs like solar panels which can decrease over time, engineering and skilled labor costs are constantly increasing, and CHP projects are more exposed to these soft costs than are renewable projects. In particular, the economic return of small-scale CHP projects are encumbered by design and installation costs, especially in high labor cost states such as Massachusetts.

8. Has the APS incentive had an impact on the decision of system owners to invest in APS eligible technologies? Why or why not.

Yes, the AEC program has had a positive impact on customer decision-making. Unlike the Mass Saves program which provides an initial jolt to the project, the multi-year nature of the AEC program improves cash flows in the critical five to ten-year period of operation. AEC cash flows are important to reduce the ongoing cost of maintenance or financing costs. The AEC program is also an important signal to customers that Massachusetts supports CHP technology, which can be helpful for customers adopting a new technology for the first time.

The costing assumptions for CHP used in the Daymark report drastically understate the true costs of doing a CHP project. In the experience of our company, the majority of well-designed CHP projects cost in the \$4,000 - \$6,000 per kilowatt of installed power. Paybacks tend to be in the five to seven-year range without any incentives. Incentives such as Mass Saves and the AEC program allow for paybacks in the three to five-year range, which are much more attractive to customers. Particularly in this economic climate, the majority of customers will not pursue projects with longer than a five-year payback. Thus, the AEC program is an essential revenue stream for the success of the CHP market in Massachusetts.

11. What revisions to the existing APS eligibility criteria would you propose to improve and simplify the APS program, if any?

Currently, the AEC program is fairly volatile in terms of price and term which are problematic when financing the AEC's as predictable cash flows. We recommend a minimum contract period and pricing support similar to the MA Smart Solar program. In recent years, AEC pricing has been much lower than what is needed to effectively support CHP projects. We urge the DOER to examine ways in which to bolster the price, and thereby the effectiveness, of the AECs. One market-based solution would be to increase the demand pull by requiring electric utilities to purchase more AECs than they currently do. Without this increased demand, AEC pricing will not effectively encourage investment in CHP.