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# Statewide CASE Team Comments - Portable Air Conditioners Appliance Efficiency Rulemaking

*Additional submitted attachment is included below.*

Comments on Proposed Portable Air Conditioner Regulations
Title 20, Division 2, Chapter 4, Article 4, Sections 1601-1609, California Code of Regulations
45-Day Public Comment Period
October 12, 2018 – November 26, 2018

*Note*: Energy Commission proposed language is indicated by single underline
The Statewide CASE Team's recommended revisions to the Energy Commission proposal are marked by double underline and ~~strikeout~~

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| | The Statewide CASE Team | The Statewide CASE Team strongly supports the Energy Commission's proposal to adopt a Title 20 Standard for portable air conditioners. | |
| 1602(d). "Combined energy efficiency ratio (CEER)" of a single-duct or dual-duct portable air conditioner means ~~is~~ the energy efficiency of a portable air conditioner in Btu per watt -hours (Btu/Wh), as determined using the test method specified in section 1604(d) of this Article. | The Statewide CASE Team | The Statewide CASE Team recommends revising the definition of "Combined energy efficiency ratio" with grammatical edits and additional detail. Suggested revisions follow.<br><br>"Combined energy efficiency ratio (CEER)" of a single-duct or dual-duct portable air conditioner means the energy efficiency of a portable air conditioner ~~in Btu per watt - hours (Btu/Wh)~~ measured as the seasonally adjusted cooling capacity of the portable air conditioner divided by its weighted average annual energy consumption allocated over the unit's annual cooling mode hours, expressed in Btu/watt-hour, as determined using the test method specified in ~~s~~Section 1604(d) of this Article. | |
| 1602(d). "Portable air conditioner" means a portable encased assembly, other than a "packaged terminal air conditioner," "room air conditioner," or "dehumidifier," that delivers cooled, conditioned air to an enclosed space, and is powered by single-phase electric | The Statewide CASE Team | Many portable air conditioners have a dehumidification mode. The Statewide CASE Team suggests adding language to ensure that portable air conditioners and standalone dehumidifiers are properly categorized and comply with applicable standards. The language should recognize that portable air conditioner devices may also have dehumidification features, and these devices should not be inadvertently excluded from portable air conditioner standards due to the existence of this feature. Additionally, to facilitate reader understanding the Statewide CASE Team suggests using the more common term "single-phase electric power" instead of "single-phase electric current". Suggested revisions follow.<br><br>"Portable air conditioner" means a portable encased assembly, other than a "packaged terminal air conditioner," "room air conditioner," or "dehumidifier," that delivers cooled, conditioned air to an enclosed space, and is powered by single-phase electric ~~current~~ power. It includes a source of refrigeration and may include additional means for air circulation, dehumidification, and heating. | |

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| current. It includes a source of refrigeration and may include additional means for air circulation and heating. ~~A portable air conditioner is typically mounted on wheels for moving from place to place within a building or structure.~~ | | | |
| 1602(d). "Portable or Spot Evaporative Cooler" means a~~n~~ spot air conditioner that uses evaporative cooling~~er that is non-ducted, not designed for permanent installation,~~ and can be plugged into a standard mains outlet. | The Statewide CASE Team | The Statewide CASE Team suggests clarifying the definition of "Spot evaporative cooler" to improve readability. Suggested revisions follow.<br><br>"~~Portable or~~ Spot ~~E~~evaporative ~~C~~cooler" means a spot air conditioner that uses evaporative cooling and can be plugged into a standard mains outlet. | |
| 1602(d). "Seasonally adjusted cooling capacity (SACC)" of a single-duct or dual-duct portable air conditioner means the amount of cooling, measured in Btu/h, provided to the indoor conditioned space, ~~measured under the specified ambient conditions~~as determined using the test method specified in section 1604(d) of this Article. | The Statewide CASE Team | The Statewide CASE Team recommends revising the definition of "Seasonally adjusted cooling capacity" to add additional detail. Suggested revisions follow.<br><br>"Seasonally adjusted cooling capacity (SACC)" of a single-duct or dual-duct portable air conditioner means the temperature-weighted measure of the ability of a portable air conditioner to remove heat from an enclosed space corrected for duct heat transfer and infiltration air heat transfer ~~amount of cooling, measured~~ expressed in Btu/hour, ~~provided to the indoor conditioned space,~~ as determined using the test method specified in ~~s~~Section 1604(d) of this Article. | |

