

Summary and Response to Stakeholder Comments Received on the ENERGY STAR Program Draft 1 Version 1.0 Clothes Dryer Specification

Ref. #	Topic	Comment Summary	ENERGY STAR Response
1	Definitions	EPA stated that it is harmonizing the definitions in Section 1 with the definitions in 10 CFR Part 430. The stakeholder agrees that EPA's definitions should be identical to those in DOE's regulations but suggests EPA cite those definitions instead of copying and pasting it into the specification, to ensure consistency and harmonization with DOE.	In order to provide partners with information necessary needed to understand the program's requirements, EPA lists relevant definitions in Section 1 of the specification. The Draft 2 specification states that unless otherwise specified, the clothes dryer definitions are identical with the definitions in the DOE test procedure, 10 CFR 430, Subpart B, Appendix D2 or in 10 CFR 430.2. Additionally, with the aim of providing better clarity for stakeholders, EPA has associated footnotes with DOE regulatory definitions, referencing the definition's location in the Code of Federal Regulations (CFR) or Federal Register, and has incorporated new language stating that in cases of conflict, the CFR takes precedence.
2	Scope	Stakeholder is concerned that limiting clothes dryer types to those included in the DOE appliance standards program may also limit the introduction of new, high efficiency products. Notably, full-size ventless electric clothes dryers and 120V ventless electric compact dryers	In Draft 2, EPA has expanded two product class descriptions -- Electric Compact 120V and Electric Standard -- to include ventless as well as vented configurations. Some stakeholders have commented that ventless dryers available in other countries might be introduced or modified and introduced, into the U.S./North American market. EPA is concerned that limiting the specification to the product classes specified in Draft 1 may impede potential market advancements for high efficiency ventless clothes dryer designs. Therefore, in Draft 2, EPA is proposing to explicitly include ventless standard electric and compact 120V configurations in the specification, using the same efficiency criteria as a similarly configured vented dryer.  EPA recognizes that clothes dryers that have some HVAC impacts, depending on a number of factors including the regional climate. The current specification does not address HVAC impacts but EPA welcomes any data or research findings on this topic that would allow the Agency to further evaluate the magnitude of these impacts and associated savings opportunities, as part of subsequent clothes dryer specification revision EPA does not believe there is sufficient data at this time to consider regional requirements for dryers in light of the added programmatic complexity with a regional requirement.
3	Scope	Stakeholder supports EPA's proposal to exclude combined washer dryers and water-cooled ventless dryers from the proposed specification, however notes that ventless dryers should also be excluded. Citing: "These machines can use significantly more water than a separate washer and dryer and should not be included in ENERGY STAR at this time."	
4	Scope	Stakeholder supports EPA's proposal to exclude ventless dryers that release the heat into water from ENERGY STAR eligibility because of the large water use. Stakeholder also cites that ventless dryers are less efficient than vented dryers, but that this can be countered in northern climates since the heat transferred to the room (from a ventless dryer) is valuable. Accordingly, they recommend ventless dryers sold in southern climates not be eligible for ENERGY STAR qualification due to negative HVAC implication	
5	Scope	EPA should expand its scope to include alternative drying technology, specifically hydronic models.	EPA believes that the proposed clothes dryer definitions/scope would cover a clothes dryer with hydronic technology. The Agency has proposed performance-based energy efficiency criteria to recognize efficiency improvements in clothes dryers, irrespective of design/technology.

