

RTU Controls Technical Working Group

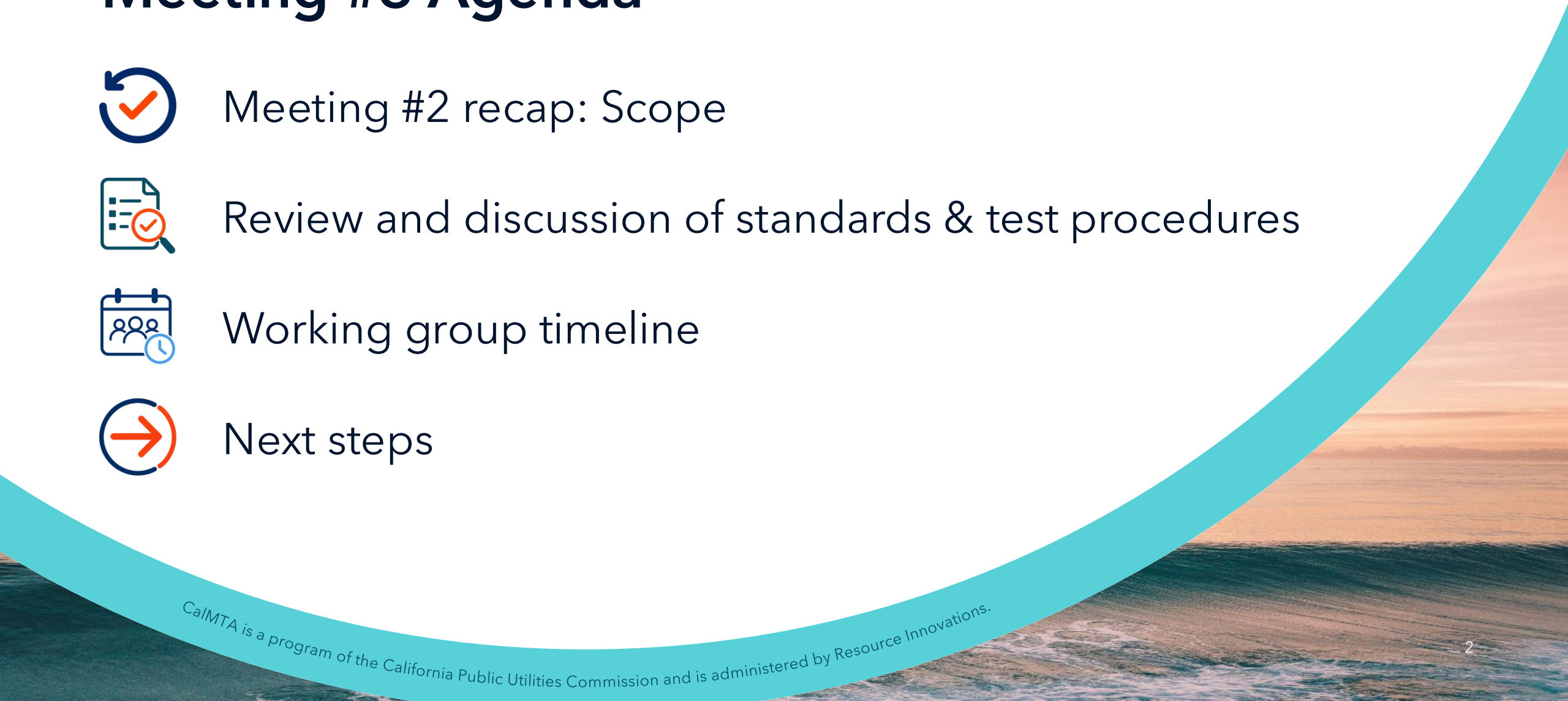
Meeting #3 – Existing Standards

October 9, 2026

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

SMART RTU Working Group
Meeting #3 Agenda

- Meeting #2 recap: Scope
- Review and discussion of standards & test procedures
- Working group timeline
- Next steps



