

RTU Controls Technical Working Group

Meeting #2 - Scope
September 11, 2026

CalMTA is a program of the California Public Utilities Commission and is administered by Resource Innovations.

Agenda

- Expectations
- Refresher on goals
- Scope Discussion: What is the RTU?
- Residential Connected Commissioning (CCX) Specification Preview
- Next Steps



Introductions



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Participant Expectations

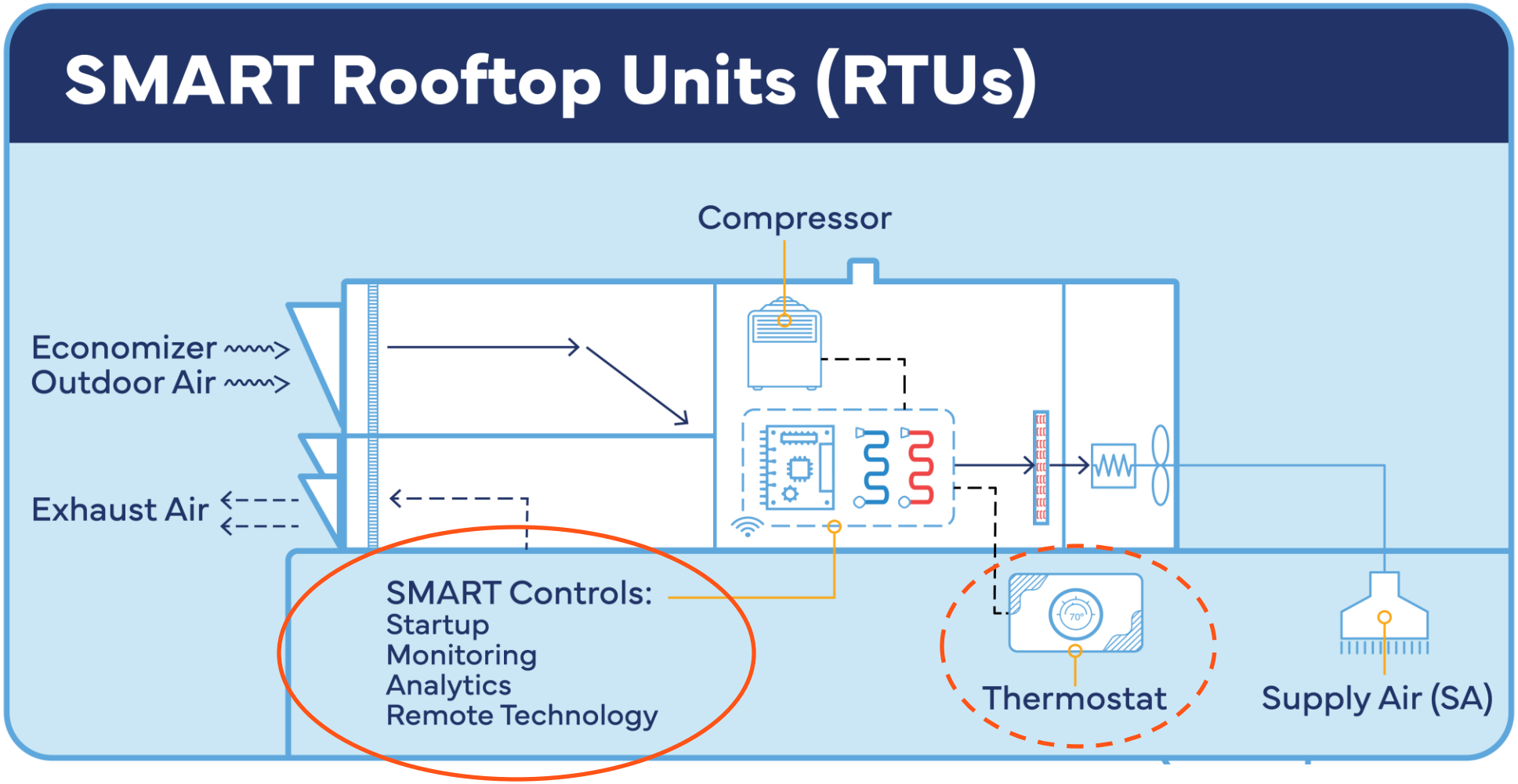
- Bring your perspective.
- Be candid and constructive.
- Share real-world insights.
- Think beyond today's products.
- Help us find the right balance.
- Work to find consensus, not perfection.
- Anticipate a meeting cadence ~ 3 weeks depending on logistics.
- Stay on topic

"SMART" RTUs



1. Application-based startup
2. Automated fault detection and diagnostics (beyond economizers required in ASHRAE 90.1)
3. Remote connection
4. Demand response

SMART Rooftop Units (RTUs)



Working group focus

Related component

Scope Discussion: What type of RTU?