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6	CEF Criteria	<p>Stakeholder notes that a 13% increase in efficiency above the 2015 federal standard is overreaching, and will limit the model choices available to consumers while increasing payback period. Stakeholder notes specific concerns with product modifications cited by EPA in Draft 1 of the specification that will allow manufactures to meet the proposed level, discussing airflow, assumptions based on an NRDC/Ecova study, and assumptions around the need for heat pump technology. The stakeholder believes the proposed 13 percent increment is not achievable without substantial investment and time for development of new technology and that a more realistic qualification level of 8 percent for both electric and gas dryers at a later date should be used as an incentive for manufacturers.</p>	
7	CEF Criteria	<p>Stakeholder notes that they have engaged clothed dryer manufacturers and assessed analysis performed by Ecova to understand the energy saving potential in clothes dryers. Based on this, they believe the Combined Energy Factor (CEF) proposed in Draft 1 of the specification will easily be met by dryer manufacturers. As a result, the stakeholder expects high market penetration and the need for rapid specification revision. The stakeholder recommends that to prevent this course of action, EPA increase the minimum proposed CEF levels to 15-20% improvements over the federal requirements for electric clothes dryers</p>	<p>EPA is proposed revised CEF requirements in Draft 2 that are based on energy performance measured under the amended DOE test (Appendix D2 to Subpart B of Part 430 – Uniform Test Method for Measuring the Energy Consumption of Clothes Dryers, published August 14, 2013: <a href="http://www.gpo.gov/fdsys/pkg/FR-2013-08-14/pdf/2013-18931.pdf">http://www.gpo.gov/fdsys/pkg/FR-2013-08-14/pdf/2013-18931.pdf</a>). The levels were developed using a data set consisting of: 1) the 20 units tested by DOE during their rulemaking process, 2) test data from the CLASP 2013 report Analysis of Potential Energy Savings from Heat Pump Clothes Dryers in North America and 3) additional test data submitted by a utility stakeholders. Additionally, as detailed in the supplemental documentation, EPA considered designs for improving dryer efficiency based on information in the DOE Technical Support Documents (TSDs) and supplemental information shared with EPA by manufacturers and other interested stakeholders as part of the specification development process. While the minimum energy efficiency criteria continues to be expressed using CEF, it is important to note that the Draft 2 proposed CEF levels are not directly comparable to the Draft 1 levels since they are based on two different test procedures.</p>
8	CEF Criteria	<p>Stakeholders indicated that cost effective modifications to existing dryer technology will allow products to easily meet the proposed levels, raising the potential for high market penetration after the release of a Version 1.0 specification. Based on this, they recommend that EPA set more stringent levels of 15-25% better than the federal standard.</p>	<p>With the publication of DOE’s final test procedure, EPA is now releasing the Draft 2 specification making use of this test procedure. The Agency anticipates this test will provide</p>

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9	CEF Criteria	<p>Stakeholder supports the EPA's minimum energy efficiency requirements relating to the Combined Energy Factor a proposed ENERGY STAR clothes dryer must achieve. They believe that its Hybrid Electric Clothes Dryer™ will meet and exceed the minimum levels of CEF at even greater efficiency levels when “serial” load testing is considered as part of the energy efficiency not currently captured via existing DOE/EPA testing criteria. DOE's Sub-part 430B Appendix D/D1 Clothes dryer testing procedures call for the dryer's exhaust air to be “cooled down” to within one (1) degree of ambient between test loads, however given that most users of a clothes dryer will dry two or more loads in succession there is considerable “residual” heat given off by the Hybrid Electric Clothes Dryer™ that will reduce energy consumption normally lost to “recovery”. Stakeholder suggests considering the dryer's residual heating benefits for its additional efficiencies that exceed that of “Stand-by Power” which is captured.</p>	<p>the additional accuracy that stakeholders are looking for in characterizing energy use and relative energy-efficiency of clothes dryers being sold in the U.S. The proposed efficiency levels were developed considering available test data discussed above, as well as the 2015 federal standards for clothes dryers. For a standard dryer, EPA estimates that models meeting the proposed efficiency criteria will use approximately 20% less energy than a conventional dryer. The Draft 2 more accurately captures the energy savings that consumers can expect. Manufacturers will also gain an additional avenue for improving the efficiency of clothes dryers through refined automatic termination control technology that reduces wasted energy at the end of the dry cycle. EPA plans to engage with manufacturers over the next several months to gather information on their timelines for testing products to the new test method and having products that meet ENERGY STAR requirements on the market. This information will assist EPA in identifying a date by which there will be a selection of ENERGY STAR products available for consumers to choose from.