



Regional Technical Forum

**June 23-24, 2026
Meeting Minutes**

Welcome, Agenda Review and Meeting Minutes

Kevin Smit, RTF Chair, began the meeting at 9:00am by calling for introductions. He counted 17 voting members present. Eric Miller, independent, moved to approve the day's agenda. Andrew Grant, Cadmus, seconded. The agenda was approved unanimously.

Christian Douglass, RTF Vice Chair, moved to approve the minutes from the May 19th meeting. Mark Jerome, CLEAResult, seconded. The minutes were approved unanimously.

Management Update

Laura Thomas, RTF Manager [Presentation](#)

Staff presented updates. There was no discussion.

Update Planning, Small Saver UES: Multi-Family Weatherization

Laura Thomas, RTF Manager, David Bopp, Contract Analyst (CAT) [Presentation](#)

Staff presented the update. After discussing RBSA data issues the RTF approved the update.

David Baylon, independent, asked if the more recently weighted RBSAs address Multi-Family in a useful way [Slide 10].

- David Bopp, RTF CAT: We didn't dig into this. This is a simple update, but we'll have to address this in the future and look more deeply into that.
- Baylon: And this is just for low-rise buildings?
- Bopp: Yes.

Grant asked why the credit on [Slide 18] is so low.

- Bopp: We made assumptions about ownership in Multi-Family buildings and who/how many would be able to take advantage of the tax credit. For that reason, it didn't apply 100%.

Grant asked if staff received any evaluation data for Multi-Family programs aside from 2023 [Slide 24].

- Thomas: I haven't.

- Bopp: The only thing I found was Energy Trust of Oregon's study which included smaller buildings that overlap with our definition. Only windows were granular enough to help us, and it wasn't different.

Grant then asked if analyzing RBSA data would inform a SEEM or REEDR modeling update.

- Bopp: Yes. If we used that approach RBSA would be critical to determine what prototypes to develop.
- Thomas: REEDR currently uses HEMS v7, but that's just a portion of the total HEMS homes. We'll be updating REEDR on the full HEMS set. We can bring this measure back in less than three years if warranted.
- Grant: And HEMS includes Multi-Family?
- Bopp: No, but when we update to REEDR, we'll consider what we can use REEDR for.
- Thomas: We're doing this for several measures, like Heat Pump Water Heaters.
- Grant: OK. My concern is the three-year sunset date. We could use a shorter sunset to force action sooner.
- Thomas: We picked three years to align with other weatherization measures. But as RTF Manager, I will monitor and if warranted we can bring the measure forward for update sooner.

Baylon asked if RBSA addresses Multi-Family separately, or if it's mushed together with other residential. He then asked, if it is mushed, can the RTF direct a change in the RBSA studies.

- Douglass: Multi-Family is tricky. We think of it as residential, but larger Multi-Family is built to commercial code. I believe the plan from NEEA going forward is to use RBSA for in-unit, and CBSA in common spaces.
- Baylon: But this measure wouldn't be helped by that. The central systems that would capture aren't relevant.
- Douglass: I think the in-unit portion of the study captures shell conditions.

Grant recalled reviewing the RBSA data collection for the upcoming round. He recalled that Multi-Family has separate data fields for ceiling construction, HVAC, site details, etc., saying they're all separate from Single Family. Grant cautioned that this is based on the previous study and offered to check to see if it is consistent with this description.

Baylon asked if billing data is available.

- Grant: They do collect billing data, but it's never great. It's only a subset. There are wild swings in the data that they try to calibrate. That's a messy process. I don't recall what they do for sites they don't have data for.
- Baylon: You'd need bills in order to consider REEDR as an alternative.
- Bopp: Agreed. Or we'd have to use older datasets that include billing data.
- Douglass: They're always trying to get the bills in addition to the audit data.

MOTION

I, Eric Miller, move that the RTF approve the Multi-Family Weatherization UES: Remove the tax credit, Change the measure name to Weatherization Low-rise Multi-Family, Keep the Category at Small Saver, Planning, Keep the Status at Active, Set the sunset date to June 30, 2029. Kyle Chase, Jefferson PUD, seconded.

Vote on the motion. The motion carries. (18 yes, 0 no, 0 abstain)

Deactivate Small Saver UES: Compressor Head Fan Motor Retrofit to ECM

Denis Livchak, RTF CAT [Presentation](#)

The RTF approved the deactivation.

MOTION

I, David Baylon, move that the RTF deactivate the Compressor Head Fan Motor Retrofit UES. Rob Marks, Snohomish County PUD, seconded.

Vote on the motion. The motion carries. (18 yes, 0 no, 0 abstain)

BREAK

Research Strategy: Irrigation Hardware Maintenance and Irrigation Hardware Upgrades

Josh Rushton, RTF CAT, Paul Sklar, RTF CAT, [Presentation](#)

After discussing the data collection and specific aspects of the strategy, the RTF approved the updates.

Baylon pointed to what looked like a really wide distribution of catch cans needed in order to make this assessment, adding that it looks like a square mile [Slide 11]. He asked if that was the intent, creating a complete map of how the water is distributed.

- Paul Sklar, RTF CAT: It's close to that. It's the entire length of the pipe, but not the whole area. It's at least one radius.
- Baylon: Do you deduce the uniformity of the sprinklers on the wheel?
- Sklar: Yes, it assumes that the uniformity is the same on each concentric circle.
- Josh Rushton, RTF CAT: And there's some sampling. They don't try to get every square foot or linear foot.

Baylon asked what the 25th percentile means.

