



# CALIFORNIA STATEWIDE UTILITY CODES AND STANDARDS PROGRAM



## Notes from October 7, 2014 Stakeholder Meetings

### MEETING INFORMATION

**Meeting Date:** October 7, 2014

**Topics Discussed:** Modifications to Joint Appendix 5: Technical Specifications for Occupant Controlled Smart Thermostats (OCSTs)

**Host:** Sacramento Municipal Utilities District

### ATTENDEES

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## MEETING AGENDA

1:00 - 1:15	Introduction: Overview of 2016 Title 24 Development; Summary of stakeholder outreach purpose and procedure
1:15 - 2:30	Occupancy Controlled Smart Thermostat (OCST) (Modifications to Joint Appendix 5 only)
2:30 - 3:00	Review and wrap-up, next steps



## MEETING NOTES

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These notes summarize the discussion at the IOU-sponsored stakeholder webinar that occurred on October 7, 2014.

### Overview of 2016 Title 24 Development

- ◆ Heidi Hauenstein (Energy Solutions, on behalf of the Statewide C&S Team) presented.
- ◆ Presentation available here: [http://title24stakeholders.com/wp-content/uploads/2014/10/T24-OCST-Stakeholder-Webinar-Presentation\\_20141007.pdf](http://title24stakeholders.com/wp-content/uploads/2014/10/T24-OCST-Stakeholder-Webinar-Presentation_20141007.pdf)
  - No questions or comments.

### Modifications to Joint Appendix 5: Technical Specifications for Occupant Controlled Smart Thermostats (OCSTs)

- ◆ Amanda Gonzalez (Energy Solutions, on behalf of the Statewide C&S Team) presented.
- ◆ Presentation available here: [http://title24stakeholders.com/wp-content/uploads/2014/10/T24-OCST-Stakeholder-Webinar-Presentation\\_20141007.pdf](http://title24stakeholders.com/wp-content/uploads/2014/10/T24-OCST-Stakeholder-Webinar-Presentation_20141007.pdf)

### Comments and Feedback:

#### Questions

- ◆ Trane: What is a price signal?
  - CASE Team: A price signal is a type of demand response signal that indicates information about price. Some DR programs are designed as tariff/rate structures, in which peak event days trigger a change in price of electricity for a subset of hours.
- ◆ Jon McHugh (McHugh Energy): How does enforcement work?
  - All of the requirements in JA5 are self-certified by the manufacturer. Utilities do not have the authority to enforce the requirement. However, if utilities provide guidance it could help ensure compliance with Title 24 requirements and a greater likelihood that the customer will use an OCST that is compatible with the utility system.
- ◆ Jon McHugh: This change does not impact how a DR signal is sent?
  - That's correct. The proposed changes impact the thermostat and how it receives and responds to responds an event, not how the event is sent.
- ◆ Jon McHugh: With respect to Demand Response Event Restoration Delay, do the open source communication protocols (OpenADR and SEP) include a randomized restoration requirement? The clause "Unless the messaging protocol contains randomization of restoration delay logic" may cause confusion because it is not clear if the device or the signal is responsible for the randomization.
  - Rish Ghatikar (LBNL): Open ADR 2.0 does include a randomized restoration. This is a mandatory requirement for 2.0b only; I believe it is optional for 2.0a.
  - Harlan Coomes (SMUD): SEP 1.1 includes randomized restoration.



