Notes from Utility-Sponsored Stakeholder Meeting for Demand Response and Demand Flexibility in 2019 Title 24 Standards

Posted December 13, 2016

Meeting Information

Meeting Date: October 11, 2016

Topics Discussed: Demand Response and Demand Flexibility.

Meeting Time: 10:00 – 4:30 PM

Meeting Host: California Statewide Investor Owned Utility Codes and Standards Team

Attendees

First Name	Last Name	Contact	Organization
Statewide Utility Codes and Standards Team			
Utility Staff			
Marshall	Hunt	mbh9@pge.com	Pacific Gas and Electric Company (PG&E)
Charles	Kim	Charles.Kim@sce.com	Southern California Edison (SCE)
Chris	Kuch	Christopher.Kuch@sce.com	Southern California Edison (SCE)
Randall	Higa	Randall.Higa@sce.com	Southern California Edison (SCE)
Mark	Martinez	Mark.S.Martinez@sce.com	Southern California Edison (SCE)
Bach	Tsan	Bach.Tsan@SCE.com	Southern California Edison (SCE)
Javier	Mariscal	Javier.Mariscal@sce.com	Southern California Edison (SCE)
Alvaro	Mendoza	Alvaro.Mendoza@sce.com	Southern California Edison (SCE)
Gary	Schushner	gary.shushnar@sce.com	Southern California Edison (SCE)
Brian	James	Brian.James@sce.com	Southern California Edison (SCE)
Christopher	Goff	CGoff@semprautilities.com	Southern California Gas (SoCalGas)
Adam	Manke	amanke@semprautilities.com	Southern California Gas (SoCalGas)
Michelle	Sim	MSim@semprautilities.com	Southern California Gas (SoCalGas)
John	Barbour	jbarbour@semprautilities.com	San Diego Gas and Electric
Jim	Kemper	james.kemper@ladwp.com	Los Angeles Department of Water and Power
David	Roland	David.Roland@smud.org	Sacramento Municipal Utility District
CASE Team Members			
David	Wylie	dwylie@aswb-engineering.com	ASWB Engineering
Scott	Bailey	sebailey@aswb-engineering.com	ASWB Engineering
Heidi	Hauenstein	hhauenstein@energy-solution.com	Energy Solutions
Erin	Linney	elinney@energy-solution.com	Energy Solutions
California Energy Commission Participants			
Payam	Bozorgchami	Payam.Bozorgchami@energy.ca.gov	California Energy Commission (CEC)
Christopher	Meyer	Christopher.Meyer@energy.ca.gov	California Energy Commission (CEC)
Ingrid	Neuman	Ingrid.Neumann@energy.ca.gov	California Energy Commission (CEC)
Adrian	Ownby	Adrian.Ownby@energy.ca.gov	California Energy Commission (CEC)