</p> <p>Finally, DOE notes that amended test procedure (Appendix D2) does not assess any potential energy impacts associated with running serial loads. DOE is not aware of any data indicating how frequently clothes dryers are used to dry loads immediately consecutively, nor what typical intervals between drying cycles are. DOE is also unaware of data showing the amount of residual heat retained by conventional clothes dryers and other technologies to determine the amount of energy savings potential. DOE will consider any such consumer use and test data that are made available.</p>
10	CEF Criteria/Test Procedure	<p>Stakeholder emphasizes that to allow utility partners to begin capturing significant cost-effective energy savings, it is vital that the ENERGY STAR specification be broad in scope, sufficiently stringent and realistic to capture meaningful and quantifiable energy savings, and prompt enough to bring labeled products to market during the 2013 calendar year. It is also essential for test procedure, on which the specification relies, measure energy use realistically so that savings can be accurately estimated.</p>	
11	CEF Criteria	<p>Stakeholders recommend ENERGY STAR pursue a specification at least as stringent as proposed in Draft 1, if not more stringent. The stakeholders reference new technical laboratory research, including an electric dryer that was tested with multiple different retrofitted technologies to improve efficiency. This testing combined with other sources indicates savings of 15-25% are cost-effectively achievable today, justifying a stringer specification for full size electric dryers. The design modifications evaluated include: insulation, air to air heat exchanger, and modulation of heater power and airflow.</p>	
12	CEF Criteria	<p>Stakeholder doesn't support applying different percentages to product classes, and also comments that it is unclear why EPA is proposing a qualification level for gas vented dryers that is more stringent than the max-tech level DOE identified.</p>	<p>When developing specifications, EPA works closely with stakeholders to gather information and data, including the DOE TSD analysis, to characterize current efficiency opportunities and an advances that can be reasonably anticipated by the time the new ENERGY STAR specification is effective. EPA notes the proposal was quite close (&lt; 2% difference) to the DOE's max tech level and that the Draft 2 proposed level was developed considering there may be more limited opportunities to improve the efficiency of gas dryers.</p>

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13	Analysis	<p>EPA should also rely on DOE's conclusions regarding the benefits to consumers and the costs to industry of those levels. Although EPA analyzed energy savings for consumers, it did not compare those energy savings to the cost increase—EPA should do so given that DOE's analysis provides the necessary information. This stakeholder also points out that the payback period for TSL 5 and 6 are longer than the expected life of a clothes dryer, which highlights that there is no economic benefit to the consumer for products at those levels. EPA should recognize that saving money for the consumer is not a benefit that will occur at these levels.</p>	<p>As a part of the ENERGY STAR product specification development, EPA considered the extent to which there are likely to be qualified models on the market when the specification goes into effect that offer reasonable payback for the consumers. To that end, the Agency researches potential technologies for increasing efficiency and engages with manufacturers to better understand their plans to introduce more energy-efficient designs in the market. For the payback assessment, EPA usually focuses on identifying and comparing a small selection of like-models (standard model vs. one that meets ENERGY STAR criteria), with the goal of isolating the incremental cost due to the efficiency improvement and ensuring this incremental cost can be recouped via energy savings in a reasonable period of time. Additional detail on EPA's assessment for the clothes dryer Draft 2 proposal is included in a supplemental attachment.</p>
14	Analysis	<p>Stakeholder expressed concerned over the use of the 2011 NRDC report in the development of ENERGY STAR level setting. Specifically, the NRDC's use of a "real-world" consumer load - reportedly using 35% more energy to dry than DOE test clothes. Stakeholder notes that the "real-world" load referenced which was not defined or correlated with field data.</p>	<p>For the energy savings calculations that support the Draft 2 proposal, EPA estimated energy savings using the amended DOE test procedure found in Appendix D2. EPA welcomes further information that would further characterize the added energy use to dry a "real world" load that has been more carefully defined through field research, such as the AHAM 1992 test load.</p>