- Jon McHugh: What is the recommendation? Is this paragraph needed at all, and if so is the clause that starts with, “unless the messaging...”
  - Follow-up Item 1: CASE Team will evaluate language for randomized event restoration, whether the language that requires the device to include randomize event restoration capabilities is duplicative because signals are also managing randomized restoration.
- ◆ Jon McHugh: We did not specify the amount of memory that is required. Suggest looking at the 2008 Title 23 standards (Section 119) and the current Title 20 requirements for time-clock controls for example language on required memory.
  - Dan O’Donnell (Honeywell): There may be memory requirements in the NEMA standard as well. I suggest reviewing them.
  - Follow-up Item 2: CASE Team will review existing memory requirements and consider adding more specific requirements to JA5.
- ◆ Jon McHugh: Are OCSTs required in Hotel Guestrooms today?
  - It depends on the HVAC system and whether it is for new construction or retrofits. If the system uses a unitary HVAC/HP, or furnace system without an EMCS and it is new construction, the OCST requirements do apply.
- ◆ Rish Ghatikar: Do we have any requirements about how the device handles participation in an event when the connection to the signal is lost after the initial signal is received, but before the event begins?
  - Amanda Gonzalez: There is not an existing requirement to address this situation. We are interested to get input from stakeholders, but we are not certain we will address this during this code change cycle.
  - Dan O’Donnell: We would prefer to let the manufacturer decide how to handle this situation.
  - Rish Ghatikar: The communication that occurs within the device after the DR signal is sent and received does not really matter – as long as the appropriate control is triggered, the DR action actually occurs, and the utility can verify that the activity occurred.
  - Carl Besaw: Override may be necessary. It would be good to allow override without a network connection.
    - Rish Ghatikar: Agree.
  - Rish Ghatikar: We would advocate for including in JA5 a requirement that states how to handle this situation.
  - Amanda Gonzalez: We should revisit the language to make sure it doesn’t jeopardize a customer’s ability to override an event.
  - Follow-up Item 3: CASE Team will investigate if we should modify proposed language in JA5 to address situation when connection is lost after a signal is received, but before an event occurs.
  - Follow-up Item 4: CASE Team will confirm that the existing override requirements apply even when the connection to the signaler is interrupted.
- ◆ Caleb Joiner (Trane): Does the proposed code say that a Wi-Fi or Zigbee connection is required, but any additional physical communication interfaces are optional?
  - That’s correct.



- ◆ Carl Besaw (SCE): Does the thermostat have to communicate directly to the thermostat or can it go through a gateway.
  - Dan O'Donnell: current standard allows communication through a gateway. Protocols like Z-wave, which are proprietary but depend on Zigbee, are used in the market. A system like this would not comply based on the current standard because Z-wave is not considered an "open-standard".
  - Carl Besaw: Sometimes the communication between the gateway and the thermostat is not through Wi-Fi or Zigbee.
  - Denver Hinds (SMUD); We want to make sure that customers, particularly in new construction, have the option of connecting the device directly to utility DR servers without having to maintain an intermediary equipment or service in order to participate in DR.
  - Carl Besaw: The consumer would be free to point their device to whatever service they desire. It doesn't have to be a utility. It could be another service provider. The hub may support more than one communication.
  - Amanda Gonzalez: The code does not disallow the use of gateways. However, if you use a gateway, each thermostat must also have the capability of communicating directly with the signaler without using the gateway.
- ◆ Albert Chi (PG&E): If the thermostat is attached to a gateway, which is common, will the gateway be considered an EMCS? I know this is outside of the scope of the JA5 effort, but this is a good question to address.
  - Harlan Coomes: This may be when it's important to have an open source protocol onboard.
  - Denver Hinds: I do not think that the Standards the way they are written would allow the hub to be used for compliance. It is important to remember that this is for new construction.
  - Dan O'Donnell: We need to spend some time on this. If the thermostat itself can connect to a hub or gateway, then it is compliant with Title 24.
  - *Follow-up Item 5: CASE Team will explore whether the existing Title 24 Requirements could be interpreted that a gateway is considered an EMCS. If a gateway is considered an EMCS, thermostats connected through a gateway would need to comply with EMCS requirements, and may not need to comply with OCST requirements.*
- ◆ Simon Lee (CEC): What are the possible open-based standards allowed under JA5.3.1 other than Wi-Fi and Zigbee?
  - We don't know of any now, but there could be some in the future.
- ◆ (Venstar): The physical communications interface is limited to wireless only? Should a wired option be available?
  - *Follow-up Item 6: CASE Team will consider if the physical communication requirements should be rephrase to allow for a wired internet connection.*
- ◆ Jon McHugh: The Nest thermostat has a proprietary communication protocol.
  - If your OCST is paired with an energy management control system it does not have to comply with JA5.



