12/4/2020

Samantha Meserve
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Dear Samantha:

Thank you for considering my input related to possible updates to the APS for 2020.

Re: Furthering/updating inclusion of Groundsource heat pump systems specifically…

1.) Benefits to ratepayers – Reducing carbon AND GHGs significantly via geo will dramatically affect economic, environmental and societal/health benefits to MA ratepayers. As 100% geo solutions emit ZERO local carbon and GHGs they also maximize efficiency and cut summer and winter electric load peaks compared with even the most efficient ASHPs dramatically. The additional cost to health services via continue fossil has been pegged at over $100/person annually. Also, as we electrify toward removal of all fossil fuels we create a more steady and manageable annual profile serving ISO New England with a much more flattened yearly load profile. This along with ongoing additional renewable electricity supply development will ultimately drive kw prices down.
2.) Current structure penalizes only the electric ratepayer since the feed in tariff does not require any support from the heavily subsidized oil and natural gas industry. Human health and environmental impact of continuing to incentivize fossil applications insures continued (accelerated in the case of including natural gas due to very high GHG factor) upward spiral of short and long term global warming effects. As you are no doubt aware, carbon profile of natural gas is lower comparing oil to gas, but GHGs are dramatically higher with natural gas than with fuel oil. It is frustrating to see that this fact seems to be avoided in current language/program. Instead only carbon reduction is referred to.
3.) Absolutely. NO fossil-based solutions should be included as new (however more efficient than oil) installations guarantee increased GHGs for the life of those systems. Also in the case of gas

used for currently qualifying CHP systems the heavily subsidized natural gas industry has effectively crashed the carbon price and has reduced the AEC benefit within the current structure by about 75%. Spring of 2019 we were seeing about $2/sq. ft. of a non-EStar house. Since CHP was added for APS inclusion (and subsequent crash in the carbon value) that is currently at about .55cents/sq. ft.

4.) 15 months ago our aggregator was paying out at $18.70/AEC. As of beginning of 2020 spot market was reduced to about $3.50/AEC. I am told this was almost exclusively a result of adding CHP to the program.

5.) I do not have details beyond those listed above. Moderate annual increases – as much as they are appreciated by the GSHP industry mean very little when the gas industry and several large CHP projects can so quickly crash carbon price/values.

6.) Tough to answer this one as there are so many factors at play. Some big ones are – non-consistent state and federal metrics/incentives and signals to the ratepayers related to first cost of GSHP installation. Incentives for GSHPs on the state and federal level have dropped dramatically in scope over the last 15 months with the drop in AEC values from CHP inclusion, ending of MassCEC program and reduction toward sunsetting of federal tax credit. Continued dramatic support to reducing the cost of natural gas in the Commonwealth and devaluing of carbon on the U.S. and world market are also elephants in the room in this category. The APS should be more exclusively focused on non-fossil outcomes.

7.) Yes. Remove fossil-originating elements so that carbon value and effect of renewables adoption can go back to a much more attractive option.

8.) Yes. A very dramatic effect. Instead of roughly $6000 for a typical 3000 sq. ft. house, the AEC program on current spot price for carbon now yields roughly $1600. Much more difficult metrics for selling GSHP.

9.) Yes. For reasons listed in answers to questions 7 and 8.

10.) No. As was the case with MassCEC I believe that the state, the ratepayers and ultimately the GSHP industry will all benefit by maintain the 100% heating application requirements as a full GSHP system avoids costly peak support from electric resistance and/or underperformance during peak conditions. Undersized geo will still provide a lower profile/peak than ASHPs during coldest outdoor air conditions, but 100% GSHP deployment for heat load will ALSO yield q flattened peak electrical need on the grid since 100% of load GSHPs operate at same 4.8 to 5.2 COP regardless of outdoor temp swings. The current DOER record based review holds all parties to account in realizing the true load, GHG reduction/removal and peak electrical leveling goals that the GSHP WILL provide.

11.) Remove fossil - based systems – specifically CHPs from the program and apply non-subsidized cost metrics to all fossil options in order to operate the program without coloring the cost outcomes to support continued fossil development.

12.) Review of MA TRM data related to GSHPs and engage GSHP industry experts to inform PAs/EEAC in particular to update and reflect GSHPs true annual efficiencies, especially under the well managed current DOER oversight for project qualification/performance. Current MA TRM is not accurate and varies dramatically from ASHRAE performance data.

Thank you for considering my comments!

Sincerely,

Martin Orio

Massachusetts Geothermal