

December 4, 2020

Ms. Samantha Meserve  
Deputy Director, Renewable and Alternative Energy Division  
Massachusetts Department of Energy Resources  
100 Cambridge Street, 10<sup>th</sup> Floor  
Boston, MA 02114

Re: 2020 APS Minimum Standard Review Stakeholder Questions

Dear Ms. Meserve:

R.G Vanderweil Engineers, LLP is a consulting engineering firm headquartered in Boston Massachusetts with 400 employees. Our Power Group has been designing Combined Heat and Power Systems for clients for over 20 years. We have designed systems in Massachusetts receiving APS credits with a combined capacity of 65 MW serving hospitals and academic campuses in the greater Boston area and manufacturing sites in Massachusetts outside of the greater Boston area. Combined Heat and Power systems provide critical thermal and electric services our clients in healthcare, manufacturing and academics who operate large energy intensive facilities. CHP provides clients with efficient, reliable and resilient low-cost energy. The ability of CHP systems to provide resilient electric and thermal generation during grid outages provides critical services to Massachusetts's residents during severe weather events. APS program revenues have been instrumental in providing project economics which allows construction of these systems benefitting the commonwealth.

### **Response to Questions**

1. The APS program results in reductions in greenhouse gases and air emissions. CHP units are base loaded and significantly reduce pollution compared to separate heat and power. The lower operating costs allow manufacturing sites to be competitive in Massachusetts which has high costs relative to other parts of the country keeping critical manufacturing jobs in Massachusetts. The ability of CHP systems to provide critical services during severe weather events or other grid disruptions provides ratepayers with hospital services, manufacturing capacity and housing at times when these services are most critical.
2. The costs of the APS program to rate payers compared to other sources should include all unintended consequences which result in impacts to ratepayers.
3. The APS program currently does prioritize technologies which provide the most benefit thru the credit calculation method. The program should provide a means to achieve the program goals by leveraging the most appropriate technology based on results. The program should not pick technologies, market cost effectiveness should drive technology.
4. No comment.
5. We believe the Current APS minimum standard and rate of increase should be increased. The market is currently oversupplied, and this will continue into the future without an increase in program size. Actual construction costs and operating costs result in project simple paybacks in most cases are over 15 years which without the APS program prevent construction of new projects. The Daymark report appears to significantly under estimate capital and operating costs for CHP systems.

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6. The APS program is a significant incentive for owners to construct CHP systems. If current APS program were to remain in place for the next 5 and 10-year periods we believe the market growth will be similar to the growth seen since program inception. Without the APS program we expect a significant decline in construction of new CHP systems. We also believe renewal will be required for assets currently in the program during this time period.
7. Market volatility can be reduced by providing guidelines on total program size and expected program participation by year. Real time information on projects coming into the program pipeline to predict when over or under supply is expected to occur would help owners in planning project timelines.
8. The APS incentive has been one of the most effective means of producing project economics which allow CHP systems to be constructed. The structure of the current calculation methods has incentivized owners to find creative solutions within their facilities to increase system efficiency to maximize credit generation. The APS incentives are very important and can make the difference to incentivize owners to install CHP which would otherwise not be installed.
9. Metering costs for small residential units can be a barrier. Developing prescriptive applications for residential should be possible to streamline the application and verification process.
10. The approval period for larger systems (over 5MW) with complicated thermal and electrical configurations can be a barrier. We have experienced a large number of iterations with DOER to work thru approval process. If more resources could be made available to expedite reviews this would be beneficial. Similarly, metering systems and the amount of data collection, storage and calculation that is required for generation of quarterly reports could be streamlined reducing costs for maintenance of the programs over the life of the project by owners. A Lessons Learned from approved projects to identify ways to streamline and improve the process would be beneficial to ratepayers.
11. We are seeing increased activity in the heat pump market as electrification takes hold. The inclusion of cooling credits should be considered in the future to expand market penetration.

We appreciate the opportunity to respond and hope the Alternative Energy Portfolio Standard will be expanded in the future to continue to provide benefits to the Commonwealth.

Very truly yours,

**R.G. Vanderweil Engineers, LLP**



Christopher W. Hastings, PE  
Managing Principal

CWH/bem