RTU Scope to review

- Fuel type
- Capacity
- Single-zone vs. multi-zone
- Compressor control
- Fan control



Fuel type

Recommendation: Heat Pump, Gas, and Dual Fuel

Reasoning:

- These features will help all units get started up & maintained more properly
- We know that gas packs aren't always set up properly
- Heat pumps are at least as complicated
- Dual Fuel units may have the most reasons to ensure best practices during startup

Capacity

Recommendation: 3-20 tons

Reasoning:

- These units represent a huge portion of the market
- Especially for smaller businesses, where commissioning is less likely

Single-zone vs. multi-zone

Recommendation: Single-zone

Reasoning:

- These units represent a huge portion of the market
- Especially for smaller businesses, where commissioning is less likely

Compressor control

Recommendation: Single-stage, multi-stage, and variable speed compressors

Reasoning:

- All units can benefit from improved startup procedures
- Single-stage and multi-stage are majority of the market
- Variable speed may take on a larger share of the market in the future

Fan control

Recommendation: Single-speed, multi-speed, and variable speed fans

Reasoning:

- All units can benefit from improved startup procedures
- Single-speed and multi-speed are majority of the market
- Variable speed may take on a larger share of the market in the future

Adv HP Coalition

Residential Connected Commissioning (CCX) Specification Preview



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Residential HVAC Installation Quality

- **70-90%** of residential HVAC systems have at least one fault.[1]
- **20.7 terawatt hours / year** wasted over no-fault baseline due to airflow and refrigerant charge.[2]
- **Additional $2.5 billion / year in utility bills** from energy waste.[2]



1. DOE EERE, 2019. Residential HVAC Installation Practices: A Review of Research Findings
2. Winkler et al. 2020. Impact of installation faults in air conditioners and heat pumps in single-family homes on U.S. energy usage

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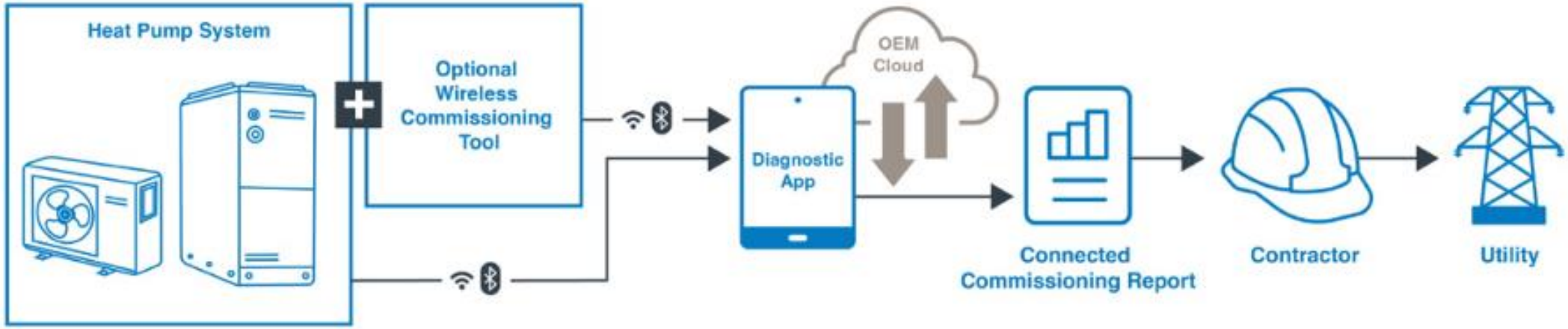
~~Connected~~ Embedded Commissioning



Automatically determine:

- ✓ Geolocation, make and model, date of commissioning
- ✓ Refrigerant charge adequacy
- ✓ Indoor airflow adequacy

Verify:

- ✓ Settings impacting supplemental heat usage
- ✓ Operating mode
- ✓ Capacity and power draw in test mode

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Industry-Driven Collaboration

Goal: Develop a definition for connected commissioning while developing alignment among OEMs and including multiple perspectives

Technical Working Group

neea

TRC Member of WSP

Pacific Northwest National Laboratory

National Laboratory of the Rockies

- ~9 HVAC OEMs
- ~7 Other industry stakeholders

Connected Commissioning Product Definition

- Report Criteria
- Certification Method of Test

CCX Project Timeline

2026	• Publish CCX Specification (Q1) • Demo/Case Studies of current onboard CX systems (Q1-Q4) • NREL certification lab testing complete (Q3-Q4) • NEEA Contractor Market Research (Q2) • PNNL round robin testing (Q4?) • V1.? Update of specification (EOY)
2027	• NEEA stands up Qualified Product List (Q1) • OEMs submit attestation of which hardware meets CCX specification • NEEA and Partners pursue program inclusion of CCX
2028	• Field Experience & Impact Research – tbd details

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Report Criteria (1/3)

System Information	
Location of Install	GPS Coordinates
Completion Date	Month / Day / Year
AHRI Certification #	Of Matched Pair
Indoor Unit	Make and Model
Outdoor Unit	Make and Model
Thermostat Model	Make and Model
System Efficiencies	HSPF2, SEER2, etc.

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Report Criteria (2/3)

Suitable Conditions	True or False
Outdoor Temperature	°F
Indoor Temperature	°F

Refrigerant Charge Adequacy	True or False
Liquid Line Temperature	°F
Degrees of Subcooling	°F
OEM Target Subcooling	°F

Indoor Airflow Adequacy	True or False
Indoor Airflow Rate	CFM
Fan Power	W

Connected Commissioning Report

Pass or **Fail**

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Report Criteria (3/3)

Controller Information	
Auxiliary Heat Control	Auxiliary Heat Lockout (N/A, Off, °F) Compressor Lockout (N/A, Off, °F)
Setback Recovery Mode	N/A, Off, On
WiFi Connection	Connected or Not Connected
Load Flex Capability	AHRI 1380 Certified, ENERGY STAR Connected Thermostat, Etc.
Switchover (*Dual Fuel Only*)	Switchover (N/A, °F, Description of Control Method)

Next Steps

- Date for next meeting:
  - Friday, October 9: 9-10am PT (12-1pm ET)
- Objective of next meeting:
  - Review existing standards and test procedures



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