15	Drying Time	<p>One stakeholder does not oppose a drying cycle time requirement. However, none of the data upon which EPA relied clearly indicate that a 50 minute drying cycle time is an appropriate limit. EPA stated that manufacturers indicated the importance of matching clothes washer and clothes dryer cycle time and stated that, according to Consumer Reports, some clothes washers have a cycle length of 45-85 minutes.</p>	
16	Drying Time	<p>Stakeholder indicates that consumers want and/or expect the dryer to be capable of linear load cycling with their washing machine. Acknowledging that the dry time is dependent on fabric content, size, and initial moisture content of the load the stakeholder concludes that the average drying time range is 30 to 60 minutes, and recommends the EPA impose a maximum drying time of 60 minutes.</p>	
17	Drying Time	<p>Stakeholder concurs with EPA's intention to set a maximum drying time requirement. However, the stakeholder expressed concern that the proposed level of 50 minutes will exclude heat pump technologies. Stakeholder recommends that EPA reconsider the proposed time requirements to ensure that dryers using heat pump technology can qualify for ENERGY STAR</p>	<p>EPA understands that a key driver in the U.S. residential laundry market is for paired laundry units (clothes washers and clothes dryers) to have similar cycle times, enabling consumers to run serial loads. Given this and the difficulties with determining what constitutes a minimally acceptable dry time for consumers and the potential differences between the dry time of the DOE test cloth load and "real world" loads, EPA believes a first step is to gather consistent data regarding dryer cycle time to further understand if there is an inherent link between drying time and efficiency. and whether there are differences among product</p>

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18	Drying Time	The draft ENERGY STAR specification includes a maximum cycle length requirement (50 min) that would exclude most, if not all, of the heat pump dryers currently available on the European market. This creates a scenario where a very efficient product may be eligible for the ETA, but not for the ENERGY STAR for clothes dryers labeling program. We are concerned that this divergence between the two ENERGY STAR clothes dryer performance tiers is not in the long-term best interests of a vibrant North American market for super-efficient clothes dryers.	between drying time and energy, and whether there are differences among product designs. EPA welcomes feedback on the revised proposal in Draft 2 to require that the length of the drying cycle be reported as part of ENERGY STAR certification and on making this information available for consumers on the ENERGY STAR website.
19	Drying Time	Stakeholders supported ENERGY STAR's proposal to have energy efficiency and drying time qualifications for the label.	
20	Drying Time	Stakeholder supports the EPA's maximum drying time requirement and views the 50 minute allotment for ENERGY STAR Dryers as adequate time in achieving proper levels of RMC. Stakeholder notes that hydromatic technologies will be capable of meeting this requirement under real world and test conditions.	
21	Drying Time Test Guidance	EPA also proposed that drying time would be measured according to ENERGY STAR guidance for measuring drying time during the energy test (Appendix D1) and that DOE would provide that guidance. We note that should DOE provide such guidance, it can be only for purposes of qualification for ENERGY STAR, and not an official interpretation of Appendix D1 that would be required when conducting the test procedure to determine compliance with energy conservation standards. Furthermore, any guidance cannot alter rated energy performance or change how the test is conducted. This does not seem to be the intent, but the process by which DOE plans to issue such guidance should be clear. Draft 1 states that Draft 2 will include this guidance—it is important that the guidance be provided with Draft 2 because it is challenging to effectively comment on the drying time requirement without knowing how it will be measured.	In Draft 2, EPA is proposing that the time to complete the DOE test procedure at Appendix D2 be recorded during the test and reported for ENERGY STAR certification. In support of this, DOE has developed proposed guidance, included in the Draft 2 specification, for stakeholder review.
22	Automatic Termination	Were DOE to act, the test procedure would incentivize effective automatic termination controls. All EPA's proposal in Draft 1 does is require automatic termination controls. It does nothing to measure the effectiveness of those controls, and thus, does nothing to ensure greater energy savings or consumer satisfaction. Without measuring effectiveness of controls, it is possible that the required controls could either 1) over-dry the load, thus using more energy than necessary; or 2) under-dry the clothes such that a consumer would initiate a timed dry feature or would run another drying cycle.	