- Rish Ghatikar: A manufacturer can still use a proprietary communication method, but each thermostat must also have the capability to communicate using an open source protocol (e.g., OpenADR or SEP) and either Zigbee or Wi-Fi.
- Rachel Radell-Harris: To help avoid stranded assets, it is important that customers do not have to rely on proprietary systems. This is why we are specifying open-based standards.
- ◆ Rish Ghatikar: If you are planning on this for new construction after January 1, 2017, then why are we specifying SEP 1.1? Shouldn't we be specifying SEP 2.0, which is the new standard?
  - Amanda Gonzalez: Main concern is that SEP is largely paired with Zigbee. It is very unlikely that utilities will be capable of supporting a Zigbee system because it would require a significant infrastructure update.
  - Rish Ghatikar: The Zigbee pairing is with SEP 1.1. SEP 2.0 does not need to be paired with Zigbee.
  - Harlan Coomes: I don't see the support for SEP 2.0 being available through the advanced metering infrastructure network. Requiring SEP 1.1 at a minimum will still help to address some of the issues.
  - Denver Hinds: SMUD is very interested in SEP 2.0. However, transitioning to SEP 2.0 does require a significant infrastructure upgrade. Including SEP 2.0 in the Standards is not a realistic target because we do not anticipate that all the utilities in the state will be able to implement the required infrastructure upgrades before January 1, 2017.
- ◆ Denver Hinds: Are you (to Rish) suggesting that manufacturers should pair SEP 1.1 with Wi-Fi? That isn't really possible.
  - Rish Ghatikar: That is the question. Should we be dictating the communication standards that should be used?
  - Denver Hinds: Yes, we are trying to dictate the communication so that we can be sure that the thermostat will be capable of connecting to the utility DR programs.
- ◆ Jon McHugh: There are some buildings that do not receive wireless signals that well. What happens if a thermostat is in a location that doesn't receive signals well (e.g., in a basement)? What are the utilities that run the DR programs finding?
  - Harlan Coomes: This does come up for both Wi-Fi and Zigbee. There are physical barriers and there are software barriers. The designer needs to decide how the thermostats need to be connected to avoid this problem. This is an area that is ripe for development.
  - Jon McHugh: If I have a device that is remote from the thermostat that is receiving the signal (e.g., a HUB) and the remote device is successful at sending the signal to the thermostats, why can't that system be allowed?
  - Denver Hinds: The problem is that in allowing the hub/gateway to receive the signal we exclude the option of connecting the thermostat to have direct communication. It's a stranded assets issue.
- ◆ Section 5.3.2 (Removable Port)
  - Harlan Coomes: This section does not say the physical connection point needs to be wired.
  - Denver Hinds: We should add more clarity on what each term means.



- Amanda Gonzalez: for the manufacturers on the line, is it helpful to have more clear definitions?
  - Dan O'Donnell: Yes, it is helpful.
- We should consider if we should allow a wired connection.
- Follow-up Item 7: CASE Team will explore whether the definitions for expansion/communication port should be clearer, and if language in Section JA5.3.2 should be modified so it does not reference allowing one-way communication because OpenADR 2.0 and SEP 1.1 only support two-way communication.
- ◆ Section 5.5 (Terminology)
  - Jon McHugh: Unless a term is not used elsewhere, it is not necessary to define in JA5.
- ◆ When are comments due?
  - Please send comments as soon as possible, but no later than October 31st.
- ◆ Albert Chiu: not all manufacturers were able to participate. Can we send them the presentation and ask them to provide comments.
  - Yes, the presentation will be posted on <http://title24stakeholders.com>, and we will see if we can send the presentation out to our stakeholder list directly.

### Follow Up Items

1. **Randomized Event Restoration:** CASE Team will evaluate language for randomized event restoration, whether the language that requires the device to include randomize event restoration capabilities is duplicative because signals are also managing randomized restoration.
2. **Specify memory required on devices:** CASE Team will review existing memory requirements and consider adding more specific requirements to JA5.
3. **Requirements for case when there is a utility server connection failure during a DR event:** CASE Team will investigate if we should modify proposed language in JA5 to address situation when connection is lost after a signal is received, but before an event occurs.
4. **Override without network connection:** CASE Team will confirm that the existing override requirements apply even when the connection to the signaler is interrupted.
5. **Definition of Gateway as ECMS:** CASE Team will explore whether the existing Title 24 Requirements could be interpreted that a gateway is considered an EMCS. If a gateway is considered an EMCS, thermostats connected through a gateway would need to comply with EMCS requirements, and may not need to comply with OCST requirements.
6. **Allowing Wired Connection:** CASE Team will consider if the physical communication requirements should be rephrase to allow for a wired internet connection.
7. **Definition for Expansion/Communication Port** CASE Team will explore whether the definitions for expansion/communication port should be clearer, and if language in Section JA5.3.2 should be modified so it does not reference allowing one-way communication because OpenADR 2.0 and SEP 1.1 only support two-way communication.