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TETRA TECH

Heat Pump Working Group
Biweekly meeting notes
Date: 05/07/2024 @ 11:00 CDT

Contacts	Mark Bergum: (608)316-3630 or mark.bergum@tetratech.com Seham Shaldoum: (608) 316-3629 or seham.shaldoum@tetratech.com
Meeting Link	**Join the meeting now** Meeting ID: 263 863 395 336 Passcode: zGGnTW **Dial-in by phone:** +1 213-357-2812,,951512004#
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
Review of Residential Measure Barriers	Residential Measure 2.2.2 (Review) • Load Calculations (Manual J & S) • Consumption hours • Right-sizing calculations (limitations to different capacities) • Winter savings for gas heat replacement – Baseline as std. heat pump • Winter savings for HP replacement – Pre and post are both equal amount of supplemental heat (77%) • Current ID of VSHP is based on SEER being greater than 15.2 • VSHP do not have the mismatched equipment concern seen with units a few years ago. • New Construction baseline = 115% of summer load • Summer and Winter Peak Coincident demand factors need to adjust based on summer peak capacity and winter supplemental heat. • EFLH is multiplied times SEER/HSPF to determine consumption. • EUL is 15 years for heat pumps.
Identification of Commercial Barriers that vary from Residential	Commercial Measure 2.2.2 • Replacement capacity limited to 20% adjustment • New Construction baseline capacity = Installed capacity • Baseline efficiencies per DOE standards or IECC2015
Proposed Discussion Schedule	○ May 7: Identification of VSHP, Load Calculation requirements, Consumption calculation (EFLH), EUL ○ May 21: Summer Peak & Sizing ○ June 4: Winter Peak & Sizing ○ June 18: Baseline Equipment and Right sizing calculation ○ July 02: Envelope incorporation ○ July 16: Draft measure
Identification of VSHP	• AHRI identifies variable speed heat pumps in several categories. The Glossary of AHRI Type Codes is saved in the Teams folder, there are 27

	categories. There may be only 3 variable speed categories, but some commercial units can be used as residential and may be part of other categories. • NEEP creates its database, and there was general agreement that it is overburdensome for the current goals of the working group. • Verified that dual speed heat pumps will be categorized with single speed heat pumps, not variable speed. • **Open Question:** Is there an opportunity for units that are not AHRI listed for this VSHP measure? **Action Item:** Identify the expected AHRI categories for variable speed heat pumps for inclusion in the TRM entry.
Identifying capacity of heating and cooling	• **Request**: Does anybody have a data set of calculated heating and cooling loads for buildings in Texas? Multiple individuals were checking their historical data to see what is available. Email Mark and Seham if you have something available and we can post anonymized data for the group. • The current standard heat pump assumption is that the heating capacity is 96% of the cooling capacity. • **Short Term Goal:** Identify template/average/reasonable performance curves for use in the TRM. • **Long Term Goal:** Research the VSHP capacity changes and identify how to manage unit variability. • References for followup: - Advanced Heat Pump Working Group (Jonathan from Daikin will provide Tetra Tech with an introduction) has collected many performance curves and may be able to support the development of a typical one. - Illinois TRM has completed work on adjustment factors for various types of heat pumps. - NEEP has built a database with 5, 17, and 47 degree F capacity points. Sam from PNNL can support research here. **Action Item:** Tetra Tech will follow up with references to present the next steps toward short-term goal at the next meeting.
Load Calculation Requirement	What are the plusses and minuses of requiring a load calculation for the VSHP measure calculation? Minus: - It is currently a large barrier to obtain Manual J calculations in programs that try to claim right-sizing in the current residential HVAC measures. Implementers see opt-out of programs when it is required. - Concern that the level of participation will be minimal if it is required. - The Manual J and S have many variables, so it will be difficult to be consistent. - There are other ways to QA install such as std. performance curves, VSHP equipment and specification identification, photographic evidence, and more prescriptive options. Plus: - The standard heat pump measure will still not require a load calculation. - It may be part of an alternate QA/QC for equipment. - Some studies are starting to show improved energy efficiency for projects with a Load Calc completed - There is an option for a Manual J Light (CoolCalc)

	- The current capacity based calculation significantly reduces energy saved if the capacity increased from the baseline to the installed. **Action Item:** Tetra Tech to follow up with PNNL about Manual J light (CoolCalc). **Action Item:** Continue conversation at next meeting.
EUL	• Currently = 15 years for all heat pump • After meeting, California based study identified the EUL could be 20 years. CPUC Group A 2023 Res HVAC and DHW EUL Study Final Report.pdf (energydataweb.com)
Next Meeting	May 21 at 11:00 Topic – Summer Peak and Sizing