August 19, 2025
Meeting Minutes

Welcome, Agenda Review and Meeting Minutes
Jennifer Light, RTF Chair, welcomed the RTF to the meeting and asked for roll call. She counted 19 voting members. Mark Jerome, CLEAResult, moved to adopt the minutes from the July 22, 2025 meeting. Christian Douglass, RTF Vice Chair, seconded. The minutes were adopted unanimously.

Douglass then moved to adopt the day's agenda. Laney Ralph, NW Natural, seconded. The agenda was adopted unanimously.

Laura Thomas, RTF Manager, began the day with a terrible joke. The RTF responded with muted delight.

Management Update
Laura Thomas, RTF Manager **Presentation**
There was no discussion.

Update Planning UES: Commercial DHP in Existing Buildings
Ryan Firestone, RTF Contract Analyst (CAT) **Presentation**
Staff presented the update. Discussion centered around equipment size, available data, and how to classify school classrooms. The RTF approved the updates, updated the size of equipment in the specification and set the sunset date to August 2028.

Dave Baylon, independent, noted that this topic has been on the agenda for years now and wondered if the region has any information about implementation [Slide 4].

- Ryan Firestone, RTF CAT: We have a slide on activity volume from the Regional Conservation Progress survey, but we don't know of any progress on our research strategy.
- Baylon: What about characterizing types of spaces and customers who are using the measure?
- Firestone: No.
- Phillip Kelsven, BPA: Bonneville did a billing analysis in 2020, that included some building type information.
- Firestone: We'll discuss that.

Jerome asked why equipment is limited to three tons, noting that he sees some four-ton equipment in the field [Slide 6].

- Firestone: We discussed that in the Subcommittee (c. 2020), and I think the recommendation was to limit it even lower, but I don't remember the reason.
- Douglass: One was to differentiate from VRF, and the other more important reason was the systems in the BPA data were 36,000 or less.
- Firestone: Yeah, from the BPA studies, the average size was around two tons.

Baylon stopped at [Slide 7] to say that five years ago three tons was pretty much the limit from manufacturers. He stated that this is no longer the case, arguing to bump the number up.

Baylon asked how auto-sizing works in estimating capacity given that a DHP only serves a portion of the total space by design [Slide 12].

- Firestone: EnergyPlus has multiple zones. There's a central system, and then we assign resistance zonal (base) or a DHP (efficient) for affected zones. Maybe you're worried about sizing implications for the central system?
- Baylon: So, the existing HVAC is auto-sized when installing a DHP in one of the zones? Really?
- Firestone: It already had electric resistance heat and perhaps a window AC, so we switched out the zonal.

Baylon asked if the assumption for hotel guestrooms touches all rooms or only one [Slide 14].

- Firestone: All of them, so 35 zones and 35 DHPs.
- Baylon: In the 1990s, HVAC systems in schools were often set zonally. It happens less so now. It doesn't seem like that could be reflected here.
- Firestone: We're not completely satisfied with this school model either.

Bob Davis, Ecotope, was unsure if the newer systems have particularly efficient fans [Slide 18]. Because of this he thought it was a good move to take out fan savings.

Baylon confirmed that the school assumes office space and not classrooms [Slide 19].

- Firestone: The EnergyPlus model is the small office, core space, nine-month occupancy. Originally, we had it as an office perimeter, but the RTF directed us to move it to core space.
- Baylon: Do programs have insight into where they're going in reality?
- No program representatives responded.

Lisa Gartland, ODOE, was not sure about using core office space, saying it didn't feel right. She pointed to ventilation being very different in a room with 30 respirating students.

- Firestone: I agree, especially if the equipment is going into classrooms (those would be more like a perimeter space). The core space model is more appropriate to some school office spaces.

- Baylon: This suggests maybe using an identifier to separate classrooms from school administrative office spaces. That would give us a chance to treat classroom ventilation more carefully.
- Light: These are good notes. But they are probably not things we can handle in a light lift. These are good flags for things we should look at in a deeper dive.

Jim White, Chelan County PUD, stated that he had to leave the meeting but voted to approve the changes (White was very garbled here) [Slide 22].

- Firestone: I should mention that White provided us with some billing data. The timing didn't allow us to include that data in this update, but we have it ready for the deeper dive.
- Davis: I think the costs are reasonable. I recently had a project adding 32 1:1 DHP systems in a small office in Portland, and costs came to around $8000 per ton.

Baylon stated that the region has had the residential version of this measure for about 15 years, adding that between 2008-12, BPA ran a program that collected data about installation conditions [Slide 28]. Baylon suggested using that data to go back and directly evaluate the measure life by surveying those installations.

- Firestone: Good point.