Bill	Pennington	Bill.Pennington@energy.ca.gov	California Energy Commission (CEC)
Mazi	Shirakh	Maziar.Shirakh@energy.ca.gov	California Energy Commission (CEC)
Peter	Strait	Peter.Strait@energy.ca.gov	California Energy Commission (CEC)
Danny	Tam	Danny.Tam@energy.ca.gov	California Energy Commission (CEC)
Gabriel	Taylor	Gabriel.Taylor@energy.ca.gov	California Energy Commission (CEC)
Other Participants			
Doug	Avery		Avery Energy
James	Benya		Benya Burnett Consultancy
Nick	Brown		Building Smart Group
Jeanne	Fricot		Center for Sustainable Energy
Brandon	DeYoung		De Young Properties
Ty	Peck		Energy Outlet
Kitty	Wang		Energy Solutions
George	Nesbitt		Environmental Design/Build
Aniruddh	Roy		Goodman Manufacturing Company
Dan	O'Donnell		Honeywell
Jim	Lutz		Hot Water Research
Courtney	Ward		Kitchell
Peter	Schwartz		Lawrence Berkeley National Laboratory (LBNL)
Charles	Knuffke		WattStopper
Jon	McHugh		McHugh Energy Consultants
Misti	Bruceri		Misti Bruceri & Associates, LLC
Mark	Aviles		Mitsubishi Electric Cooling & Heating
William	Ha		Mitsubishi Electric Cooling & Heating
Vincent	Lee		Mitsubishi Electric Cooling & Heating
Pierre	Delforge		Natural Resources Defense Council (NRDC)
Mark	Lyles		New Buildings Institute
Kyra	Weinkle		NORESCO
Sally	Blair		NORESCO
Roger	Hedrick		NORESCO
Ying	Wang		Okapi Architecture
Barry	Haaser		OpenADR
Albert	Chiu		Pacific Gas and Electric Company (PG&E)
Sam	Piell		Pacific Gas and Electric Company (PG&E)
Kelly	Seeger		Phillips
Yao-Jung	Wen		Phillips
Joseph	Briscoe		PLC Multipoint
Aimee	Wong		Southern California Edison (SCE)
Neha	Arora		Southern California Edison (SCE)
Pei-Chi	Chou		Southern California Edison (SCE)
Beth	Braddy		Trane
Evan	Eitemiller		Trane
Astar	Harmon		www.energyinspectors.com

Meeting Agenda

Time	Topic	Presenter
1:00 – 1:30	Introduction	Randall Higa (SCE)
1:30 – 1:45	Compliance Improvement	Javier Mariscal (SCE)
1:45 – 2:15	Background on Demand Response	David Wylie (ASWB Engineering)
2:15 – 2:25	Break	
2:25 – 3:30	Demand Response Clean-up	Scott Bailey (ASWB Engineering)
3:30 – 4:55	Demand Flexibility	David Wylie (ASWB Engineering
3:55 – 4:00	Review and wrap-up, next steps	Randall Higa (SCE)

Key Takeaways and Action Items

1. Overview
    a. No key takeaways or action items
2. Demand Response Clean-up
    a. Participants expressed confusion from implementers (building designers, contractors and controls manufacturers) about the code language, both Title 24 Standards and JA5. The stakeholders were highly receptive to a clean-up effort. Confusion arouse from:
        i. Inconsistencies in language used to describe demand response requirements.
        ii. Terminology varies throughout the code language.
        iii. Definitions were missing or outdated with current industry practices.
    b. Participants had a discussion about “DR Ready/ DR Capable” vs “DR Enabled”, or how far Title 24 could require demand response readiness and participation. Major concerns were raised regarding the cost and push back of requiring “DR Enabled” buildings.
    c. Participants recommended that the code language be more explicit about the automatic aspect of demand response, that execution of demand response is automatic when a demand response signal is received.
    d. Participants commented on confusion regarding the demand response communications, more specifically the messaging protocol used to notify end users of an event.
        i. Most stakeholders supported OpenADR as a requirement for demand responsive controls to reduce concerns about interoperability, stranded assets and cybersecurity.
        ii. Concerns still exist with cloud based systems.
    e. Participants expressed some concerns regarding the clean-up of the compliance documentation and acceptance testing. Their main concern was cost effectiveness or incurring additional costs.
    f. If implementers have a better understanding of Title 24 demand response requirements, then better compliance and higher participation in demand response programs and events would result.
3. Demand Flexibility
    a. Participants expressed desire for flexibility in employing alternate demand response strategies not prescribed in Title 24. Possible alternatives that stakeholders requested:

i. Compressor cycling
ii. Compressor + Fan cycling
iii. Combination of strategies to achieve the same load reduction.

b. Participants expressed interest in demand flexibility and the opportunities it presented.
c. Is Demand Flexibility a component of Demand Response or vice-versa?
d. Received Comments
   i. OCST vs ADR Thermostats
   ii. Lack of TES Modeling in CBECC (comment from previous meetings)

Overview of 2019 Title 24 Development

- Randall Higa and Javier Mariscal (SCE) presented on behalf of the Statewide Utility Codes and Standards Team
- Presentation available here.

