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Docket Number:	19-BSTD-03
Project Title:	2022 Energy Code Pre-Rulemaking
TN #:	237063
Document Title:	Vertiv Response to Express Terms for Computer Rooms
Description:	N/A
Filer:	System
Organization:	Vertiv Corporation
Submitter Role:	Public
Submission Date:	3/9/2021 1:44:37 PM
Docketed Date:	3/9/2021

Comment Received From: Vertiv Corporation
Submitted On: 3/9/2021
Docket Number: 19-BSTD-03

Vertiv Response to Express Terms for Computer Rooms

Additional submitted attachment is included below.



March 9, 2021
California Energy Commission
1516 Ninth Street, MS 34
Sacramento, CA 95814

Re: Docket No. 19-BTSD-03 – 2022 Energy Code Pre-Rulemaking; *Express Terms*

Vertiv Group Corporation (“Vertiv”) submits these comments in support of the Draft 2022 Energy Code Express Terms for Sections 140.9 and 141.1 for Covered Processes issued on February 22, 2021. Vertiv herein makes one recommendation for further refinement of the Energy Code.

Section 140.9(a)1

First, Vertiv agrees with the proposed economizer ambient temperature thresholds in Section 140.9(a)1 of the Draft Express Terms. Vertiv believes the proposed thresholds for air (65°F), water (50°F), and refrigerant economizers (50°F) will decrease energy consumption in California’s data centers and improve energy efficiency standards of all Computer Room Air Conditioning equipment. The varying temperature thresholds also reflect the inherent differences in the characteristics of air, water, and refrigerant economizers that make it infeasible for water and refrigerant economizers to meet the same temperature threshold as air economizers. Applying a “one size fits all” mandate and increasing the temperature thresholds to 65°F – as one commenter recommends – would decrease data center owners’ flexibility to select a system design that most efficiently and cost-effectively meets their needs. There is no data in the record demonstrating that any installed, cost-effective and reliably operating refrigerant economizers could meet a 65°F temperature threshold. As Vertiv explained at length in Comment TN# 235640, increasing the temperature thresholds for all three economizers to 65°F would likely require the installation of evaporative cooling and system redundancies that would significantly increase data center water usage and dramatically increase capital and operating costs to data center operators. This would undermine data center owners’ current efforts to be more sustainable by reducing power and water consumption. In all likelihood, the costs and concerns about water usage (in a state often affected by drought conditions) would drive water and refrigerant economizers from the California market, leaving data centers to rely on air economizers whose peak operation is dependent upon ideal smog and soot conditions. Data center owners are already focused on sustainability and utilizing the most reliable, efficient, cost-effective equipment with proven technology available today that meets all of California’s prescriptive requirements. The temperature thresholds in the Draft Express Terms further those efforts. In addition to its Comments in TN# 235640 Vertiv refers the Commission to its comments in TN# 235011, 235085, 235087, 235127 and the comments in TN# 235122 and 235639 for further information supporting the temperature thresholds proposed in the Draft Express Terms.

Second, Vertiv supports increasing the minimum value of the supply air temperature to 65°F, which conforms to the ASHRAE Thermal Guidelines for Data Process Environments (ASHRAE 2015). Increasing the proposed minimum supply air temperature will bring the standard



in line with what is actually technically feasible at the proposed economizer temperature thresholds.

Third, Vertiv supports including integrated pumped refrigerant economizers as a prescriptive requirement in Title 24. Including integrated pumped refrigerant economizers as a prescriptive option gives data center owners more flexibility to meet the Commission's efficiency requirements, and Vertiv has set forth all of the data required by the Commission to qualify as a prescriptive requirement. Vertiv's data, set forth in Vertiv's Proposal in TN# 235638, proves that the use of an integrated pumped refrigerant economizer is more efficient than a baseline waterside economizer across all 16 of California's Climate Zones using the T24 2019 thresholds. That data was generated by a third-party independent consultant engineer based on CEC-approved calculation methods, and is consistent with the data submitted by multiple fully-integrated single and dual-circuit pumped refrigerant economizers installed in data centers across California over the last several years, each of which had to submit data to the CEC in accordance with performance compliance requirements.

EXCEPTION 3 to Section 140.9(a)1, EXCEPTION 4 to Section 140.9(a)1, and 141.1(b)1.C

Vertiv generally supports the Commission's proposals in Exception 3 to Section 140.9(a)1, Exception 4 to Section 140.9(a)1, and 141.1(b)1.C, including the temperature thresholds set forth therein. As explained above, increasing the temperature thresholds for Exceptions 3 and 4 to Section 140.9(a) is infeasible. Increasing the temperature threshold in Section 141.1(b)1.C would disrupt existing data center operations significantly by requiring data centers to operate part of their economizer systems under one temperature threshold, while any alterations, equipment expansions, or equipment replacements would have to operate under a different temperature threshold. Such a proposal would be completely unworkable as existing data center designs may be completely incapable of being retrofit to a higher temperature threshold, potentially forcing abandonment of upgrades or evacuation of the property.

With respect, Vertiv does have one proposal for the Commission's consideration. Exceptions 3 and 4 to Section 140.9(a)1 and Section 141.1(b)1.C each approve refrigerant economizers for use in computer rooms in Climate Zones 1-9, 11-14, and 16. The detailed analysis provided in TN#235638 proves, however, that an integrated pumped refrigerant economizer is an acceptable prescriptive compliance option within all 16 of California's Climate Zones. TN#235122 also included a recommendation to remove these climate zone limitations. Vertiv therefore recommends that the Commission revise the Draft 2022 Energy Code Express Terms to clarify that refrigerant economizers are permissible within all 16 of California's Climate Zones.

Conclusion

Vertiv thanks you for this opportunity to submit comments in support of the Draft 2022 Energy Code Express Terms for Sections 140.9 and 141.1 for Covered Processes. Please let us know if you have any questions regarding our comments or require Vertiv's response to other comments filed in this docket.