Gartland moved back to [Slide 29] asking what staff gets out of vapor line temperature and how they get Outdoor Air Temperature.

- Firestone: Vapor line temperature differentiates cooling from heating. The Research Strategy document specifies that the Outdoor Air Temperature sensor is measured in a protected space.

Davis stated that the main reason this measure exists and gets traction is that commercial VRF is absurdly expensive. He said the result is that this is a large and growing measure.

- David Tripamer, BPA: Davis's question makes me wonder about the baseline. Should it include some weighting for VRF? Also, could the fact that DHPs can be installed relatively quickly be a benefit as you don't lose part of the building while waiting for a VRF installation?
- Davis: And in a related situation, once a VRF is in service, you can lose a third of the building from an unreliable system. That's much less of an issue with DHPs.
- Firestone: This is something we could consider.
- Light to Tripamer: If you connect with Thomas, she can make sure these concerns are in front of the CAT when we get to the deeper dive.

Parking Lot

Light asked for discussion around moving the spec to three or four tons.

- Baylon: It seems like we have an opportunity to deal with issues related to schools right now. But I may be underestimating the lift.
- Firestone: We weren't comfortable with the results we were getting from our model, so we don't have an EnergyPlus model for schools. We could easily switch from office core

to office perimeter for classrooms. That would improve the location physics, but it wouldn't account for the unique ventilation load in classrooms.

- Rob Marks, Snohomish County PUD: Classrooms usually have additional ventilation equipment, and we rarely see DHPs in schools.
- Gartland: Also, nine months might be a bit short. Teachers are usually back in the classroom early, and school start dates seem to be moving up.
- Jerome: We've done DHPs in several different schools, so it does happen. But I don't know how often.

Douglass confirmed that it would be a large lift to get a better school model.

Light asked about increasing the equipment size limit.

- Firestone: It wouldn't affect our savings because we unitize per ton. It could increase risk if there's a reverse incentive to oversize to get a larger program incentive.
- Tripamer: I think people are strongly motivated to get the cheapest thing they can, and I don't think utility incentives move the needle enough to create a reverse incentive in practice.
- Jerome: I think bumping it up to four tons makes sense for the current market.

MOTION
I, Mark Jerome, move to approve the updates to the Commercial DHP in Existing Buildings UES measure as presented and: Update measure eligibility to 4 tons maximum capacity, Keep the Category at Planning, Keep the Status at Active, Set the sunset date to August 31, 2028. Kelsven seconded.

Vote on the motion. The motion carries (19 yes, 0 no, 0 abstain)

BREAK

Update Planning UES: High Efficiency Residential Central Air Conditioners
Adam Hadley, RTF CAT Presentation
Staff presented the proposed updates and indicated further work to analysis HEMS v9 was needed for the next update. The RTF discussed and approved updates to the cooling loads and removed the SEER/EER criteria.

Thomas explained to the RTF that staff will be doing a deeper dive into HEMS v9 which is available now but will take a lot of work to process [Slide 4]. She said, for now, staff are using v7 results.

Davis stated that HPs are usually used more than A/C, wondering if staff have any sense of why this is and if the distribution of the house plays a role.

- Adam Hadley, RTF CAT: I don't know. It bugs me a lot. The same pattern shows up in all three heating zones. Maybe it's home size? Maybe it's rural versus urban or window usage?

- Davis: Could it be related to the shell?
- Hadley: It could be. I didn't dig too deeply this time because we will go there for v9 of the HEMS data.

Baylon stated that one feature of a CAC plus gas furnace system is that you get a controller for the gas furnace and this could result in different CAC usage. He asked if we know what kind of controllers are being used.

- Hadley: Yes, I think the RBSA provides model numbers.
- Baylon: In theory, you could look into this. Gas furnaces have setbacks. That can have an impact on cooling.
- Hadley: That's a good point. A thermostat model and better indoor air temperature are both available in v9 HEMS data.

Gartland thought that maybe the units reached capacity at higher Outdoor Air Temperature, which would explain the leveling off of energy use [Slide 11].

Davis suggested looking at things like nominal tonnage versus estimated cooling load [Slide 13]. He also thought information on the duct system, if available, would be useful as they impact the amount of cooling energy used.

Baylon brought up a technical point about SEER and SEER2, saying they are the result of three kinds of tests, each with a different amount of latent heat. Baylon said they are then combined to represent somewhere like Philadelphia or Washington DC, leading to probably 2/3rds of the SEER rating being biased towards the latent heat found on the east coast and Midwest, but not in the Pacific Northwest. Baylon said we should be interested in one of the three tests, wondering how easy it would be to do. He suggested calling the Oak Ridge people.