- Rushton: There is a protocol for the catch can assessment, which includes spacing. You put a can every 10 feet or so. The cans vary however they vary. You run the sprinklers for four to six hours, to get ½ to 1 inch of water across the field. At that point, you have a fairly good idea of how much water lands in each can. So, now you have 50 catch cans worth of data. Some have more water, some have less. The 25th percentile can be determined from this information. Our measure assumes that the 25th percentile is what the field gets watered to. This will be checked in our research strategy. We assume the irrigator is observing the field. If they notice patches of wilt, they'll irrigate more. If say,

only 4% of the field is underwatered or overwatered, it might not be that noticeable. We need to check our assumption.

- Baylon: So, the decision here is taking a set of catch cans that received 100% of water requirement and then what?
- Rushton: Let's move on. This is foundational to our current analysis and we're saying we need to research this story.
- Sklar: The protocol for the catch can measurements is from the American Society of Agricultural and Biological Engineers. It's cited in the research strategy.

Baylon confirmed that the +/- 50% percent uncertainty uses the 25th percentile of 100% coverage [Slide 15]. He then confirmed that staff goal is +/- 50% of that standard. He asked if staff are allowing that much non-uniformity before worrying about it.

- Rushton: The next slide covers the candidate method.

Grant asked if the sample should include the crop types [Slide 16]. He noted that plant sensitivity to irrigation schedule could vary, pointing to soy versus wheat, adding that the irrigator could have different habits for different crops.

Grant also pointed to regional location and different amounts of rainfall during the growing season. He acknowledged that that may be the "geography" variation in the sample but recommended capturing the regional variation in rainfall.

- Rushton: This is a small strategy for a 12.7 aMW measure. It doesn't warrant sampling across the whole region. But your recommendation, to at least get a variation in rainfall and to ask farmers about practice by crop type, makes sense.

Baylon stated that there's an underlying assumption that uniformity is a significant problem. He called it irritating that we don't know this for our measure. Baylon thought a survey might provide that data from the perspective of the farmer, who is the most important informant. Baylon suggested taking a survey of several farms, admitting that it's expensive to get informed surveyors. He defended this by saying the region would find out what uniformity means to the farmer. Baylon said if it is important then data collection of the distribution might be justified.

- Rushton: The questions here try to speak in terms of what the farmer is thinking in their decision making. I don't use the word "uniformity" because that could be leading. It might not be a term they think of. I don't think farmers know the uniformity of their fields very well. They don't put out catch cans.
- Baylon: But they would visually see impacts. Either they react and check equipment, water more, etc., or not. These are giant areas. Two or three sprinklers not working well impacts a big area. It's not hard to imagine that the farmer would notice.
- Rushton: Yes. That's why we're asking this. If a farmers says, "I water the same amount every week," they have no savings. But if they use a drone or other tools to gauge uniformity, then there are savings.
- Baylon: I suggest we start with a survey before doing any catch can measurements.
- Rushton: Hang on to that thought.

Grant asked if the utilities could piggyback on the surveys [Slide 18] and use the contacts for other data collection after agreeing to the survey.

- Thomas: We don't dictate research and evaluation. Programs can design the research that works for them. We just lay out the objective.

Noe Contreras, NEEA, asked how this reduces uncertainty even if staff get the answer to the research and understand the "why" [Slide 30]. He wondered how staff will use the output of this research, which is qualitative in nature.

- Rushton: This is fairly quantitative. If lift, well depth, crop types, etc., are different than our measure assumptions, we can update our measure.
- Contreras: I was thinking of the uniformity research.
- Rushton: We need the catch can study to correlate uniformity to waste water. That's the goal of that research. Maybe that's the LQ approach, maybe not. Maybe it's the LQ approach for most farmers but with no recognition of uniformity for some. Then we'd use LQ but apply an adjustment factor to the savings. There could be other approaches.

Baylon asked if we have, or bothered to get, the energy requirements for running gravity irrigation out of Grand Coulee [Slide 36]. He said he hasn't seen this and wondered if the Council gathers this information or if it's a "gimme" at the beginning of the analysis.

- Sklar: I haven't asked the Council. They probably have some of this information. But we're not missing that. It's the percentage of water from those pumps used in eastern Washington versus surface water from rainfall. We can get data from the USDA and custom analysis of service water in eastern versus western Washington.
- Baylon: I look forward to this report.

Jim White, Chelan County PUD, asked if the region still has the scientific irrigation measure. He said the purpose is to optimize water use, calling this redundant.

- Thomas: SIS was deactivated in 2017 by the RTF.
- Baylon: Did it fall out of favor?
- Sklar: No, it's so popular it happens without us.
- Rushton: The uniformity measure is being applied to a world where there's a significant amount of SIS.
- Baylon: This is the future of irrigation?
- Rushton: Yes. We ask about it in the survey. We want to know how that impacts the uniformity measure.

MOTION

I, Jim White, move that the RTF approve updates to the Research Strategy for Agricultural Irrigation Hardware maintenance and Upgrades as presented.

Baylon seconded.

Vote on the motion. The motion carries. (18 yes, 0 no, 0 abstain)

BREAK

Discussion Item Part 1: New Measure for Centrally Ducted Heat Pumps

David Bopp, RTF CAT [Presentation](#)

Staff presented ideas for the new measure. The RTF discussed the type of equipment to use, how to best use REEDR, and the trouble with thermostats.

Baylon noted that the RTF is not looking at any existing heat pump measures, which he called mostly unsuccessful, before asking why this one is being explored [Slide 7].