Comments and Feedback

1. Ying Wang (Okapi Architecture): Does the cost-effectiveness analysis consider the lifecycle costs?
   a. Randall Higa (SCE): Yes
2. Pei-Chi Chou (SCE): How does California Public Utility Commission (CPUC) get involved and provide input to this process?
   a. Randall Higa (SCE): The Statewide Utility C&S Program has to operate within the parameters that CPUC has established.
   b. Mazi Shirakh (CEC): There is some coordination between the California Energy Commission and CPUC. CEC also relies on data from the IOU California Advanced Homes Program (CAHP), which CPUC has to approve because it is an IOU program.
   a. Randall Higa (SCE): CPUC has also been involved in conversations about which baseline should be used for IOU efficiency programs. Should the baseline for incentive programs be minimum compliance with building codes or something else? They have also been working on analyses of compliance with building codes by building department.
3. Aniruddh Roy (Goodman Manufacturing Company): Randall mentioned that demand response (DR) is not feasible under the prescriptive approach since performance trade-offs cannot be made. Could you please elaborate?
   a. Randall Higa (SCE): The key concept is that energy efficiency and DR are different such that you cannot trade efficiency measures for DR controls measures. In other words, you cannot have a less energy efficiency building if you install DR controls.
   b. Mazi Shirakh (CEC): Most prescriptive measure save electricity (kWh). DR reduces electric demand (kW).
4. Peter Schwarts (LBNL): You say there is an effort to bring tools to stakeholders at the right time and you are thinking about the time required to bring products to market and looking ahead to technology trends. With this in mind, are you thinking about performance / outcome-based codes and verifying actual energy performance after the building is completed and occupied?

a. Javier Mariscal (SCE): We are aware that performance-based /outcome-based codes, but that is not our focus for now. There is a huge education lift that we are doing in partnership with the CEC to help people who interpret and enforce the code.
b. Randall Higa (SCE): Moving to outcome-based codes is very difficult for compliance because we do not have the data to demonstrate compliance at the time of permitting.

Demand Response Introduction

- David Wylie (ASWB Engineering, Utility CASE Team) presented.
- Presentation available here.

Comments and Feedback

1. No comments or questions.

Demand Response Clean-up

- Scott Bailey (ASWB Engineering, Utility CASE Team) presented.
- Presentation available here.

Comments and Feedback

1. Mazi Shirakh (CEC): If you are going to recommend revisions to the acceptance tests or new acceptance tests, you will need to complete a cost-effectiveness analysis.
    a. Scott Bailey (Utility CASE Team): Ok, that is good information.
2. Michelle Sim (SoCalGas): Are you going to consider retrocommissioning requirements? How do you ascertain if the system is functioning as intended after a period of time?
    a. Mazi Shirakh (CEC): Title 24 only applies to new construction and major alterations. We cannot require retrocommissioning with the confines of Title 24 because there is not mechanism to require activities that occur after the permitting process. We rely on the utility incentives and other programs to make sure the savings continue.
    b. Michelle Sim (SoCalGas): What do you assume about the persistence of savings?
    c. Mazi Shirakh (CEC): We assume the savings will continue.
3. Kyra Weinkle (NORESCO): Did we capture the correct market actors and tasks that each market actor needs to complete to comply with the proposed requirements?
4. Jon McHugh (McHugh Energy): In nonresidential buildings, you typically have to install an OCST if you replace your air conditioner. As a result, there may be more OCSTs being installed in existing buildings than in new construction. The equipment has to have the capability to be demand responsive but code does cannot require someone to participate in a utility demand response program.
5. Dan O'Donnell (Honeywell): For definitions, why not just call an OCST a "DR Thermostat"? Contractors don't know what an OCST is and the industry calls it a DR thermostat.
6. Ty Peck (Energy Outlet): The proposed code language should continue to call out “automated controls.” Having DR controls does not mean that the control is going to initiate a response. The California Independent System Operator (CAISO) and the California IOUs are using a top-node server for automated dispatch with OpenADR protocol, I think it would be better for the state if Title 24 requires new buildings to have automated controls so you can integrate them with CAISO or the utility programs.
    a. Scott Bailey (Utility CASE Team): Good point.