Baylon continued, saying SEER is based mostly on latent heat which means you're going to have a hard time finding a correlation in our region between SEER rating and energy consumption. He said this has always worried him about using SEER asking if this could be fixed, noting that SEER test results are published and could be reweighted. Baylon recalled that there was talk about doing this in SEEM, but in 2005 the region didn't need to worry much about cooling.

- Hadley: That's not the focus here. I didn't normalize the results to SEER, but that's not the biggest impact. I think it's behavior.

Andrew Grant, Cadmus, noted that this work is only 0.1 SEER which is close to the federal standard [Slide 15]. He said the RTF's current practice assumption needs attention, wondering if programs can help with a better current practice SEER2 estimate.

- Baylon: Why don't we use EER instead of SEER. We don't pay much of a penalty. The problem with EER is that it's tested at 95°F which isn't representative. I'd like to see what happens if we did that. California did this. Maybe it would help with our correlations.
- Hadley: It could be. It's part of our research. It's a good point.

Noe Contreras, NEEA, addressed the EER versus SEER issue, saying EER is a fixed outdoor temperature and variable capacity isn't as important as it is for SEER. He stated that variable capacity helps with low load efficiency.

- Hadley: Our measure is just for single and two-speed A/Cs. We didn't include variable speed in our measure. But part of the work is to see if we can add variable speed to our measure based on the data we have.

Grant asked about the calculation methodology of CDDs and HDDs [Slide 18]. He said there are three methods: daily min/max, daily average, or hourly. He recommended looking into the variability of consumption on these three methods of calculating CDD and seeing which gives the best trend/correlation. Grant asked staff to consider switching to the method with the best correlation.

- Hadley: I think that's automatically built into the research. Your point is spot on.

MOTION
I, Eric Miller, move that the RTF approve the proposed edits to the Residential Central Air Conditioners UES as presented, and: Keep the Category at Planning, change the Status to Active (from Under Review), Set the sunset date to August 31, 2027
Jerome seconded.

Vote on the motion. The motion carries (20 yes, 0 no, 0 abstain)

Update Proven UES: ENERGY STAR Commercial Refrigerators and Freezers
Denis Livchak, RTF CAT Presentation
Staff presented a proposed update to incorporate new data into the current practice assumptions for the measure. The RTF focused on the data sources to inform current practice. The RTF approved the update.

Tripamer asked how TSD defines baseline equipment and if any equipment is below the RTF baseline [Slide 4].

- Denis Livchak, RTF CAT: The "baseline" is at the level of the 2010 energy standard. The TSD is in anticipation of upcoming rulemaking. Baseline is the current mandatory standard, and the components used to reach that level of consumption. They then consider what components can be modified to go beyond baseline.
- Tripamer: So, the TSD analysis implicitly assumes that nothing is below the standard?
- Livchak: Yes, the baseline is for new equipment, and the standard has been in effect since 2010.

Tripamer noted that used equipment is a big share of the market in commercial food service as it's a lot cheaper. He stated that this work doesn't seem to take that into account at all.

- Light: This topic has come up at the RTF before. It's a good point. We're currently not factoring in used equipment in our current practice baseline. We look at the savings over the lifetime of the measure. When things get moved around in different spaces, it gets very complicated. It's a real consideration, but we haven't found a way to account for it, or if we even should.

- Tripamer: So, it's not that you think it's inaccurate, it's because you don't know how to account for it? Theoretically, if a study came out on the used-equipment market could we do this?
- Light: The RTF did have a study to think this through. When we assume a lifetime or a measure, we don't want to recount something because it's bought and moved. I'd like to table this. It's a good question. We can follow up with you offline. It's a bigger topic than just this one measure.
- Livchak: I'm not aware of any studies characterizing used refrigeration equipment.

Baylon stated that [Slide 10] shows two conflicting estimates of the market. He asked why staff didn't pick one or the other, rather than going down the middle.

- Thomas: The CAT felt that both sources had pros and cons. Splitting the difference seemed appropriate.
- Baylon: In my understanding TSDs are 3rd party assessments and usually pretty thorough. I'm inclined to think that TSD is a better place to start. Why not just use that?
- Livchak: Once you start digging into the sources of the DOE data, some of it is unclear. We looked into the manufacturers' interview guide, it's mostly how much they're willing to adopt certain technologies. It's not based on actual sales, to my knowledge.
- Baylon: What about ENERGY STAR?
- Livchak: ENERGY STAR partners report their volume shares.
- Baylon: ENERGY STAR partners sell about 50% ENERGY STAR?
- Livchak: Yes, and that's about 80% of the market.
- Baylon: So, one set of data is actual sales, and the other is aspirational data. Do we take the average of those to get 34%?
- Light: Yes. Let's parking lot this issue.