- Thomas: We started here because we know the direction folks want to go in. After we have new measures, we can return to the existing measures and let the RTF know if they're still necessary. Starting from scratch seemed much easier than rescoping the existing measures.
- Baylon: So, we'll look at the "any" heat pump measure in December?
- Thomas: Yes. Same with ductless heat pumps.
- Bopp: We might keep them on the books to be able to say, "here's what you don't get if you don't do much."

Baylon asked if there is a midstream measure.

- Bopp: No, we don't have one and we don't plan to have one.

Bruce Manclark, Earth Advantage, noted that a lot of thermostat settings are in 5° increments. [Slide 15]. He said you might have choice of 15/20/25°.

- Christopher Dymond, NEEA: 17° is from rating, but control might not have the option. I've been in touch with manufacturers that can only go down to 32°. I encourage us to keep something like 15° or 20°. Getting a manufacturer to meet a spec is powerful leverage. That's why I'm a fan of specifying a temperature that locks out the electric resistance.

Douglass asked Dymond if that is for a single speed unit or variable speed cold climate unit.

- Dymond: It is claimed to be across all product lines
- Baylon: Is that because they expect to use electric resistance in defrost?
- Dymond: No. They're afraid of liability if the pipes freeze. I don't know the details, but my point is that some manufacturers haven't been challenged to go this cold without electric resistance. If the criteria are in the spec, the burden is on the manufacturer to meet it. It's a game of "who cares about a bit of electric resistance heat." We have to say, "we do!"

Baylon's first reaction to 15% leakage was calling it too big a number, especially with variable speed equipment running all of the time [Slide 18]. He admitted that it might not be significant leakage as a fraction but still significant as a very low part of loads. Baylon thought you could get 15% from a house not doing well, calling even 10% high.

- Bopp: I was leaning towards an upper bound. This is based on feedback I received on what is actually achieved in the field.
- Baylon: You think 15% is an actual outcome of trying to seal the ducts?
- Bopp: Yes. And I've noted that's on the high side.

Manclark asked if 15% is at test pressure or operating pressure.

- Bopp: Testing, at 25 pascal.
- Manclark: Then I agree with Baylon. 15% is too high.

Dymond encouraged staff to try some REEDR varieties for sensitivity analysis, to test varying levels of leakage, insulation levels, and for air flow requirements. He said NEEA landed on defining CFM/watt as the criteria. Dymond noted that some manufacturers have very low power draw, which means he doesn't care about the static pressure, adding that it's something that can be measured directly from the machine. Because of this, Dymond recommended fan efficacy over a static pressure requirement.

- Baylon: Would the spec be fan efficacy?
- Dymond: Yes, you need a minimum flow rate (cfm/ton) and a maximum watts/cfm. These would be verified by the manufacturer. Meeting a high static pressure requirement could result in really high fan consumption.
- Bopp: We want to avoid extremely high static pressure. That can result in noise like popping. We want to avoid homeowner discomfort.
- Dymond: Protecting customer comfort is a nuanced discussion. I'll save it for later.
- Bob Davis, Independent: I agree with Dymond. The airflow issue we've had is believing manufacturer's listed info versus what we see in the field. PTCS was created because the published values from manufacturers weren't what we saw in the field. Things are better now. Dymond's fan power requirement is good, but it probably won't get measured correctly in the field. They might measure amps, not watts. Whatever it is it has to be measured, not reported by equipment.
- Dymond: I'm not sure we're trying to set up a program that includes RMS power metering.
- Jerome: Static pressure does still affect CFM values, which goes into BTU output. We need to be cognizant and not throw that out. It's important.

Dymond asked who's taking liability for comfort [Slide 19]. He pointed to danger with the utility program saying, "we'll tell you how to take care of comfort." Dymond said the contractor should be on the hook for that while we provide guidance, like how to ensure there's enough capacity.

Davis beat the drum of the capacity question asking, after doing the sizing and selection work, will the device really deliver the capacity that it says it will at these temperatures [Slide 22]. He said we don't worry about "will a furnace give us this many BTUs at a low outdoor temperature," asking why we don't have the same certainty with a given coil combination. Davis pointed to published numbers but wondered about confidence in these numbers. He called this a real issue for installers, especially if we limit electric resistance. Davis insisted that he doesn't have much confidence in published performance for a given coil combination.

Bopp noted that the region doesn't have a lot of field data on this, adding that BPA only covers about 20 systems in heating zone 1 and 2. He said, in general, they found the numbers in the

NEEP database reliable, but noted the small sample size. Bopp called it concerning that published numbers may or may not be accurate.

Baylon was not clear about the heat pump modeling capabilities of REEDR. He cautioned that care needs to be taken here because we're using REEDR as a crutch. Baylon was not confident in how these specs are captured by REEDR.

- Bopp: Yes, this would be a Planning measure.
- Baylon: Some discussion of how REEDR handles these key variables would be helpful. There are alternative ways to model this. I'm not sure how REEDR handles this.
- Thomas: Part of why we're not proposing this measure for approval in July is to give us all more time to get comfortable.
- Baylon: I'm particularly interested in how it handles variable speed heat pumps.

Douglass explained that instead of giving EnergyPlus a single set of performance curves representing single speed, you can give it three to four curves. He added that we've been given performance curves from NEEA on high performance, high-capacity heat pumps and we're working on getting those into REEDR. Douglass said that includes both good performing and poor performing equipment. Regardless, he agreed that we'll want a truth set of real, measured consumption.