7. Ying Wang (Okapi Architecture): Is there an exception for buildings that do not have to comply with demand response control requirements because it does not make sense for them to participate in demand response due to the nature of the building, such as hospitals and schools? Requiring demand response controls in these building types does not seem cost-effective because they are not likely to participate in DR programs.
    a. Charles Knuffke (WattStopper): Hospitals are an "I" occupancy, so they and are not covered by Part 6 of Title 24.
    b. David Wylie (Utility CASE Team): Schools that are greater than 10,000 square feet do need to meet the demand responsive lighting control requirements
    c. Christopher Meyer (CEC): Part 6 of Title 24 does cover hospitals. There was a change in the definition of the I occupancy, so there was confusion for a while. To clarify, hospitals are covered. CEC is working with OSHPD to identify requirements that should be applicable to hospitals.
8. Christopher Meyer (CEC): Are you looking at the default settings of hardware? We are getting feedback on the impact of factory settings on the ultimate use of efficiency devices. If the product is shipped in a format that requires the user to make changes to the default settings to realize the efficiency or demand response benefits, then the value of the product is diminished. Are you looking at this issue for DR controls requirements?
    a. David Wylie (Utility CASE Team): That is a good point. The OCST does have some default settings. The Title24-compliant HVAC systems have some conditions that are pre-established, but we should take a look at the factory default settings.
9. Mark Aviles (Mitsubishi Electric Cooling & Heating): How do manufactures get devices approved?
    a. Mazi Shirakh (CEC): There is a self-certification process. Contact me if you have questions. Manufacturers complete a form to self-declare the product meets the OCST requirements. Once CEC receives the form, we update the database of qualifying products.
10. Jon McHugh (McHugh Energy): There seems to be some tension between the desire to avoid stranded assets versus current market practices and market trends. The consumer who purchases the OCST should be able to get value back, and take advantage of competitive markets. If the thermostat uses proprietary communication, the consumer is stuck with using one provider. What are your thoughts on trade-offs between the competitive capabilities of proprietary software and the potential for stranded investment?
    a. Scott Bailey (Utility CASE Team): We have received comments like this as well.
    b. Jon McHugh (McHugh Energy): Are you thinking about going with the approach that requires open-based communication, or are you considering allowing proprietary solutions? It isn't clear what you are proposing from the slides.
    c. Scott Bailey (Utility CASE Team): We are not sure if we will require open-standards, but we are looking at the issues surrounding open and proprietary communication.
    d. Ty Peck (Energy Outlet): The open standard that has been utilized world-wide should be the standard that you base the Title 24 code upon. If you have a product that uses a proprietary communication protocol, you need a virtual end node (VEN) that can communicate using OpenADR to bridge the communication gap between signalers who are using OpenADR and the proprietary products. This architecture that uses VENs along with proprietary products can be safer in terms of cyber security and still allow communication to CAISO.

e. David Wylie (Utility CASE Team): Edison requires the use of OpenADR. Nest thermostat, for example, has their own protocol, and insist on using their own protocol.
f. Aimee Wong (SCE): I manage SCE's Automated Demand Response (ADR) program and several other third-party aggregator programs. We are working with Nest so they can receive signals through the DRAS (Demand Response Automation Server). They are currently working off of OpenADR protocols. We hope that we will get other thermostat manufactures and manufactures of internet of things to use this structure. This will allow us to communicate while still allowing the use of proprietary communication.
    i. Mazi Shirakh (CEC): Would you want to put a requirement in Title 24 that devices that do not use OpenADR must be able to cross-connect somewhere?
    ii. Ty Peck (Energy Outlet): Code currently requires the use of a "standards-based" messaging protocol. The structure that Nest is using with SCE would comply with the "standards-based" requirement.
    iii. Aimee Wong (SCE): Most DR programs go through the DRAS. There are still some programs that use manual (not automated) response, but we are trying to move towards more automation.