Tripamer was confused by the difference between "market share," "penetration," and "saturation" [Slide 8].

- Livchak: The numbers here are the percentages of all sales.
- Thomas: ENERGY STAR doesn't provide granularity. It's just a single number for the whole market.
- Tripamer: These are two different things to me.
- Light: We've spent a lot of time on this measure. We were using ENERGY STAR only at 50%. The RTF noted that might not be accurate for specific classes. So, we looked at the TSD, and we get very different numbers. So, what do we use? The CAT proposed simple average of the two. We could pick something else.
- Tripamer: My understanding of "market penetration" is 50% of the market has at least one piece of ENERGY STAR equipment.
- Light: Everything here is meant to mean sales. Let's not get hung up on the words. We're looking at what percentage is ENERGY STAR versus not ENERGY STAR.
- Douglass: I think we're making a mountain out of a molehill. We have two conflicting pieces the data and we're splitting the difference.

- Grant: I always question the ENERGY STAR data. Shipment and sales might be different. We should look at such a large disconnect between ENERGY STAR and the TSD. We should look at this in this way for all measures where we have both data.

MOTION
I, David Baylon, move that the RTF update current practice from 50% to 18% the ENERGY STAR Commercial Refrigerators and Freezers.
There was no second.

Tripamer said if the region is already looking for the current practice baseline, we should also look into the used market.

- Light: Noted.

I, Gregory Brown, move that the RTF update current practice from 50% to 34% of the ENERGY STAR Commercial Refrigerators and Freezers.
Jes Rivas, Swift Strategy, seconded.

Vote on the motion. The motion carries. (16 yes 0 no, 1 abstain).

Light ended the meeting at 12:45.

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 minutes from the July 22, 2025 RTF meeting. (Jerome/Douglass)	19	0	0	Yes	66%	100%	19
Motion: Approve the agenda for the August 19, 2025 RTF meeting. (Douglass/Ralph)	19	0	0	Yes	66%	100%	19
Motion: Approve updates to the Commercial DHP in Existing Buildings UES measure as presented and: -Update measure eligibility to 4 tons maximum capacity -Keep the Category at Planning, -Keep the Status at Active, -Set the sunset date to August 31, 2028 (Jerome/Kelsven)	19	0	0	Yes	66%	100%	19

Motion: Approve the proposed edits to the Residential Central Air Conditioners UES measure as presented, and: -Keep the Category at Planning -Change the Status to Active (from Under Review) -Set the sunset date to August 31, 2027 (Miller/Jerome)	20	0	0	Yes	69%	100%	20
Motion: Update the current practice from 50% to 34% for the ENERGY STAR Commercial Refrigerators and Freezers UES (Brown/Rivas)	16	0	1	Yes	55%	100%	17

August 19, 2025, Meeting Attendance
* Designates Voting Member

Name	Affiliation
Chris Baker	VEIC
Landon Barber*	Idaho Power
David Baylon*	Independent
David Bopp	RTF Contract Analyst
Gregory Brown*	Tierra Resource Consultants
Noe Contreras*	NEEA
Michael Daukoru	CALTF
Bob Davis*	Ecotope
Christian Douglass*	RTF Vice Chair
Logan Douglass	RTF Contract Analyst
Jesse Durst	PSE
Ryan Firestone	RTF Contract Analyst
Wesley Franks	WA UTC
Lisa Gartland*	ODOE
Andrew Grant*	Cadmus
Adam Hadley	RTF Contract Analyst
Bill Hibbs	Clark PUD
Aaron Ingle	NEEA
Masumi Izawa	BPA
Mark Jerome*	CLEAResult
Mitt Jones	independent
Phillip Kelsven*	BPA
Erin Kempster	Power TakeOff
Rick Knori*	Lower Valley Electric

Jennifer Light*	RTF Chair
Denis Livchak	RTF Contract Analyst
Ben Mabee*	BPA
Bruce Manclark*	Earth Advantage
Rob Marks*	Snohomish County PUD
Eric Miller*	Independent
Ali Mires	DC PUD
Michelle Morales	Eco Act
Andi Nix*	Energy Trust of Oregon
Nick O'Neil*	Energy 350
Joe Prijyanonda	ICF International
Laney Ralph*	NW Natural
Ron Ramey	Energy Solutions
Jes Rivas*	Swift Strategy
Josh Rushton	RTF Contract Analyst
Paul Sklar	RTF Contract Analyst
Kevin Smit	NWPCC
John Stalnaker	BPA
Laura Thomas	RTF Manager
Samantha Taylor	CLEAResult
David Tripamer	BPA
Eva Urbatsch*	Puget Sound Energy
Michelle Wildie	Puget Sound Energy
Jim White*	Chelan County PUD