Participant Expectations

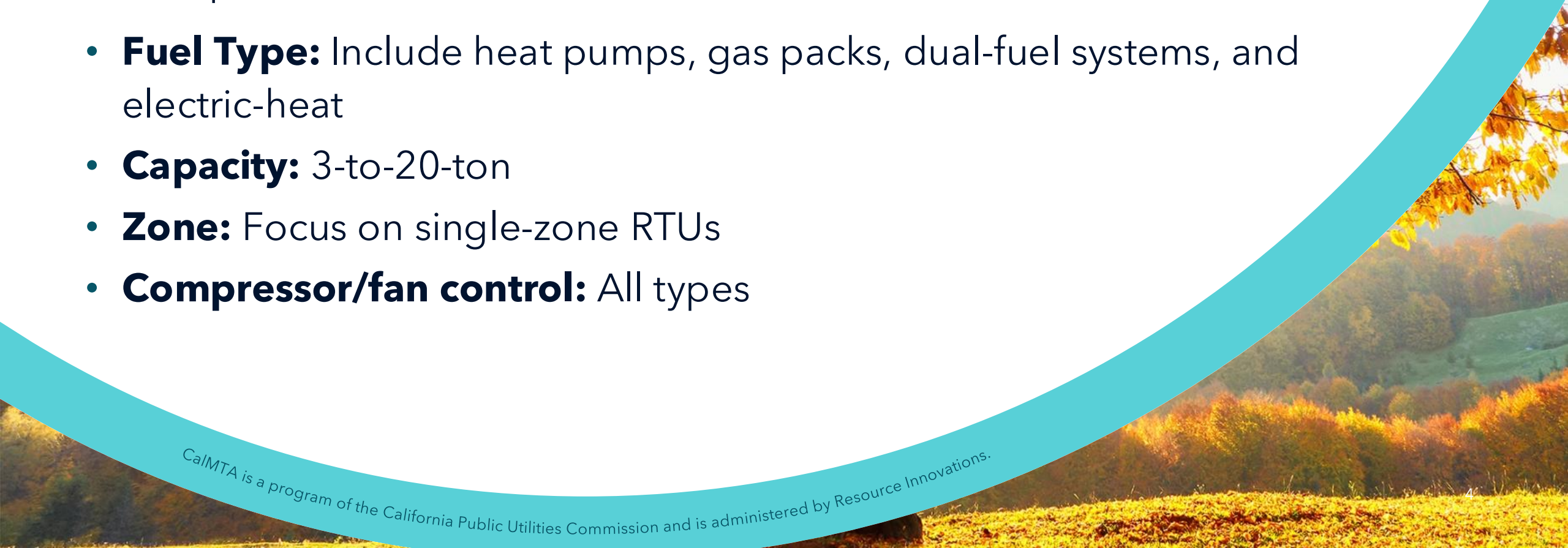
- Bring your perspective.
- Be candid and constructive.
- Share real-world insights.
- Think beyond today's products.
- Help us find the right balance.
- Work to find consensus, not perfection.
- Stay on topic.
- No one knows everything, but together we know a lot!

Outcomes from meeting #2: Scope

Key decisions and discussion outcomes:

Proceed with a broad initial scope for manufacturer-provided "SMART" RTU capabilities.

- **Fuel Type:** Include heat pumps, gas packs, dual-fuel systems, and electric-heat
- **Capacity:** 3-to-20-ton
- **Zone:** Focus on single-zone RTUs
- **Compressor/fan control:** All types



Standards and Test Procedures



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

Goal: our spec references existing standards as much as possible

Reason	Why it matters
Avoid reinventing requirements	Existing standards already much of what we need
Minimize manufacturer burden	Reduce friction in industry
Support consistency across programs	Referencing standards helps utility programs apply the spec consistently
Reduce ambiguity	Established standards provide clearer guidance
Focus our effort on gaps	We can spend time on the missing pieces

SMART RTU Standards Review



- Let's review these standards at a high level
- Request brief opinions on each
- Deeper, nuanced conversations to follow

Startup, **M**onitoring,
Analytics, **R**emote **T**echnology

Applicable standards

Organization/Number	Name of Standard
Advanced Heat Pump Collaborative	Specification for Embedded Commissioning Capable Heat Pumps and Air Conditioners
ASHRAE 207	Laboratory Method of Test of Fault Detection and Diagnostics for Air-side Economizers
NLR/DOE	Commercial HVAC Challenge
AHRI 1380	Demand Response through Variable Capacity HVAC Systems in Residential and Small Commercial Applications
AHRI 1390/CSA Z5050	Commercial Building Smart Grid Interface Standard
ANSI/CTA 2045	Modular Communications Interface for Energy Management
Open ADR	Open Automated Demand Response

Advanced HP Collaborative: Connected commissioning

Specification: Specification for Embedded Commissioning Capable Heat Pumps and Air Conditioners.