11. Charles Knuffke (WattStopper): It would help us if we could know if the controls that are Title 24 compliant are capable of participating in DR programs. Is there information on how many newly constructed Title 24-compliant buildings are participating in DR programs?
    a. Aimee Wong (SCE): Customer has to be in operation for a certain period of time to participate in the programs I manage. So, I am not working with new construction. We are running some pilots for DR programs for new construction. There is a question as to whether we should provide incentives for new construction both residential and commercial. We are still trying to figure out the cost-effectiveness for this technology incentive. Should we be providing incentives for new construction if builders are supposed to be doing it to be compliant with code? We rely on third-party aggregators and account managers to help customers to save money through DR.
    b. Charles Knuffke (WattStopper): I will be more confident in installing DR controls if I know people are taking advantage of the controls.
    c. Christopher Meyer (CEC): Sometimes we put language in the code so that buildings have the capability of participating in programs. If people aren't realizing savings from their DR-capable buildings, we need to look at the DR-requirements in more detail.
    d. Aimee Wong (SCE): When builders get on certain time-of-use and RTP rates, the buildings will have the capability of controlling their building loads in ways that will be beneficial.
    e. David Wylie (Utility CASE Team): Title 24 cannot make building owners/occupants participate in DR programs. We need to come up with code requirements that will equip people who want to participate with the appropriate controls so they can participate.
    f. Charles Knuffke (WattStopper): Going back to your slide on the impact on market actors; as a manufacturer I want to get my products in buildings, but I also want to be serving my customers by selling them products that they can use.
    g. Christopher Meyer (CEC): Two questions: 1) What is the barrier to just taking the huge leap from DR-capable to requiring customers to participate in DR Programs if they have the capability to do so? 2) How can we require the capital investment in the infrastructure in code if the utilities cannot or aren't signing new construction up for DR programs so the user can realize the value of their investment?

i. Mazi Shirakh (CEC): From the code perspective, it is a huge difference between DR-capable and DR-enabled, especially cost-effectiveness. It may not be something we can do in one cycle. Wiring a building a certain way and putting in a thermostat is one thing, but requiring enrollment is another issue.