- Bopp: In the end, we might not use the REEDR results for savings. It could be from a BPA pilot study, for example.

Grant addressed REEDR saying staff should include some model runs with secondary zonal systems like fireplace and baseboards to capture the ways heat pump systems are utilized. Grant then asked if the RTF should be listening for anything specific during the next day's presentations.

- Bopp: For tomorrow, we wanted outside perspective. We want to understand if what they're doing is something we want to do.
- Rushton: I want to address the question of "can you rely on the equipment to do its part?" Independent testing in AHRI is good. How much insurance does that provide? It's still an open question.
- Ben Larson, Larson Energy Research: Let's talk about output capacity at 17°. Published numbers were confirmed in the field. That was a solid finding. Also, for verification, duct eligibility requires a duct blaster. Then, how would verification of thermostat settings be done? My experience from studying manuals is that this is unclear.
- Bopp: Good question. I'm not sure how we'd verify that.

Davis called the thermostat issue interesting. He said terminology can be confusing, depending on how the thermostat interacts with a given coil combination. Davis added that it can even vary in different parts of the manual. He said it helps if the installers are clear on the intention of the program but insisted that the problem is verification. Davis asked how the service tech does this across the class of variable speed equipment, range of products, changing refrigerants, etc. He said you can't assume that all of the stuff we've talked about comes along for the ride, if we do,

we may not get the performance we want. As an example, he asked if “smart thermostats” means what it should.

- Dymond: We’ve been working with AHRI and NEEP to make sure data comes from load-based test. Manufacturers can verify capacity. We’ve seen that in the labs. I’ll reach out to NEEP to see if they trust capacity values. I’m confident that the capacity is there.
- Davis: There are also systems that can hit the mark, but don’t stay there. I’ll stop complaining if we can be confident that we get the published capacity at the indoor capacity, when it’s cold outside.
- Bop: We’ll hear more about this from NYSERDA and Efficiency Maine tomorrow.

Lisa Gartland, ODOE, recalled that when she was in CA, she field-tested variable speed ductless heat pumps, all with proprietary thermostats. She revealed that the thermostats gamed the testing, saying for example, the deadbands would be adjusted so that the temperature inside the residence was different than the setpoint. Gartland reported that a lot of savings were due to that and suggested that when specifying/testing, to make sure the indoor temperature is the same as the setting, or account for the difference.

- Bopp: We do accept that as savings in our connected thermostat measure: if homeowners are okay with the temperature difference and don’t adjust it, it’s not considered curtailment.

Bopp stated that the presentation is posted on the website. He hoped there will be time to go through the rest tomorrow. Regardless, Bopp asked the RTF to review and provide feedback.

Smit ended the meeting at 1:00

Day Two

The RTF heard three presentations by guest presenters on heat pump programs in the Northeast and the results of a recent study heat pumps by Bonneville. The presentations focused on sharing the details of the program or study with a particular focus on performance and use of back up heating. Presentations included the New York State Energy Research and Development Authority (NYSERDA) Heat Pump Program and Polar Vortex Study, Efficiency Maine’s Manufactured Home Heat Pump Program, and Bonneville High Capacity, High Performance Heat Pump Study. The discussion focused on clarifying questions and gaining a deeper understanding of the lessons learned by these programs and studies. These programs and studies have grappled with similar issues and challenges as the RTF through its development of the new measure for centrally ducted heat pumps.

New York State Energy Research and Development Authority Heat Pump Program and Studies

Max Ciovacco, NYSERDA, JJ Sawicki, TRC Companies [Presentation](#)

Baylon noted that he didn’t see window improvements in the specs [Slide: Updated Heat Pump Ready Specifications (2026)].

- Max Ciovacco, NYSERDA: The window spec is double-paned vinyl.

- Baylon: Is that a requirement?
- Ciovacco: Not necessarily, but it's something that we look for. It's sufficient to reach 10ach50 infiltration.
- Baylon: So, the cost numbers do not necessarily include new windows.
- Ciovacco: Correct. It does not include the cost of new windows.

Jerome addressed oversizing the heat pump, asking if any dehumidification issues in the cooling mode have been seen.

- Ciovacco: This is common in New York. I tell people that you're probably dehumidifying in your home, anyway. In your basement, humidity is above 50%. You might have additional dehumidification requirements if you've grossly oversized cooling, but that's not a new problem in New York. Standard A/C is already grossly oversized for a typical home. We would look to do additional dehumidification, but I wouldn't blame the heat pump per se.
- JJ Sawicki, TRC Companies: Weatherization shrinks your heating load more than the cooling load, so you're oversizing on cooling, load shrinks a lot. Dehumidification is better with weatherization. You can remove more water.

Dymond asked who takes liability for a reduction in capacity [Slide: Example Project After SME Consultation].

- Ciovacco: There's no liability. The system covers 100% of the heating load.
- Dymond: If you have a third party informing the contractor that you don't need as much capacity, is the third party responsible?
- Ciovacco: The contractor is 100% responsible. We help them value engineer it.

Davis called this an interesting presentation and called the material not surprising. He addressed Manual J, saying most contractors don't do much or don't know how to do things correctly. Davis asked how much time NYSERDA spends on educating people, making changes to design, and more.

- Ciovacco: In this example, it took about three hours for the Manual J analysis and revision. But our speaker series/YouTube series covers this. We're getting contractors to watch these videos to implement their learning.
- Sawicki: Manual J is for EmPower+; there are more guardrails for low-income programs. For other program, we spot check 10% of heat pumps, including Manual J, as part of our QAQC. We don't see a lot of oversizing in QAQC. It's gotten better with the trainings.

