

Filing Receipt

Filing Date - 2024-09-10 08:44:37 AM

Control Number - 56510

Item Number - 19

TE TETRA TECH

Heat Pump Working Group Biweekly Agenda Date: 09/10/2024 @ 11:00 CDT

Contacts	Mark Bergum: (608) 316-3630 or mark.bergum@tetratech.com Graham Thorbrogger: (608) 316-3623 or graham.thorbrogger@tetratech.com
	DUO Interchance Filippi Open 50540
Access	PUC – Interchange Filing: Case 56510
	Interchange - Documents (texas.gov)
	Teams site:
	https://tetratechinc.sharepoint.com/:f:/r/teams/PUCTHeatPumpWorkinggroup/Shared
	%20Documents/General?csf=1&web=1&e=mCHkEh
	Dest Martine second bit of this and a second bit and a low
	Past Meeting recordings: <u>https://vimeo.com/channels/HPVVG</u>
Discussion	o Transition to Long Term Studies
Schedule	o
Long-term	Review of current questions for long-term research
research	Assumption testing
	Transformational approach opportunity
	Interactive effects impacts (envelope, lighting, etc.)
Measure	Completed by end of week for review for inclusion in Volume 4 of the TRM.
	 Review TRM measure and provide direct feedback or EEIP comments.
	 Convene next summer to gather initial feedback from implementation.
	 Identify TRM measures to incorporate interactive effects of VSHP.
	Check in on long-term research efforts.
Next Meetina	Sept 24 at 11:00
	Topics
	– Long term study scope



Acronym	Term
ACCA	Air Conditioning Contractors of America
	Manual J is the sizing calculation from ACCA
AHRI	Air Conditioning, Heating, and Refrigeration Institute
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
CCHP	Cold Climate Heat Pump (as defined by NEEP)
COP	Coefficient of Performance
CPUC	California Public Utilities Commission
DHW	Domestic Hot Water
DOE	United States Department of Energy
EER	Energy Efficiency Ratio
EFLH	Equivalent Full Load Hours
ER	Early Retirement
EUL	Effective Useful Life
HP	Heat Pump
HSPF	Heating Seasonal Performance Factor
IECC	International Energy Conservation Code
NC	New Construction
NEEP	Northeast Energy Efficiency Partnership
PNNL	Pacific Northwest National Laboratory
PUC	Public Utility Commission of Texas
ROB	Replace on Burnout
SEER	Seasonal Energy Efficiency Ratio
TRM	Technical Reference Manual
VSHP	Variable Speed Heat Pump

Long-term research topics

Assumption Testing

- 1. Eligibility Criteria
 - a. Can the measure be applied to Commercial?
 - b. What are critical eligibility criteria?
 - i. Does the number of speed settings matter?
 - ii. Is a matched controller necessary? What are critical components of the controller?
 - c. What percentage of heating is electric resistance in the market for Low Income, Hard to Reach, and Standard residential SOP participants?
- 2. Certification
 - a. Do the values from AHRI meet the needs of the calculations?
 - b. Is any other certification source (NEEP database) acceptable?
- 3. Load Determination
 - a. Is there a difference in equipment installed when a sizing calculation is completed?
 - b. What is the annual and peak cooling load compared to the cooling capacity in various climate zones?
 - c. What is the annual and peak heating load in various climate zones?
- 4. Summer Savings Calculation
 - a. Do we use EER/SEER/Other for peak summer calculation?
 - b. Is the EFLH_c and CF_s still valid for the variable speed units?
 - c. How does the controller impact the summer peak kW or annual summer kWh?
- 5. Winter Savings Calculation
 - a. Is the EFLH_h and CF_w still valid for the variable speed units?
 - b. How can we use HSPF (Region IV) for winter consumption?
 - c. What metric best matches the heat pump energy consumption at Texas Climate zone PDPF tables?
 - d. What is the aux. heat kW size?
 - e. What is the best way to determine aux. heat use?
 - f. How often does aux. heat engage with standard heat pumps and variable speed heat pumps?
 - g. What is the peak capacity in winter for each climate zone?
 - h. How does the controller impact the winter peak kW or annual heating kWh?

Transformational Approach

1. How do we determine if aux. heat is used for an individual install?

Interactive Effects

- 1. Can envelope be used to reduce Load of EFLH? And how is it quantified?
- 2. Can auxiliary heat be connected to Emergency DR? fan speed?
- 3. Do we want to manage and what value is created by a 'Quality Install' designation?
- 4. Can advanced control create savings? How?

5. Does commissioning the system increase savings?

Known Studies

- PNNL will do field studies in Texas and needs locations
- Consumption analysis of AMI should be possible to identify a lot of installs.