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Daikin US Comments - SB 49 - Flexible Demand Appliance Standards

Additional submitted attachment is included below.



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February 3, 2021

Mr. J. Andrew McAllister, Ph.D.
Commissioner
California Energy Commission
Docket Unit, MS-4
Re: Docket No. 20-FDAS-01
1516 Ninth Street
Sacramento, CA 95814-5512

(submitted electronically to Docket 20-FDAS-01)

Re: Daikin Comments Regarding the December 14, 2020 Lead Commissioner Workshop on Senate Bill 49 Flexible Demand Appliance Standards and the December 9, 2020 Staff Paper, Introduction to Flexible Demand Appliance Standards [*Docket Number 20-FDAS-01*]

Dear Commissioner McAllister:

Daikin U.S. Corporation (“Daikin”) hereby submits the following comments in response to the California Energy Commission (CEC) December 14, 2020 Lead Commissioner Workshop on Senate Bill 49 Flexible Demand Appliance Standards and December 9, 2020 Staff Paper, *Introduction to Flexible Demand Appliance Standards* (Staff Report). Daikin U.S. Corporation is a subsidiary of Daikin Industries, Ltd., the world’s largest air conditioning equipment manufacturer. The Daikin Group includes Daikin Applied, Daikin North America LLC, and Goodman Manufacturing Company, L.P.

I. Introduction

Daikin appreciates CEC’s efforts to include central air conditioners within the scope of this rulemaking, all the following products within the scope of AHRI Standard 1380-2019 should be considered: single-phase and three-phase ACs and HPs $\leq 65,000$ Btu/h with either two-stage or variable-speed compressors. Daikin recommends CEC to continue identifying opportunities to add more products into the scope of future rulemaking activities as performance standards become available for equipment outside the scope of AHRI Standard 1380-2019, but with the

capability or potential to be covered by flexible demand appliance standard (e.g., commercial HVAC equipment). Daikin believes that AHRI Standard 1380 should be expanded to include commercial equipment as relatively few changes would be required.

II. Flexible Demand Appliance Standards

Flexible demand appliance standards should provide an incentive pathway for products meeting those standards to facilitate cost-effective and widespread adoption in the state of California.¹ Emphasis should be placed primarily on two-stage and variable speed HVAC systems in particular because these products are much more consumer friendly and more likely to facilitate increased participation in flexible demand programs as such products will provide some level of comfort, as opposed to single speed on/off systems that do not provide any comfort during a DR event.

1. For two-stage and variable speed ACs and HPs, AHRI Standard 1380-2019 prescribes performance requirements that can be easily referenced in incentive programs. Tables 1, 2, 3 and 4 of AHRI Standard 1380-2019 specify the communication, discovery, and management provisions across multiple communication protocols. The standard prescribes performance criteria depending on system type (two-stage or variable speed).
2. For single-speed ACs and HPs, since AHRI Standard 1380-2019 does not specifically prescribe performance requirements for such systems, incentive-based / time-based demand response programs successfully implemented for such systems across the country should be evaluated. These programs include but are not limited to direct load control, time of use, peak time rebates, etc. CEC should coordinate with CPUC to enhance the incentive pathway and make DR programs attractive and cost-effective for customers with single-speed systems to voluntarily enroll in such programs.

III. Effective Energy Management

Effective energy management can occur via DR-ready HVAC systems that (1) receive, interpret, and act on external signal(s), (2) adjust operation based on standardized

¹ The importance of an incentive approach is also summarized in SEC. 2., Sections 25402(c)(1)(A) and 25402(f)(4), of SB-49.



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performance criteria, (3) have settings that are easy for consumers to select, and (4) provide useful real time alerts to consumers.