Davis then asked about Manual S, wondering what direction contractors are given in selecting equipment to meet load.

- Sawicki: We use the NEEP list to determine compliance with Manual S. They have to meet a list of requirements. We look at the NEEP list, verify capacity, and then have a contractor look at humidity control, zoning requirements, and additional engineering thought processes to ensure that it's appropriate.

Jamie Anthony, BPA, asked about cost, incentives, and resources spent to get homes weatherized and to ensure that Manual J is done correctly.

- Ciovacco: There's a pre-inspection process that the contractor does on their own. The incentive comes after the pre-inspection.
- Sawicki: NY state has energy audit incentives—up to \$200 for a contractor to do that work. In a low/moderate income home, a contractor can get an incentive for doing this and then recommend EmPower+ to get incentives for weatherization and heat pump.
- Ciovacco: Not all homes go through that process, though.

Baylon asked about the incentive for the weatherization portion of projects.

- Ciovacco: It's around \$10,000, depending on the project.

Anthony pointed to the three Subject Matter Experts and 24 contractors that helped with Manual J. He asked if these are full time employees.

- Ciovacco: These are contractor outside of NYSERDA and not necessarily full time.

Who's Afraid of a Polar Vortex: Research Project Preview **JJ Sawicki, TRC**

David Korn, Ridgeline Analytics, asked which circuit board, specifically what brand, failed [Slide Data Results -One Home].

- Sawicki: I don't know. I could ask the contractor. Maybe it was a Fujitsu Air.

Baylon asked about the contractor cost to install a two-system home [Slide: Clean Heat Connect].

- Sawicki: Roughly \$30,000.
- Baylon: Is that typical?
- Sawicki: The average cost is \$20,000 to \$30,000 depending on the system and size of house. Outliers are \$40-50,000. The typical/average is \$25-30,000.

Baylon asked about the incentive amount.

- Sawicki: NY state has five major utilities. Incentives range from \$6,000 to \$10,000 per home to the homeowner. Contractor incentives are about \$500.

Douglass called this a great and interesting presentation. He noted that the last house shown had a design load of 95,000 Btu/h [Slide: Data Results-Legacy Furnace]. Douglass called that big, asking about the type of system.

- Sawicki: That was a legacy equipment, 2,400 square foot home with a 100,000 btu ducted heating oil furnace installed about 10 years ago. The contractor at the time said that was what was needed. We don't think that much capacity was needed. We could do a Manual J on this home, and I doubt we would see 95,000 btu. This was shown to show what a fossil fuel system can do to meet load. It doesn't do great.
- Bopp: We have a fallacy that legacy equipment gives us amazing temperatures.

Bopp pointed to installed/incentivized cold climate heat pumps from the NEEP list, asking if anything amazing was required or if the heat pump just has to be on the list of basic cold climate products.

- Sawicki: That's right. The requirement is that it has to be on the NEEP list and the system has to be sized for 100-120% of design load. There's some wiggle room if you do Manual J and standard sizes aren't in this range.

Rushton recalled that contractors assume liability, asking if capacity numbers on the NEEP database are reliable.

- Sawicki: Yes. They work. That's reality. From our study, these systems were not super-oversized. The capacity shown comes from the NEEP list, we're looking at about 110% of design load and we're maintaining temperature well in really cold spells. Capacity is relied on by contractor, homeowners, and the program.

Dymond stated that the NW has more experience doing heat pumps, but the region hasn't placed the objective as 100% heat pump. He stated that NY State has leaned into 100% heat pumps so the NW could too. Dymond said NEEA uses TRC Companies as a prime contractor, adding that we can use a lot of resources and capabilities shown in the presentation.

Baylon called this impressive. He asked exactly how many heat pump systems are being incented by this program and how many other systems are going in as a result of the contractor-based video and training that aren't part of incentives.

- Sawicki: We don't have that data. Incentive programs are utility owned, not through NYSERDA. TRC does the QAQC program for the utilities, and we target 10-15% of all incentivized heat pumps. To get to the number of installed heat pumps, we have some anecdotal data, but not a lot. We do see in NY State that contractors that incentivized do heat pumps. There are contractors that don't incentivize and also do heat pumps, but they don't like doing the admin work, so I don't have numbers. I'll dig around after this presentation and send anything I find to the RTF.
- Baylon: This is a good program. If it's getting substantial uptake in the market, that'd be good to know.
- Sawicki: Clean Heat Connect does track engagement. We reach 800 to 1000 contractors per year with this information. We're hoping that those numbers go up with our partners. Most of the contractors we meet across NY are familiar with the program.

Rushton pointed to the wealth of Manual J calculations TRC has, wondering if there has been a comparison of this data to historical billing data to see if there's an option to size based on billing data.

- Sawicki: The data we have is utility-owned. We need permission and lots of negotiation with the utilities to do anything with it. These are investor-owned utilities. They have some rules. But it's their data and we'd have to negotiate to use it.

BREAK

Efficiency Maine Manufactured Home Heat Pump Program

William Rambur and David Korn, Ridgeline Analytics [Presentation](#)

Anthony asked who paid to check insulation and do a blower door test [Slide 14].

- Korn: This was a low-income program. Ridgeline did the work, and it was paid for by Efficiency Maine, not the contractor. I'm not sure if the blower door was a game changer. It's important, but a small variation in results would change things. You might be able to get away without it.

Davis appreciated the demonstration of panel restrictions, then asked about ducts.