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| 1602(d). "Spot air conditioner" means a~~n~~ portable air conditioner that discharges cool air into a space and discharges rejected heat back into that space, where there is no physical boundary separating the discharges. ~~*Spot air conditioners are considered a subset of portable air conditioners.*~~ | The Statewide CASE Team | The Statewide CASE Team suggests revising the definition for spot air conditioners. The Statewide CASE Team recommends using the word "delivers" instead of "discharges" to indicate that the delivery of cooled air is the desired outcome and not a byproduct of operation. Additionally, the Statewide CASE Team suggests using the word "cooled" instead of the word "cool" to more accurately specify that the output air is mechanically cooled and that the spot cooler is not just providing ventilation. Furthermore, the definition proposed does not define "space" – without a clear definition of space, the proposed definition could be interpreted as discharging both cooled air and condenser outlet air into the same spot, which is not true. Spot air conditioners usually discharge the condenser outlet air in the opposite direction from the cooled air. Moreover, the term "physical boundary" is also vague, so the Statewide CASE Team suggests striking that description. U.S. DOE did suggest a definition for "spot cooler" in the February 2015 Notice of Proposed Rulemaking for the Portable Air Conditioners Test Procedure.[1] However, since U.S. DOE did not propose a standard for spot air conditioners, the definition was ultimately not adopted since it was deemed unnecessary for the purposes of product testing or classification. That definition is shown below for reference.<br>U.S. DOE 2015: "Spot cooler means a portable air conditioner that draws condenser inlet air from and discharges condenser outlet air to the conditioned space, and draws evaporator inlet air from and discharges evaporator outlet air to a localized zone within the conditioned space."<br><br>The Statewide CASE Team suggests the following revisions to this definition:<br><br>"Spot air conditioner" means a portable air conditioner that delivers ~~discharges~~ cooled air into a space and discharges ~~rejected heat~~ the condenser outlet air back into another area within that same space~~, where there is no physical boundary separating the discharges~~. | |
| 1605(g). | The Statewide CASE Team | The Statewide CASE Team notes that per section 1605(f), if an appliance serves multiple functions and is not a federally-regulated appliance, both the primary and secondary functions of the appliance shall meet the applicable standards in Title 20. Although the primary function of portable air conditioners is cooling, in reviewing the product literature of top-selling portable air conditioners in the California market, the Statewide CASE Team found that nearly all products offer a dehumidification mode. Even though portable air conditioners are explicitly not classified as dehumidifiers, this mode serves as a secondary function, and therefore, the dehumidification mode of portable air conditioners could also be compelled to comply with dehumidifier regulations. U.S. DOE opted to exclude dehumidification mode from their proposed rule based on reported low operating hours in this mode from a metering study with less than twenty participants that were informed of the study scope in advance. However, the Statewide CASE Team disagrees with this assessment and believes that requiring the dehumidification mode of portable air conditioners to comply with dehumidifier standards would ensure the efficiency of portable air conditioners used in this mode and prevent dehumidifier standards from being circumvented by multi-functional units like | |

1 Energy Conservation Program: Test Procedures for Portable Air Conditioners; Notice of proposed rulemaking. https://www.regulations.gov/document?D=EERE-2014-BT-TP-0014-0009

