CPUC Comments on SWBE001-02 Greenhouse Heat Curtain

Lead PA: SCG

Workpaper Submittal Date: 8/16/2021

CPUC Review Date: 9/15/2021

SCG Response Date: 9/17/2021

CPUC Additional comments: 10/19/2021

SCG Response Date: 10/20/2021  
CPUC comments: 11/11/2021

SCG Response Date: 11/19/2021

Please reach out to Workpaper Review Team to set up a call to discuss.

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| CPUC Comment | PA Response |
| In the ridge and furrow base case structure inputs, the roof material U-Value is listed as “N/A”, however the measure case roof material U-Value is listed as 0.45.  How is the reduction of heat loss modeled without a base U-Value number to compare with - Or is the savings for the ridge and furrow greenhouse heat curtain only due to an air infiltration decrease. | The ridge and furrow base case structure inputs assume a corrugated polycarbonate roof material, which has a U-value of 1.2 (this is the default U-value for corrugated polycarbonate in Virtual Grower, which was cross-referenced with manufacturer spec sheets). This has been added to the workpaper and reference file.  CPUC Accepted |
| The baseline case for Hoop house greenhouses (measure offering SWBE001B) is stated as double layer polyethylene covering on page 3. Based on the baseline inputs descriptions on page 6 was this supposed to be with IR film? | Yes. We will correct this to clarify.  CPUC Accepted |
| Comment 10/19/2021: Gas Savings Section text on page 5 refers to savings for the greenhouse infrared (IR) film instead of heat curtain. | This has been corrected. |
| Comment 10/19/2021: Using Virtual Grower 3 and the inputs provided, we were unable to recreate the savings in the workpaper. We tested three climate zones for the hoop house offering with gas unit heater, and 1 climate zone for the Ridge and ferrow greenhouse structure type. All tested cases showed significantly less unit savings than the submitted workpaper, by about 50% or more. (see attached) | When modeling the different HVAC types, our consultant noticed the virtual grower outputs were the same. We reached out to USDA and they informed us that the outputs of virtual grower are just for the system heating load and do not take into account system performance. In order to determine system performance, you need to divide the heating load by the system efficiency.  The outputs of virtual grower should be compared to the “Heat Load” tabs in the newly attached Simulation results reference file.  A section was added in the workpaper to describe the post processing calculations that were done to the data. |
| Comment 10/19/2021: Please provide models, secondary calculations, and backup documentation in the .zip file. | See Appendix B. Heat load Conversion in the newly attached reference file. |



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| **EnergyImpactID** | **Building Type** | **BldgLoc** | **BldgHVAC** | **Savings from Appendix B (Therm/sqft/yr)** | **Savings from EAD (Therm/sqft/yr)** | **Savings - Spot Checked (Therm/sqft/yr)** |
| SWBE001A | Hoop house | CZ01 | Unit heater | 0.52 | 0.589 | 0.589 |
| SWBE001A | Hoop house | CZ07 | Unit heater | 0.46 | 0.169 | 0.168 |
| SWBE001A | Hoop house | CZ16 | Unit heater | 1.10 | 0.720 | 0.720 |
| SWBE001B | Ridge and Furrow | CZ01 | Unit heater | 0.59 | 0.896 | 0.896 |
| SWBE001A | Hoop house | CZ01 | Hot water boiler | 0.32 | 0.3631 | 0.363 |