- Korn: This was an older program. We did walk away from homes with obvious issues: like you could look down register and see the ground. Some programs did participate in weatherization program too.
- Davis: That's my interest. Some of these homes have a lot of opportunity. It's a slam dunk to deal with ducts if you're already in the house.
- Korn: Yes. The complication with manufactured homes is that everything is sealed. We can't see what's going on. We looked for obvious issues or duct blaster results to reject homes or send them to weatherization programs.

Manclark asked if there was any concern about low airflow and high static on 3.5- and 4-ton units [Slide 19].

- Korn: No. Ductwork in manufactured homes are nominally 0.3 inches of water. Static is a bit higher. The heat pumps we installed had variable speed fans. A fan for a 3.5-ton unit was close to existing fan at half speed. One unit was adequate, but it made a lot of noise at full speed. We switched to a deep-pleated filter to cut static pressure. We didn't find this to be a concern.

Douglass called this an interesting presentation, saying he was not surprised that these systems can keep up without backup with a flat thermostat setting [Slide 26]. Douglass asked about owners that want setbacks, noting that RTF data shows issues when homeowners want 3°, 5°, or even 10° setbacks at night. Douglass asked if the presenter is seeing this and if so, what they are using, like an intelligent setback recovery, to mitigate it

- William Rambur, Ridgeline Analytics: Part of our survey was on setbacks. The vast majority of users didn't use setbacks. That's what I see anecdotally.
- Korn: We don't see a lot of electric resistance use, so there's very little setback. Maybe that's because the program population skews older. But we're aware that it's a real struggle to meet temperatures after a setback.
- Douglass: In the northwest, maybe half or two thirds of homes have a setback. Maybe a quarter have a really deep setback.
- Rambur: We've been educating pretty heavily on this.
- Sawicki: NY is similar to Maine. We encourage homeowners not to do setbacks. We did have one home use a setback.
- Rambur: Most boilers are sized about two times to heat load. They can handle a big setback. But we're sizing heat pumps much closer to heat loss.

- Sawicki: We typically see 86,000 BTU in legacy systems.

Bonneville Power Administration's High-Performance High-Capacity Study **Ben Larson, Larson Energy Research [Presentation](#)**

Baylon asked if setback behavior was tracked and if so, did it impact need for electric resistance heat [Slide: Quick Overview].

- Ben Larson, Larson Energy Research: Yes, we tracked it and yes, it's a huge indicator. We'll get to it later.
- Douglass: What was general design point for Zone 1?
- Larson: There was a 20° balance point in all heating zones. In HZ1, that's below the 99.6 design temp, in HZ2, it's not. We set the limit at 20° as a practical matter. We weren't going to do insulation improvements. We didn't think six-ton heat pump was practical as you can't buy one. So, we set the design temperature a bit high at 20°.

John Heflin, Energy 350, asked if shoulder season cycling was considered when choosing the balance point in the chat [Slide: Indoor Temperature & Total Power at all Hours].

- Larson: No. We were a bit concerned about oversizing for cooling load, so that was a check, but I don't think we ran into any egregious cases where we had to down-size a heat pump because it.

Douglass said the graphs look like the equipment is modulating between low and high speed, adding that we see that in the power signal [Slide: Example Very Cold(est) Day]. He noted that supply temps show 90° and 110° air, asking if that common.

- Larson: Yes, it's common for the temperature to change with speed. Also, we see a pretty big range of supply temperatures across manufacturers.
- Douglass: Can any products hold a more constant supply temperature across speeds?
- Larson: I'm not sure.
- Davis: The Tacoma sites installed equipment from a manufacturer that prioritized high supply air temperature. Other manufacturers don't and may have fewer desirable characteristics at lower Outdoor Air Temperature.
- Douglass: I'm surprised by the change on this graph from 90° to 110° supply air. Are people OK with 90° supply air?
- Davis: It's iffy below 90° or 95°.
- Bopp: Does this include duct losses?
- Larson: We monitored at the air handler, so yes, delivered temperature would be lower than this.

Baylon said that most of these cases on [Slide: SNO 43-HZ1, ER installed....] suggest not much night setback. He asked if there was a night setback.

- Larson: Yes. [Slide: PLU 02-HZ2....]. In some cases, we see a very similar temperature at night versus daytime, and we say there's no setback there. That's a big theme. When we didn't see setback, we didn't see much electric resistance use.
- Baylon: Was there a setback for the site with electric resistance use?

- Larson: Yes. We see an about 4° to 5° difference. Four degrees isn't so big, but it triggers electric resistance.
- Baylon: It's interesting to see all of these east coast sites with no setback. We're very different.
- Larson: The setback was saving money with electric resistance.

Bopp asked if the pre-cases had setbacks and users were educated out of them.

- Larson: I don't know that.
- Dymond: Many east coast sites use multi-split ductless. There's much less setback usage.

Douglass reported seeing a study that used a deep setback and had huge electric resistance spikes. He recalled that after the setback was removed, they saw a dramatic reduction in electric resistance use.

- Larson: Yes, the occupants reached out to the project and asked how they could improve. We did an analysis and told them to remove the setback. We took about 12 sites and did one month with setback and one month without and showed the improvement in performance without setback.

Davis guessed that the majority of east coast sites had ducts in the basement and not in unconditioned crawl spaces, so there were no duct losses. He said the house that Larson mentioned had a very detailed setpoint schedule, but no setback resulted in same energy consumption, and there was much less of a demand spike.