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23	Automatic Termination	<p>The ENERGY STAR proposal requires the use of both temperature and moisture sensors. This highly prescriptive design requirement fails to allow for innovation. In mandating both sensors, the ENERGY STAR program does not demand effectiveness. This stakeholder's research shows that use of both sensor types would likely drive up energy use. The ENERGY STAR program is urged to simply specify an efficiency level and avoid prescriptive, innovations stifling requirement on how to achieve that level. ENERGY STAR should also encourage the DOE to implement the test procedure modifications proposed by AHAM to include the automatic termination feature in the DOE test procedure.</p>	
24	Automatic Termination	<p>One stakeholder recommends that EPA work in conjunction with DOE to develop a test method that captures the effectiveness of automatic termination controls. EPA should not give an across the board credit for the existence of automatic termination controls without testing their effectiveness. They disagree with EPA's proposal to give a blanket credit to dryers that include automatic termination controls as these controls can vary in effectiveness, including resulting in over drying. They urge EPA to work with DOE to modify the test procedure as recommended in the 2011 joint petition.</p>	<p>With the publication of DOE's final test procedure, EPA is now releasing this Draft 2 specification making use of this test procedure. The Agency anticipates this test will provide the additional accuracy that stakeholders are looking for in characterizing energy use and relative energy-efficiency of clothes dryers being sold in the U.S. The Appendix D2 better reflects the way consumers use a clothes dryer, will more accurately measure the energy consumption of control clothes dryers, and allows for greater differentiation among clothes dryer efficiency. The test also provides manufacturers with the incentive to improve the technology that senses when a load is "dry" (sensors and control algorithms), that will reduce wasted energy at the end of the dryer cycle.</p>
25	Automatic Termination	<p>Absent an appropriate test procedure, one stakeholder encourages ENERGY STAR to develop an appropriate supplemental test for automatic termination to accurately differentiate the performance of clothes dryers with different automatic termination practices.</p>	<p>DOE determined in the clothes dryer test procedure final rule that the test-to-test and lab-to-lab variation using the current IEC/AHAM test load is sufficiently higher than with the DOE test load to warrant the continued use of the DOE test load. Further, DOE concluded that specifying any alternative load with more variation in weights, composition, and size than the DOE test load would increase the test-to-test and lab-to-lab variation. Repeatable and reproducible test procedures are necessary to ensure that testing results are consistent from test to test and lab to lab especially for compliance and verification testing. For these reasons, DOE did not adopt amendments to the DOE test load in the final rule. In addition, due to a lack of sufficient information at this time, DOE did not adopt a definition of a real-world load in the final rule. DOE stated that it may continue collecting data on clothes dryer test loads and may consider amendments to the test load in a future rulemaking if data is made available showing that the variation from test to test and lab to lab can be reduced, particularly for different batches and lots of test loads. (Final Rule published on August 14, 2013. Available at: <a href="http://www.gpo.gov/fdsys/pkg/FR-2013-08-14/pdf/2013-18931.pdf">http://www.gpo.gov/fdsys/pkg/FR-2013-08-14/pdf/2013-18931.pdf</a>)</p>
26	Automatic Termination	<p>Stakeholder recommends measuring automatic termination, citing that correctly functioning automatic termination not only saves energy directly (~7%), but it also would provide more realistic estimates of other energy-saving technologies. Finally, stakeholder recommends using real-world clothing; citing research by NRDC and Ecova that indicates real-world clothing requires approximately 35% more energy to dry, and significantly more time. They recommend using the AHAM 1992 performance clothing load because it captures many of the characteristics of real clothing loads: three-dimensional articles of clothing, 100% cotton and a significant diversity in thickness.</p>	

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27	Automatic Termination	<p>One stakeholder believes that significant efficiencies can be achieved via automatic termination and supports EPA's Draft 1 proposal. However there is concern over the accuracy and sensitivity of sensing components such as Thermistors and CPU's that consumers must rely upon to prevent pre-mature or excessive time termination that may create quality control problems for manufacturers and performance dissatisfaction for consumers. Stakeholder suggests that the EPA require the use of Real World (RW) test loads during validation testing by independent test agencies to insure product integrity.</p>	
