# CEE SUPER EFFICIENT HOME APPLIANCES INITIATIVE

High Efficiency Specifications: RESIDENTIAL CLOTHES DRYERS

Terms of Usage below

Effective January 2, 2019

## Efficiency Criteria

<table>
<thead>
<tr>
<th>Efficiency Level</th>
<th>CEE Tier 1&lt;sup&gt;1&lt;/sup&gt; Combined Energy Factor (CEF)&lt;sup&gt;2&lt;/sup&gt;</th>
<th>CEE Tier 2&lt;sup&gt;1&lt;/sup&gt; Combined Energy Factor (CEF)&lt;sup&gt;2&lt;/sup&gt;</th>
<th>CEE Advanced Tier&lt;sup&gt;3&lt;/sup&gt; Combined Energy Factor (CEF)&lt;sup&gt;2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric Clothes Dryers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard&lt;sup&gt;4&lt;/sup&gt;, Vented or Ventless</td>
<td>≥ 3.93</td>
<td>≥ 4.30</td>
<td>≥ 5.20</td>
</tr>
<tr>
<td>Compact&lt;sup&gt;4&lt;/sup&gt;, 120 V, Vented or Ventless</td>
<td>≥ 3.80</td>
<td>≥ 4.30</td>
<td>≥ 5.20</td>
</tr>
<tr>
<td>Compact&lt;sup&gt;4&lt;/sup&gt;, 240 V, Vented</td>
<td>≥ 2.68</td>
<td>≥ 3.70</td>
<td>≥ 5.20</td>
</tr>
<tr>
<td>Compact&lt;sup&gt;4&lt;/sup&gt;, 240 V, Vented</td>
<td>≥ 3.45</td>
<td>≥ 3.70</td>
<td>N/A</td>
</tr>
<tr>
<td>Gas Clothes Dryers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard or Compact&lt;sup&gt;4&lt;/sup&gt;, Vented or Ventless</td>
<td>≥ 3.48</td>
<td>N/A</td>
<td>≥ 3.80</td>
</tr>
</tbody>
</table>

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<sup>1</sup> CEE Tiers 1 and 2 are performance levels intended to enable sufficient product volume for energy efficiency programs to achieve cumulative savings goals and to emphasize significant per unit savings over the performance baseline, which is typically the federal minimum efficiency standard. CEE Tier 1 aligns with ENERGY STAR® Product Specification for Clothes Dryers Version 1.1 and CEE Tier 2 aligns with ENERGY STAR Most Efficient 2019 criteria for clothes dryers.

<sup>2</sup> The CEF requirements are based on the US Department of Energy 10 CFR Appendix D2 to Subpart B of Part 430, Uniform Test Method for Clothes Dryers. CEF is the quotient of the test load size, 8.45 lbs for standard dryers and three lbs for compact dryers, divided by the sum of the machine electric energy use during standby and operational cycles.

<sup>3</sup> A CEE Advanced Tier represents an aspirational level of efficiency and product performance agreed by manufacturers to be technically feasible. While few or no products may fulfill the Advanced Tier’s standards at the time it is created and those that exist may not be appropriate for all applications, it lays the groundwork for future programs, provides a longer-term focus and shared performance target for manufacturers, and provides recognition for the first manufacturers to develop products that achieve new heights of efficiency and performance.

<sup>4</sup> A standard clothes dryer is defined as greater than or equal to 4.4 cu ft and a compact clothes dryer is less than 4.4 cu. ft.
Connected Criteria

A. Connected Clothes Dryer System
To claim compliance with the CEE Connected Specification requirements, a Connected Clothes Dryer System shall include the appliance plus all hardware and software elements required to enable communication in response to consumer-authorized energy related commands, not including third-party remote management that may be made available solely at the discretion of the manufacturer. These elements may reside inside or outside of the appliance.

This capability shall be supported through at least two means, as identified in section B.2. The specific design and implementation of the Connected Clothes Dryer System is at the manufacturer’s discretion, provided it is interoperable with other devices via open communications protocols and enables economical consumer-authorized third-party access to the functionalities provided for in sections D, F and G.

CEE requires that a product enables economical and direct, on-premises, open standards interconnection. Manufacturers may also choose to provide additional means to connect, including proprietary architecture and protocols.

The product must continue to comply with the applicable product safety standards—the addition of the functionality described below shall not override existing safety protections and functions. The appliance must meet manufacturer’s internal minimum performance guidelines, such as those for drying performance.