White called this is an opportunity for deep setbacks for heat pumps. He said you can save money if you don't have electric resistance. White conceded that you have to start early to reach the setpoint, but you'd save energy in the end.

Contreras noticed many of the sites had continuous operation and asked if there were any comments from homeowners.

- Larson: During a cold period one site in Tacoma had a system operate continually and blow not-hot air. They switched to electric resistance. That was the only comment I can recall. But my slides show the coldest days. On warmer days, the systems cycle.

Miller confirmed that 20° was used for sizing regardless of where it was installed.

- Larson: Yes.
- Miller: In retrospect, would you do that differently?
- Larson: No. We typically got a bit lower balance point than 20° by making 20° the maximum. We didn't have problems with exceeding the air flow capability of the existing duct system. That was good. But if you sized to the design temperature, you'd save more energy. This balances the capital cost versus the energy savings.
- Miller: Utilities have been telling people that setbacks are good. Now we have to be reeducated.

Davis recalled an unusual aspect of this research study; the duct systems were a bit small for heat pumps because the legacy system was electric furnace. He said there was some allowance to improve the duct system a bit, adding that in about 20-30% of cases, there was an upgrade to the return side of the system.

- Larson: Yes, I thought it was cool that you *could* do upgrades to the duct system like add a return or increase the pleat depth of filter. We targeted less than 0.8 inches of water for total external static. We tried to get below that at maximum system air flow, and we did.

Anthony said that BPA paid for ductwork, sizing, blower door, duct blasting, etc. with research budget. He thought it would be a challenge for the RTF and the region to do this with a “cookie cutter approach.” Anthony said NY and ME are doing a good job and suggested studying what they’re doing to make this cookie cutter.

- Dymond: I’ve noticed recently that there are substantial redesigns in the heat pump market to focus on heating. That coincided with changes in refrigerant to A2L, which works better for heating at lower temperatures.

Anthony asked if the balance point was determined by Manual J or previous utility and fossil fuel bills [Slide: What Predicts ER Use?].

- Larson: We looked at measured dimensions and Manual J. [Amplify](#) would have been a cooler approach to doing that.

Dymond called the work great, adding that one more predictor of electric resistance use is having it. He asked if 5kW is a reasonable threshold for heating zone 2. Dymond wondered if we should say 10kW and get a control solution that does what we need. He agreed that you can get away with less, but that may not be the best utility solution.

Douglass was surprised that air leakage correlated to electric resistance use.

- Larson: This was a very focused question: does leakage correlate to electric resistance use. It didn’t. It’s not a large enough fraction of the total heat loss rate to see a signal.
- Douglass: Independently, these things aren’t big enough to move the needle. Maybe cumulatively they will.
- Larson: Yes

Davis insisted that you need real inputs to do load calculation and you need to know how to do it. He said people don’t want to do this because data collection takes time and a duct test is complicated. Davis recalled that even when the return system was improved, there wasn’t consistency in how ducts were insulated or sealed, saying that’s how it happens in real life.

Davis then asked how much backup heat to put in in heating zone 2. He recalled an installer limiting this to 5kW and said it doesn’t come on very much. Davis said if he were an installer in heating zone 2, he’d want at least 10kW as insurance on cold days, if there was room for it.

Davis stated that in Arizona, the cooling sizing methodology in the old Manual J was quite a bit higher than looking at loads [Slide: Conclusions]. He said the conclusion from that is, don’t

bump up the Manual J results for sizing. Davis said for heating, Manual J is mostly values from ASHRAE Fundamentals. He asked where do you go from there if that's not accurate. Davis thought Amply might be helpful, but said the challenging part is trying to double check the total loads. Davis said the report is enormous and hard to review. He called this a barrier if you're helping contractors do these calculations. Davis concluded by saying we're at a challenging place with load calculations.

Douglass asked if the mismatch in load accounts for off-grid heating.

- Larson: My understanding of the graph on the right was that this was total heating: electricity and gas. And no supplemental/unknown fuels were present.

Heflin stated that Manual J is not meant to be the final result, pointing to other steps in the process. He gave an example, saying Manual S can pull you into a smaller heat pump size because of a limit on cooling side. Heflin said when he does Manual J, he gets pretty close to measured consumption. But he cautioned that Manual J doesn't do a good job of predicting the amount of heat trapped in your home.

Rushton said it seems like the graph from Justin Margolis suggests that you can determine heating load correctly from billing data. He asked if there are any doubts in this supposition.

- Larson: I believe the Margolis study also did metering comparison and found general agreement with billing data. So, yes, you can get good results from billing data if there are no non-utility fuels. AMI data or data reads get you pretty good results. In our study, we metered the heat pump. When we use that to determine the balance point, it's super solid. That clearly predicts where you'll use electric resistance and where you won't.
- Davis: We sized to 17 versus 20. Small difference. The empirical balance points in the presentation were close to 17 or lower. The purple dots (the majority) were colder than 17, with few exceptions. The load part is the first part of the process. Then you have to select equipment, which might be larger than this.

Baylon was trying to understand [Slide 20]. He asked if using Manual J gets you nowhere close to right answer. Baylon asked if cutting that number in half is a good predictor of the actual load.

- Larson: Yes. Click on the link and you'll more info on this topic.
- Baylon: If you could probably guess as well as Manual J why go through the trouble?
- Larson: Yes. This is all concerning because you're trying to determine the heat load. If you can't do that, you can't size the heat pump. The reassuring thing is that in the BPA study, the nature of just *trying* to size to 20° was sufficient.
- Baylon: When you use Manual J, you oversize so you don't need auxiliary heat.
- Larson: Yes.
- Anthony: It's not just sizing. It's also making sure that the ducts work, etc.
- Baylon: But at the end of the day, Manual J is giving you a 2:1 safety factor.
- Anthony: I agree that this slide suggests this.