28	Automatic Termination Criteria	<p>Stakeholder has concerns with EPA's proposal to limit timed dry. The goal of the limitation is to discourage consumers from using the timed dry feature which can over-dry clothes, yet EPA allowance for mid-cycle adjustment of that time limit is such that the cycle time can exceed 15 minutes. EPA must provide for that allowance so that manufacturers can test under Appendix D1.</p>	
29	Automatic Termination	<p>Stakeholder disagrees with the proposal to limit timed drying to a maximum of 15 minutes per cycle by stating: automatic termination controls vary in effectiveness, and this variation is not captured by the current test procedure. In some cases this may result over drying and in other cases under drying, leading some consumers to use the timed dry option instead. Limiting the timed dry option to only 15 minutes could lead to consumer frustration and dissatisfaction as this amount of time is unlikely to be sufficient to dry a load. Additionally, 15 minutes is not long enough for a heat pump dryer cycle and would lead to inefficient operation. While this stakeholder is not opposed to a maximum timed drying setting generally, it should be an amount of time that is long enough for a heat pump cycle and which is likely to dry a load of clothes.</p>	<p>EPA had proposed design and operational requirements in Draft 1 for clothes dryers equipped with automatic cycle termination, to encourage broader use of automatic termination controls that can save energy by reducing waste energy used at the end of the cycle and prevent added wear/tear on clothes. Conversations with some manufacturers had suggested there was a significant portion of consumers that continued to use the timed drying instead of opting for a cycle with automatic termination. This assumption has in fact been further validated by NEEA field study that found approximately 29% of clothes dryer cycles were run with the timer control as opposed to using automatic termination setting. With this said, EPA understands stakeholders' concerns that, as structured would have been problematic for heat pump technology and potentially frustrating for at least some consumers who specifically sought to run a full timed-dry cycle.</p> <p>With the release of Appendix D2, the Agency feels that such design requirements are no longer necessary for ENERGY STAR as the updated test procedure will be capable of identifying effective automatic termination clothes dryer design. In light of the NEEA data that indicates about 29% of consumers are not using an automatic termination setting, EPA also sees opportunity to build consumer awareness on energy savings from choosing a cycle with automatic termination.</p>
30		<p>Stakeholder expresses concern that setting such a time requirement will upset consumers not accustomed to using auto termination features and thereby implying that ENERGY STAR qualification will be synonymous with having to repeatedly set a short timed drying cycle in order to dry clothes.</p>	
31	Warranty	<p>Stakeholder argues that the Draft 1 specification warranty requirements for residential clothes dryers are unfounded as EPA has not demonstrated any known performance/quality issues in the residential clothes dryer market. Stakeholder cites the inconsistency in requirements where other products have control boards but EPA has not instituted similar warranty requirements, specific to control boards.</p>	

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32	Warranty	Stakeholder believes the warranty requirements imposed in the Draft 1 specification strays from the ENERGY STAR mission. Stakeholder states that warranties are a competitive aspect of the product market and should be left to the free market determine a level acceptable to consumers. Stakeholder notes that costly and complex technology is not unique to ENERGY STAR clothes dryers.	There is precedence for including warranty requirements in ENERGY STAR specifications to ensure that performance is maintained with greater energy efficiency, particularly in sectors where new technologies are being brought to market that are yet to be vetted through extensive consumer use or there have been known quality issues (e.g., CFLs). The intention of including warranty requirements in the Draft 1 specification was to ensure that energy efficient designs, especially those that include heat pump technology which U.S. consumers are not yet familiar with, meet consumer expectations for quality and performance longevity. At this time, after reviewing stakeholders' feedback, EPA does not believe there is not sufficient information to suggest there is a need for warranty requirements. Therefore, they have been removed in the Draft 2.