Summary:

- Produces a standardized report about startup
- Pass/fail

SMART: Startup

Market/status: Residential. Late-2026 draft is anticipated.

"Does the unit meet manufacturer's criteria at startup?"

ASHRAE 207

Standard: Laboratory Method of Test of Fault Detection and Diagnosis for Air-side Economizers

Summary: States how to test FDD to determine if it works.

SMART: Automated Fault Detection and Diagnostics (AFDD).

Market: Commercial RTUs with economizers

Only applies to FDD of economizers

DOE Commercial HVAC Challenge

Specification: Commercial Building HVAC Technology Challenge.

Summary: Sets method of test for connectivity and demand response targets for advanced rooftop heat pumps.

SMART: Connectivity and demand response

Market: Commercial low-ambient heat pump RTUs.

- Still in development

AHRI 1380 and AHRI 1390

AHRI 1380: Defines DR communications and equipment response.

AHRI 1390: Commercial Smart Grid Interface. Very early stages

SMART: Demand response.

Market:

AHRI 1380: Residential and small commercial (<65 kBtu/hr)

AHRI 1390: Commercial

Open ADR - CTA 2045- AHRI 1380

Open ADR:
Communication protocol from an aggregator or utility

CTA 2045:
Physical port to the equipment

AHRI 1380:
How the equipment responds to the event

CTA-2045

Standard: Modular Communications Interface for Energy Management.

Summary: Defines a modular hardware interface and energy-management messages.

SMART: Remote Technology/Connectivity. Through Wi-Fi, cellular, or smart mesh

Market: Residential and applicable commercial equipment



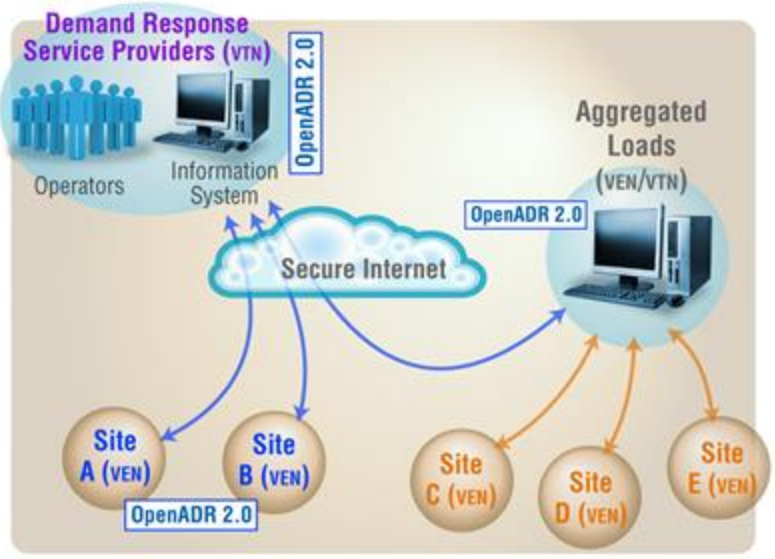
OpenADR

Protocol: Open Automated Demand Response.

Summary: Standardizes a non-proprietary interface between utilities or aggregators and connected customer systems.

SMART: Connectivity and Demand response.

Market: Both commercial and residential. Applications include building-management systems and thermostats.



Related standards

Organization/Number	Name of Standard
ANSI/ASHRAE/IES Standard 202-2024	The Commissioning Process Requirements for New Buildings and New Systems
ANSI/ASHRAE Standard 230-2022	The Commissioning Process Requirements for Existing Buildings and Systems
ASHRAE Guideline 0-2019	The Commissioning Process
ASHRAE Guideline 1.1-2025	Application of the Commissioning Process to New HVAC&R Systems
ASHRAE Guideline 11-2021	Field Testing of HVAC Controls Components
ASHRAE Guideline 36	High-Performance Sequences of Operation for HVAC Systems
ANSI/ASHRAE Standard 221-2020	Test Method to Field-Measure and Score the Cooling and Heating Performance of an Installed Unitary HVAC System
ANSI/ASHRAE Standard 135 - BACnet	BACnet - A Data Communication Protocol for Building Automation and Control Networks
BACnet/SC	BACnet Secure Connect
ANSI/ASHRAE Standard 135.1	Method of Test for Conformance to BACnet
ANSI/ASHRAE Standard 231-2026	A Control Description Language for Building Environmental Control Sequences
ANSI/ASHRAE/IBPSA Standard 232-2024	Common Content and Specifications for Building Data Schemas

…the list continues on the following slide!