B. Communications
1. Open Standards—Communication with entities outside the Connected Clothes Dryer System that enables connected functionality (sections D, F and G) must use, for all communication layers, at least one of the standards:
   - Included in the Smart Grid Interoperability Panel (SGIP) Catalog of Standards
   - Included in the NIST Smart Grid framework Tables 4.1 and 4.2
   - Adopted by the American National Standards Institute (ANSI) or another well-established international standards organization such as the International Organization for Standardization (ISO), International Electrotechnical Commission (IEC), International Telecommunication Union (ITU), Institute of Electrical and Electronics Engineers (IEEE) or Internet Engineering Task Force (IETF)

2. Communications Hardware Architecture—Communication with entities outside the Connected Clothes Dryer System that enables connected functionality described in sections D through G shall be enabled by either option a) or the combination of option b) with options c) or d), according to the manufacturer’s preference:
   a) Open standards communication port on the appliance combined with open standards communications module
   b) Open standards communication within the physical premises of the home
c) Built-in communication technology employing a manufacturer-maintained cloud connection
d) Manufacturer-specific external communication module(s) or device(s)

C. Open Access
To enable interconnection with the product, in addition to the open standards required in section B1, an interface specification, application programming interface (API), or similar documentation shall be made available to interested parties. At a minimum, it shall allow transmission, reception, and interpretation of the following information:

- Energy consumption reporting that must include accuracy, units, and measurement interval, as specified in section D
- Operational status, user settings, and messages as specified in section F, if transmitted via a communication link
- Demand response as specified in section G

D. Energy Consumption Reporting
In order to enable simple, actionable energy use feedback to consumers and consumer-authorized energy use reporting to third parties, the product shall be capable of transmitting energy consumption data via a communication link to energy management systems and other consumer-authorized devices, services, or applications. These data shall represent the product's interval energy consumption. It is recommended that data be reported in watt-hours for intervals of 15 minutes or less; however, representative data may also be reported in alternate units and intervals as specified in the product manufacturer's interface specification (API), as detailed in section C.

The product may provide additional types of energy use feedback, such as energy use feedback on the product itself or energy use associated with the previous cycle. Product feedback, if provided, may be in units and format chosen by the manufacturer, for example $/month.

E. Remote Management
The product shall be capable of receiving and responding to consumer-authorized remote requests, not including third-party remote management which may be made available solely at the discretion of the manufacturer, via a communication link, similar to consumer-controllable functions on the product. The product is not required to respond to remote requests that would compromise essential performance or product safety as determined by the product manufacturer.

F. Operational Status, User Settings, and Messages
The product shall be capable of providing the following information to energy management systems and other consumer-authorized devices, services, or applications via a communication link:

- Operational and demand response status, such as off or standby, cycle in process, delay appliance load, temporary appliance load reduction.
The product shall be capable of providing the following information on the product to energy management systems and other consumer-authorized devices, services, or applications via a communication link:

- At least two types of messages relevant to the energy consumption of the product. For example, messages for clothes dryers might address a performance issue such as a clogged lint filter or report energy consumption that is outside the product’s normal range.

G. Demand Response
The product shall have the capability to receive, interpret, and act upon consumer-authorized signals by automatically adjusting its operation depending on both signal content and settings from consumers. At a minimum, the product shall be capable of providing the following for all cycle and setting combinations:

1. Delay Appliance Load Capability: The capability of the product to respond to a signal in accordance with consumer settings, except as permitted below, by delaying the start of an operating cycle beyond the delay period.
   a) Default settings—The product shall ship with default settings that enable a response for at least three hours.
   b) Consumer override—The consumer shall be able to override the product’s Delay Appliance Load response before or during a delay period.
   c) The product shall be able to provide at least one Delay Appliance Load response per consumer initiated operating cycle, but is not required to provide more than three Delay Appliance Load responses in a rolling 24-hour period.

2. Temporary Appliance Load Reduction Capability: The capability of the product to respond to a signal by providing load reduction for a short time period, typically 10 minutes. Upon receipt of signal and in accordance with consumer settings, except as permitted below, the product shall restrict its average power draw during the load reduction period to no more than 20 percent relative to the baseline average power draw defined in the ENERGY STAR Clothes Dryer Test Method to Validate Demand Response.
   a) Default settings—The product shall ship with default settings that enable a response period of at least 10 minutes.
   b) Consumer override—The consumer shall be able to override the product’s Temporary Appliance Load Reduction response before or during a load reduction period.
   c) The product shall be able to provide at least one Temporary Appliance Load Reduction response per consumer initiated operating cycle.

H. Information to Consumers
If additional modules, devices, services, or infrastructure are part of the configuration required to activate the product’s communications capabilities, prominent labels or other forms of consumer notifications with instructions shall be displayed at the point of purchase and in the product literature. These shall provide specific information on what consumers must do to activate these capabilities, for example, “This product has
Wi-Fi capability and requires Internet connectivity and a wireless router to enable interconnection with an Energy Management System or with other external devices, systems, or applications.”

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