33	Warranty	Stakeholder supports EPA's efforts to ensure that qualifying products are covered by a warranty. However, stakeholder recommends the EPA consider warranty precedents set by residential lighting fixture specifications - setting warranty requirements for ENERGY STAR qualified clothes dryers to double the industry standard for warranty duration	
34	Warranty	One stakeholder indicated that their energy efficient clothes dryers will offer a limited 3 year warranty on our microprocessor controls and a limited 5 year warranty on their Hybrid heat generation system.	
35	Effective Date / Test Procedure	Stakeholder cites that DOE is required, per statute, a three-year lead-in for mandatory compliance. Stakeholder is concerned that the early use of CEF and the new test procedure will force manufacturers to comply almost two years early with the new federal standards. Further noting that the proposed levels for ENERGY STAR qualification are significantly more stringent than the 2015 DOE standards, thereby placing excessive burden on companies to achieve those levels in advance of the DOE standards being mandatory. Another stakeholder expressed confusion about the early adoption of the DOE test procedure that utilizes a Combined Energy Factor (CEF), and the implications to the potential for paired clothes washing units. Clothes washing and clothes drying products are inherently linked, and stakeholder has concern that EPA has severed the link by placing different test procedure, metric, and effectivity dates on each one which could impact the selection of matching units available to consumers and increase the likelihood of error.	When revising ENERGY STAR specification, EPA is sensitive to the timing of new Federal standards and other factors to importance to the industry (e.g., peak selling season, production cycle). In Draft 2, EPA is proposing to reference the amended DOE clothes dryer test procedure (Appendix D2) This test offers the opportunity to more accurately assess the energy use associated with automatic termination setting and therefore enables the ENERGY STAR program to offer more real-world based guidance to consumers in selecting a more efficient dryer. The Agency plans to engage with manufacturers over the next several months to gather information on their timelines for testing products to the amended DOE test method in Appendix D2 having products that meet the ENERGY STAR requirements on the
36	Effective Date	Notably, under EPA's anticipated revision schedule for clothes washers, the revised clothes washer specification would become effective several months later, in November 2013. These two product lines are inherently linked. Thus, it makes sense that they should also be connected on an ENERGY STAR timeframe. Such a schedule would better match with manufacturers' design schedules for the products.	

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37	Effective Date	A number of stakeholders encouraged ENERGY STAR to pursue two specifications/two tiers: Specification Version 1.0 effective in Summer-Fall 2013, followed by an updated, more aggressive specification effective in early 2015 (with levels that are 20-25% more stringent than the DOE standard in 2015). One stakeholder noted that ENERGY STAR did this several years ago by simultaneously announcing versions 4 and 5 of its television specification, giving manufacturers time to plan for the needed technologies to achieve version 5 efficiency levels.	market. EPA plans to use this information to identify a date by which there will be a selection of ENERGY STAR products available for consumers to choose from.
38	Effective Date	Stakeholder provides several comments and considerations for EPA on the effective date including: cumulative regulatory burden and investment (UL dryer safety requirements, DOE standard changes, new/revised ENERGY STAR specifications), burden associated with the timing between the proposed Draft 1 effective date and the 2015 DOE clothes dryer standard, consideration for high efficiency paired clothes washers and clothes dryers. Stakeholder recommends the idea timing for both the ENERGY STAR clothes washer specification and the clothes dryer specification as March 2015.	
39	Future Specifications	EPA identified a list of topics and questions for consideration as the ENERGY STAR clothes dryer program evolves in the future, one of which was "eco mode." EPA stated that such a mode could potentially offer significant savings opportunities for clothes dryers. This stakeholder notes that should EPA wish to address eco mode or energy saver mode in a future specification, it would need a test procedure to do so.	EPA appreciates this comment; EPA and DOE will take this under consideration for future specification and test procedure development efforts.  The Appendix D2 test method adopted in the DOE clothes dryer test procedure final rule specifies in section 3.3 that for the automatic termination test cycle, any other optional cycle settings that do not affect the program, temperature or dryness settings shall be tested in the as-shipped position. As a result, eco-mode would be included as part of the test cycle if it is activated by default in the as-shipped position and does not affect the requirements for the cycle program, temperature, and dryness level settings.