Discussion Item Part 2: New Measure for Centrally Ducted Heat Pumps

David Bopp, RTF CAT [Presentation](#)

This item was moved to the July meeting. Bopp said [Slide 22] of the presentation correlated well to the information presented today. He said [Slide 26] should also be carefully examined before the next meeting.

Smit ended the meeting at 1:00pm.

Voting Record: June 23-24, 2026

Motion Language	Yea	Nea	Abs	Motion Passes?	Percent of Yea Votes		Number of Voting Members Present
					RTF Voting Members (40% min)	Members Voting (60% min)	
Motion: Approve the agenda for the June 23-34, 2026 meeting. (Miller/Grant)	16	0	0	Yes	55%	100%	16
Motion: Approve the minutes from the May 19, 2026 meeting. (Douglass/Jerome)	16	0	0	Yes	55%	100%	16
Motion: Approve the Multi-family Weatherization UES: -Remove the tax credit -Change the measure name to Weatherization Low-rise Multi-family -Keep the Category at Small Saver, Planning -Keep the Status at Active -Set the sunset date to June 30, 2029 (Miller/Chase)	18	0	0	Yes	62%	100%	18
Motion: Deactivate the Compressor Head Fan Motor Retrofit UES (Baylon/Marks)	18	0	0	Yes	62%	100%	18
Motion: Approve updates to the Research Strategy for Agricultural Irrigation Hardware Maintenance and Upgrades as presented. (White/Baylon)	18	0	0	Yes	62%	100%	18

June 23-24, 2026, Meeting Attendance

* Designates Voting Member

Name	Affiliation
------	-------------

Jamie Anthony*	BPA
Suzi Asmus	NEEA
Alyssa Baker-Blanc	Recurve
Landon Barber*	Idaho Power
David Baylon*	Independent
Jonathon Belmont	BPA
David Bopp	RTF Contract Analyst
Brittney Breen	Energy Trust of Oregon
Ryan Brown	NEEA
Gregory Brown*	Tierra Resource Consultants
Kyle Chase*	Jefferson PUD
Max Ciovacco	NYSERDA
Cyrus Collins	Evergreen Efficiency
Noe Contreras*	NEEA
Michael Courtney	NYSERDA
Tiffany Craig	NWPCC
Courtney Dale	Evergreen Energy
Bob Davis*	independent
Joshua Dennis	WA UTC
Emily Donohue	Evergreen Energy
Christian Douglass*	RTF Vice Chair
Logan Douglass	RTF Contract Analyst
Jesse Durst	Puget Sound Energy
Christopher Dymond	NEEA
Ryan Firestone	RTF Contract Analyst
Wesley Franks	WA UTC
Trevor Frick	Clark PUD
Rachel Gardner-Clark	Tacoma Power
Lisa Gartland*	ODOE
Kevin Geraghty*	independent
Tom Gillman	Puget Sound Energy
Jackie Goss	Energy Trust of Oregon
Jessica Graeber	ESassoc
Andrew Grant*	Cadmus
Connor Grossman	CLEAResult
Wylie Hampson	NEEA
John Heflin	Energy 350
Angela Hoang	Evergreen Energy
Zachary Horvath	Cadmus
Aaron Ingle	NEEA

Masumi Izawa	BPA
Mattias Jarvegren*	Clallam PUD
Mark Jerome*	CLEAResult
Alex Joe	independent
Mitt Jones	Evergreen Economics
Isaiah Kamrar	Energy Trust of Oregon
Phillip Kelsven*	BPA
Leah Kim	Tacoma Power
Rick Knori*	Lower Valley Electric
David Kom	Ridgeline Analytics
Melissa Kosla	Acadis Consulting
Ben Larson	Larson Energy Research
Ben Latson	Energy Trust of Oregon
Denis Livchak	RTF Contract Analyst
Ben Mabee*	BPA
Bruce Manclark*	Earth Advantage
Rob Marks*	Snohomish County PUD
Dalyn McCauley	Energy 350
Eric Miller*	Independent
Ken Morgan	Gensco
Tamar Nagel	NYSERDA
Stephen O'Guin	NEEA
Brian Owens	CLEAResult
Andrew Paul*	Avista Corp
Joe Prijyanonda	ICF International
John Purvis	Clallam PUD
Laney Ralph*	NW Natural
William Rambur	Ridgeline Analytics
Akanksha Rawal	E Too
Sean Reckert	Energy Trust of Oregon
Sam Rosenberg*	PNNL
Josh Rushton	RTF Contract Analyst
JJ Sawicki	TRC Companies
Leila Shokat	Energy Trust of Oregon
Paul Sklar	RTF Contract Analyst
Kenji Spielman	Energy Trust of Oregon
Kevin Smit*	NWPCC
John Stalnaker	BPA
Poppy Storm	2050 Institute
Samantha Taylor	CLEAResult

Adam Thomas	Acadis Consulting
Laura Thomas	RTF Manager
Eva Urbatsch*	Puget Sound Energy
Garett Valenzuela	CPlus
Joe Walderman	NWPCC
Danielle Walker	BrightLine Group
Emily Wangenheim	TRC Companies
Jim White*	Chelan County PUD
Sarah Widder	NEEA
Alysa Wyrick	Avista Corp