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| | | portable air conditioners. The Statewide CASE Team suggests the following addition to address this point:<br><br>**Portable Air Conditioners.** If a model of portable air conditioner sold or offered for sale in California has both single-duct and dual-duct configuration options, both configurations must meet the applicable standard in section 1605.3. If a model of portable air conditioner sold or offered for sale in California has a dehumidification option, the model must meet the applicable dehumidifier standard in Section 1605.1 per 1605(f). | |
| 1605.3.(d). | The Statewide CASE Team | In their rulemaking on portable air conditioners, U.S. DOE proposed a minimum CEER standard for portable air conditioners corresponding to efficiency level (EL) 2 from the rulemaking and with a performance ratio (PR) of 1.04. At the time of the rulemaking, U.S. DOE found that EL 3 was not cost-effective, primarily due to the increased burden on manufacturers and limited availability of qualified products across all capacities. Given California-specific market considerations, the Statewide CASE Team believes that U.S. DOE estimates were overly conservative in estimating what efficiency improvements could be applied to portable air conditioners. For example, due to lack of data on products currently utilizing alternative refrigerants, U.S. DOE did not consider efficiency improvements from switching from R-410A to R-32 or other alternative refrigerants. This assumption is not necessarily realistic for California, and the use of alternative refrigerants could be a feasible technical pathway for efficiency improvements in the California market. Additionally, although at the time of the U.S. DOE rulemaking, components such as high-efficiency compressors may not have been available across the full range of portable air conditioner capacities, recent energy conservation standards for related products, such as standalone dehumidifiers and room air conditioners, may drive the increased production of these high-efficiency components across a wide range of capacities, making them available for portable air conditioner manufacturing in the near future. Therefore, the Statewide CASE Team supports the adoption of a standard at EL 3, with a PR of 1.18 to maximize the cost-effective savings to the consumer. A suggested revision follows.<br><br>(1) Energy Efficiency Standards for Portable Air Conditioners. The combined energy efficiency ratio (CEER) of single-duct and dual-duct portable air conditioners manufactured on or after February 1, 2020, shall not be less than the value calculated in the following equation, where SACC is the seasonally adjusted cooling capacity of a portable air conditioner:<br><br>Minimum CEER = ~~1.04~~ 1.18 × $\frac{SACC}{3.7117 \times SACC^{0.6384}}$ | |

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<tr><th>Section/Page/Line</th><th>Commenter's Name</th><th>Comments/<br>Suggested Revisions</th><th>Response</th></tr>
<tr><td>1606. Table X.</td><td>The Statewide CASE Team</td><td>The Statewide CASE Team suggests adding "Nominal Cooling Capacity" to the information required in Table X – Data Submittal Requirements. The suggested revisions follow.<br><br><table><tr><td>D</td><td><u>Single-Duct and Dual-Duct Portable Air Conditioners</u></td><td><u>Nominal Cooling Capacity (Btu/h)</u></td><td></td></tr></table></td><td></td></tr>
<tr><td>1607.</td><td>The Statewide CASE Team</td><td>The Statewide CASE Team recommends reporting product SACC and CEER values either labeled on the product directly, or in product literature to facilitate review of products for compliance. Additionally, the Statewide CASE Team recommends that product labeling clearly indicates that portable air conditioner units are meant to be used with ducting, and that product literature includes clear instructions on proper product ducting use. The Statewide CASE Team recommends the following additions to the proposed regulatory language.<br><br><u>(  ) Single-Duct Portable Air Conditioners and Dual-Duct Portable Air Conditioners. Each single-duct or dual-duct portable air conditioner unit and each package containing a unit shall be labeled, permanently and legibly on an accessible and conspicuous place on the unit, in characters no less than 1/8" on the unit, and 1/4" on the packaging, with the following energy performance information: cooling capacity, seasonally adjusted cooling capacity, and combined energy efficiency ratio, and with the following statement "UNIT TO BE USED WITH DUCTS – PORTABLE AIR CONDITIONER IS NON-COMPLIANT IF IT IS USED WITHOUT DUCTS."</u></td><td></td></tr>
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