IV. Incentive Programs

A successful incentive program design should account for the following:

1. Fostering consumer choice while simultaneously encouraging prioritization of energy efficiency in the final purchasing decision.
2. Increase customer flexible demand monetary incentive levels to make it worthwhile to enroll for the year while trading off comfort for a single-speed system. However, systems in the scope of AHRI Standard 1380-2019 may be able to foster increased customer enrollment.
3. Eliminate any full load (“EER”) requirements for products meeting AHRI Standard 1380-2019 requirements. Minimum DOE regional standards would remain applicable for ACs installed in the U.S. Southwest as they already have peak load minimums.
4. Performance compliance credits in the California Building Energy Efficiency Standards. Field-acceptance testing or HERS verification methodology could be incorporated for verification.

V. Cybersecurity

SEC. 2., Section 25402(f)(2), of SB-49 states the following: “In adopting the flexible demand appliance standards, the commission shall consider the National Institute of Standards and Technology’s reliability and cybersecurity protocols, or other cybersecurity protocols that are equally or more protective, and shall adopt, at a minimum, the North American Electric Reliability Corporation’s Critical Infrastructure Protection standards.”

Daikin looks forward to the CEC’s findings per the actions prescribed in SB-49.

Additionally, Daikin recommends CEC to consider the following current California laws while publishing its findings:

- a. SB-327: California Information Privacy Law on Connected Devices.²
- b. California Consumer Privacy Act of 2018.³

² https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB327

Lastly, CEC should consider existing security provisions in communication protocols referenced in California’s 2019 Building Energy Efficiency Standards (Title 24, Part 6). For example, OpenADR 2.0b specifies the necessary level of security essential to meet the U.S. cybersecurity requirements for data confidentiality, integrity, authentication, and message-level security.⁴ Such security requirements are essential for non-repudiation and to mitigate any resulting cybersecurity risks. The following security levels apply to OpenADR 2.0b: a). Standard Security (mandatory); and b). High Security (optional). Section 9.2 of OpenADR 2.0b specifies that Transport Layer Security (“TLS”) 1.2 must be used to encrypt all traffic, regardless of the authentication method used. The client must always validate the server’s TLS certificate given during the handshake. Subsection 9.2.1.1 further prescribes the steps related to establishing validity of a certificate during the TLS 1.2 handshake, establishment of connection, and authentication. All clients are required to support the authentication provisions in subsection 9.3.4.7. Per Section 10, OpenADR 2.0b aspires to conform to the cybersecurity requirements prescribed by National Institute of Standards and Technology’s (“NIST”) and requires manufacturers to refer to the latest version of the NIST Special Publication 800-131A when choosing a security algorithm. Subsection 10.1 of OpenADR 2.0b states that “Standard” security uses TLS 1.2 for establishing secure channels between a Virtual Top Node (“VTN”) and a Virtual End Node (“VEN”) for communication. “High” security additionally uses XML signatures providing non-repudiation for documentation purposes. To provide security services like authentication, confidentiality and integrity, VENS and VTNs must use Public Key Infrastructure (“PKI”) certificates. Subsection 10.4 mandates default cipher suites related to the ECC and RSA PKIs along with TLS 1.2, unless there exists a specific TLS and cipher suite combination for a specific VTN and VEN configuration. Expired certificates are not allowed to be used.

VI. Cost-Effectiveness

To ensure cost effectiveness of standards for appliances to facilitate quick deployment of flexible demand technologies, CEC in consultations with CPUC must ensure that all utilities in California implement plans to accept all communication protocols specified in consensus performance standards

³ Civil Code, Division 3, Part4, Title 1.81.5:

http://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?division=3.&part=4.&lawCode=CIV&title=1.81.5

⁴ <https://www.openadr.org/specification>



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for appliances. Diverging utility actions on preparedness for communication protocols will hinder widespread adoption of flexible demand technologies. Additionally, CEC must ensure that existing communication protocols in California's 2019 Building Energy Efficiency Standards (Title 24, Part 6) are not adversely impacted because of any new CEC standards activity. Regulated entities and California homeowners and commercial building owners have already made significant efforts to ensure that demand responsive controls satisfy the criteria set forth in Title 24.⁵

VII. Conclusion

Daikin appreciates the opportunity to provide these comments. If you have any questions regarding this submission, please do not hesitate to contact me.

Sincerely,

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⁵ Section 110.12(a)(1) of the 2019 edition of Title 24