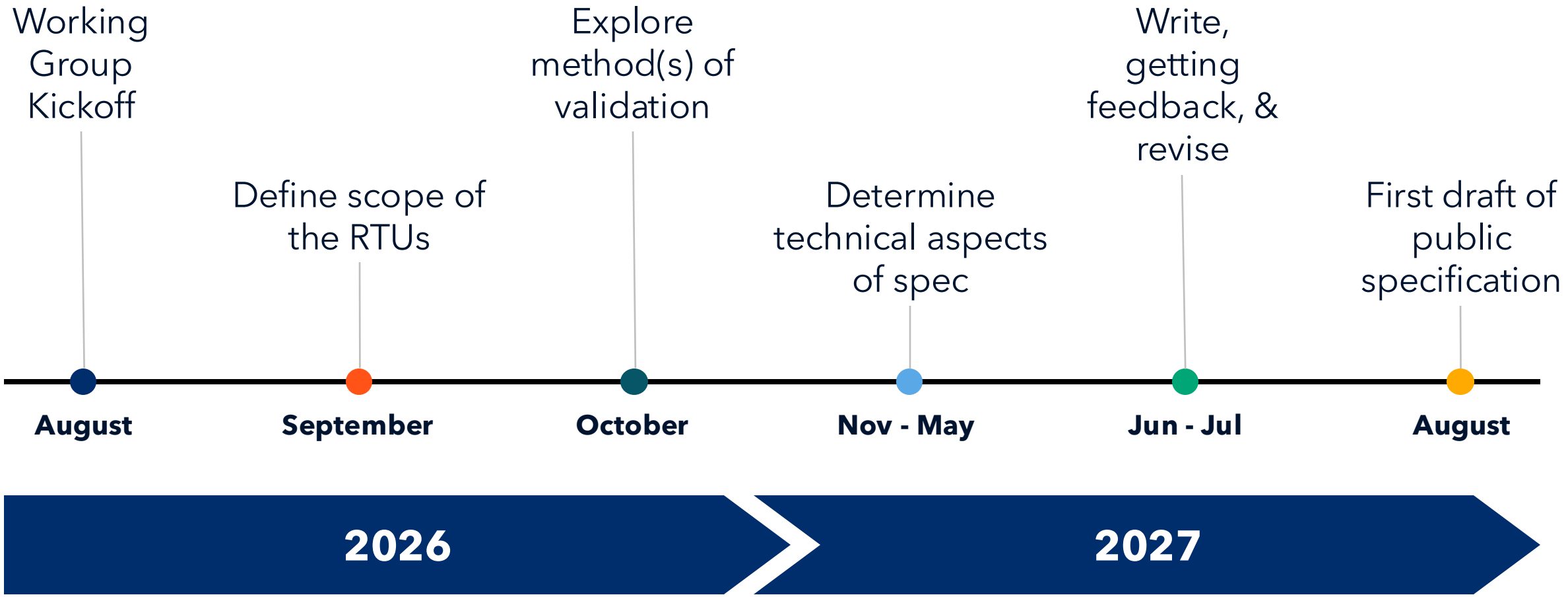
Related standards (cont.)

Organization/Number	Name of Standard
ASHRAE Standard 223P	Semantic Data Model for Analytics and Automation Applications in Buildings
NIST SP 800-82 Rev. 3	Guide to Operational Technology (OT) Security
NIST SP 800-213	IoT Device Cybersecurity Guidance for the Federal Government: Establishing IoT Device Cybersecurity Requirements
AHRI 1340-2024	Performance Rating of Commercial and Industrial Unitary Air-Conditioning and Heat Pump Equipment
DOE CFR 431.92	Code of Federal Regulations
AHRI/ASHRAE 37	Methods of Testing for Rating Electrically Driven Unitary Air-Conditioning and Heat Pump Equipment
ASHRAE 90.1	Energy Standard for Sites & Buildings Except Low-Rise Residential Buildings



Are there additional standards we should be aware of? Let us know!

Steps to a specification



Next steps



Next meeting – Friday, October 30

Detailed review of the residential Embedded Commissioning spec.



Homework request

Review Table 1 “Criteria Name” and determine applicability to RTUs.

Note important pieces to add, such as economizer requirements.



Subgroups and individual discussions

Subgroups are not necessary, but if manufacturers want to meet individually to deep-dive please contact Nick (nfiore@calmta.org).

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