12. William Ha (Mitsubishi Electric Cooling & Heating): Going back to Section 120.2(h) code language, has other means of reduction been considered? For example, compressor speed reduction, compressor or mode staging, or fan speed reduction?
    a. Scott Bailey (Utility CASE Team): We will cover this in the next presentation.
13. James Benya (Benya Burnett Consultancy): How will cost-effectiveness be demonstrated in compliance with Warren Alquist?
    a. Randall Higa (SCE): For the clean-up measures, the intent is to not change the stringency of the requirements. If we are not changing the stringency, a cost-effectiveness analysis is not required.
    b. Mazi Shirakh (CEC): There is the big difference between DR-capable and DR-enable. If we are going to try to add acceptance tests or other requirements to make buildings DR-enabled, we would need to complete a cost-effectiveness analysis. We do not need a cost-effectiveness analysis if we do not change the stringency of the requirements.
14. Kitty Wang (Energy Solutions): The difference between "ready" or "enabled" is important. Clarifying existing definitions or adding definitions if appropriate will help clarify the intent of the code. "ADR-ready" or "ADR-capable" means is having the technology that is able to initiate DR automatically installed in the facility. The enablement of the technology ("DR-enabled") means the technology connected and online with the utility and has a default strategy pre-programmed to be ready to go when it receives a signal. The third level and final step is "enrollment" in the DR program. Mazi, were you were saying it is a big step from "ready" to DR-enabled or were you talking about enrollment?
    a. Mazi Shirakh (CEC): I was talking about the second level, DR-enabled. How to require the third step in the code language still needs to be determined. Not sure we can require enrollment.
    b. Jon McHugh (McHugh Energy): When we started this in 2008, we envisioned the utility would be providing the DR service and the utility would be enrolling new buildings in DR programs they were establishing service accounts for the new buildings. Now we know that third-party providers are actually the ones who go out and sign people up for DR programs. Is there something we can do to go to encourage new buildings to enroll in DR programs? Maybe we require the thermostat manufacturer or a contractor communicate with DR service providers to ensure that the building owner is presented with a DR service offer. The contractor / manufacturer could provide the owner with a list of local providers who offer DR services in the area?
    c. Mark Martinez (SCE): We started working on DR 16+ years ago as a result of the energy crisis. Prices were fixed and our meters didn't know what time it was. Now we have smart meters that know what time it is. Now we have third parties to help us implement programs. We also have building systems (lights, pumps, etc.) that are more capable of responding to DR events. Utilities have been providing incentives to enable these DR technologies in existing buildings. We don't have new construction DR programs. The role of codes and standards is to enable infrastructure to be able to respond to DR. In the future we will have dynamic prices. As a result of how different utilities and energy service providers provide these programs that will enable. It all depends on the region since DR is not evenly distributed geographically. Statewide, if you can enable an infrastructure to be DR-ready, then depending on where you are, you may or may not

have a DR program or a rates program, but at the state has done its duty to enable the implementation of DR policy throughout the state. We can provide the guidance to enable the infrastructure to be DR-ready. The current drivers are encouraging fast and flexible responses, and codes should enable that infrastructure.

15. Mark Aviles (Mitsubishi Electric Cooling & Heating): Are there going to be standards to how you receive the signals or how the equipment is installed? Do we have to use an OCST, or can the control be hard-wired to a condenser unit?
    a. David Wylie (Utility CASE Team): You bring up a good question. Right now, you cannot receive credit for strategies other than temperature setbacks and dimming lighting. Should there be a prescriptive alternative that would allow people to received compliance credit for other strategies like compressor cycling.
    b. Stakeholder: We may also want to look at the code such that new building types that may embrace DR to counteract dynamic pricing.
16. Peter Schwartz (LBNL): You said there was not a need to go back and recalculate the savings estimates and cost-effectiveness of DR measures because we are not proposing revisions to the requirements. Would it be beneficial to refresh the analyses? I anticipate we would find that measure that were not cost-effective several years ago are now cost-effective.
    a. David Wylie (ASWB): For the clean-up measure, we really are not intending to change the stringency of DR requirements. We will be talking about new requirements in future code cycles.
    b. Peter Schwartz (LBNL): Mark Martinez talked about real-time pricing. We might also want to look at the code such that new building types or spaces that might embrace DR to counter act dynamic pricing and we want to make sure there aren't elements of the code that work against customers embracing the technology.
17. James Benya (Benya Burnett Consultancy): Remember, you do not have to install demand responsive controls if the lighting power is 0.5 watts per square foot or less. By 2020 almost all lighting will be less than 0.5 W/SF.

Demand Flexibility

1. Scott Bailey and David Wylie (ASWB Engineering, Utility CASE Team) presented
2. Presentation available here.

Comments and Feedback

1. Christopher Meyer (CEC): If someone has a behind the meter battery storage system, are we focusing on people getting to self-utilization of renewables? In addition, are we trying to get people to keep batteries with the capacity to help address overgeneration? Are we giving them benefit for time of use tiers?
    a. David Wylie (Utility CASE Team): That is a complex scenario. Real-time pricing is around the corner. Can we write code language that facilitates building the trough, such as the rates and when you charge that will enable and encourage participation in DR? We are focusing on the equipment at the facility that allows you to participate in DR.
2. Ying Wang (Okapi Architecture): Can this tie in with CALGreen? Thermal storage is expensive and large; will it be mandatory, or could you submit that as a demand response capability?
    a. David Wylie (Utility CASE Team): We are not suggesting that somebody would have to use thermal storage, but if they do install thermal storage, they could use their thermals storage system to make their HVAC load more flexible. We need to figure out how to do this as a prescriptive requirement. We are asking stakeholders for feedback.

3. Ty Peck (Energy Outlet): The code should indicate that you need to do DR automatically, because you are asking customers to be flexible and accept the overgeneration from the grid. This cannot be done with a phone call. Require an end-node in a facility that can talk to the utility. Code should include automatic DR with virtual end-node, if we are forward thinking for 2020.
    a. David Wylie (Utility CASE Team): The current code requires automation. Do we need the code to say more, such as how is automation implemented going forward? We may not need to regulate the fast and flexible tools.
4. Charles Knuffke (Wattstopper): We have to be careful about lighting – by 2019, the lighting controls requirement says that any space that uses less than 0.5 W/square feet is exempt from demand shed requirement. By 2019, Title 24 would prevent any lighting control requirements for most facilities once they're all using mainly LEDs.
5. George Nest (Environmental Design Built, HERS rater): The duct curve is happening today and we will have to deal with it. Traditionally, DR has been about reducing energy in the afternoon. I think we will have to move toward using more energy during the middle of the day. I think NREL did a study that said California will need 10 times more energy storage than we are currently contemplating. Batteries are part of the solution, but there are other things we can do. The 2019 TDV is reflecting the duct curve because the values during the duck curve period have been reduced and the values for the ramp-up towards 8pm have been increased. We need to think about how do we shift peak, such as more night time use to utilize wind as well as how we can use more energy from 10am – 2pm (storage, electric vehicles, AC during the day, etc.). We need to think about load schedules and could offer credits to buildings which are able to be demand flexible.
    a. David Wylie (Utility CASE Team): Should we require a battery-ready building in Title 24?
    b. George Nest (Environmental Design Built, HERS rater): Yes, we should consider it. We are requiring solar-ready. We are trying to make installation of solar hot water easier, so yes we should make battery storage easier.
    c. Mazi Shirakh (CEC): There is precedent in Title 24 for what George is proposing, so we can definitely do this for storage in residential and nonresidential. Should someone decide to put storage at their facility, should we have some kind of methodology protocol requirement?
    d. David Wylie (Utility CASE Team): Yes, we should facility battery storage with the proper language.
6. Michelle Sim (SoCalGas): Is there an exploration of other technology strategies, other than what was presented here, that are inclusive of natural gas? As we change terminology from demand response to demand flexibility, we're talking about resilience and energy security in our grid. I think natural gas should be included as it will play a big role in this.
    a. David Wylie (Utility CASE Team): The intent is to look at prescriptive alternatives to meet the two measures we presented. We will develop a list of measures to be considered.
    b. Randall Higa (SCE): We are open to suggestions of other approaches and technologies. The way we approach DR is going to be multi-faceted. We are thinking about the role that codes and standards should take in the multi-faceted approach that also includes tariffs, CAISO markets, etc. How we look at DR in programs, emerging technologies, etc. have to be coordinated. You can email us your suggestions.
    c. Jon McHugh (McHugh Energy): For the 2008 Standards, EPRI proposed an open-loop controls measure in which the compressor speed on equipment would be modified. This measure was rejected because the history with load cycling air condition and not having a direct feedback on the temperature in the space, that you could potentially have the issue

where the space gets too hot. Is it okay to have a control that takes you out of the comfort zone?

i. David Wylie (Utility CASE Team): A building operator would need to decide if the facility could go outside of the ASHRAE defined comfort zone.