40	Future Specifications/ Test Procedure	Stakeholders discussed ways in which clothes dryers can impact HVAC energy use, and recommend 1) measuring the water condensed in the DOE test would allow the calculation of the amount of heat released into the room, allowing more accurate estimation of HVAC impacts; and 2) for vented clothes dryers, it would be simple to measure the air flow rate during the test to understand the amount of air the clothes dryer draws from the outside.	EPA appreciates the discussion on potential HVAC impacts and is engaging with stakeholders further to understand the magnitude of the energy savings opportunity for future clothes dryer specification development efforts.
41	Connected Criteria	Stakeholders support EPA's proposal to recognize smart grid functionality and provide a 5% allowance consistent with the Joint Petition to ENERGY STAR to Adopt Joint Stakeholder Agreement as it Relates to Smart Appliances from industry, efficiency advocates and environmental groups. The allowance is intended to serve as an incentive to help jump start the market for clothes dryers with smart grid functionality.	The Draft 2 retains the 5% allowance and proposes new connected criteria that leverage the significant stakeholder engagement associated with crafting connected criteria for other

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42	Connected Criteria	Stakeholder comments that maintaining openness, function, and communication technology neutrality toward "Connected" functionality in the ENERGY STAR clothes dryer requirements will allow EPA to avoid conflicts with the many interested parties working on integration of home appliances into a future, more intelligent grid. Also support plans to develop a test procedure for connected functionality.	appliances including residential refrigerators and freezers and clothes washers. To use the allowance, electric clothes dryers must be tested to a TBD DOE test procedure to validate clothes dryers' demand response capabilities.
43	Emerging Technology Award	Stakeholder expressed concern that the Draft 1 proposal did not address how the EPA Emerging Technology Award for Advanced Clothes Dryers and the ENERGY STAR clothes dryer program will work together in the market. Suggesting that clear guidance for manufacturers, retailers, and energy efficiency program providers is needed to support the continued advancement of efficient clothes dryers in the market.	The ENERGY STAR Emerging Technology Award is designed to recognize innovative products, commercially available but not yet widely adopted, that have significant potential to reduce greenhouse gases but may not yet fulfill the ENERGY STAR program's Guiding Principles. The first clothes dryer received this award in June 2013. EPA is currently working closely with stakeholders, including manufacturers, retailers and utility groups, to recognize and help support products that have received the award, and is coordinating this effort with the ongoing work to develop the first ENERGY STAR clothes dryer specification.
44	Alternative Specification Approach	Stakeholders suggest considering a points system to reward desirable clothes dryer feature characteristics. A minimum threshold of points would be necessary for ENERGY STAR qualification. An advantage to this approach would be that in a minor update of the specification the number of points required could simply be raised. Not all of these characteristics have to be related to energy use.	The Agency appreciates this suggestion and the principle of enabling more rapid updating of ENERGY STAR specifications to track product evolution. EPA has found success with a less prescriptive, more holistic approach for its ENERGY STAR specifications. Where there is opportunity to recognize and reward a nascent feature that will offer significant savings and consumer benefit such as deep sleep functionality in set top boxes or the ability to maintain a network connection in a low power sleep mode for a number of office equipment products, EPA has included a credit in ENERGY STAR specifications. The inclusion of such incentives can track more closely market evolution such that relevant specifications can be amended between full revision cycles.
45	Test Method	Stakeholder recommends the program include a number of modifications to the DOE test procedure for clothes dryers: One would measure eco-mode, if present, in order to reward eco-mode, and a second to measure post-cycle energy use to assess the energy implications of post-dry cycle modes like "wrinkle prevention" and reward those units that take steps to minimize energy expenditures.	The Appendix D2 test method adopted in the DOE clothes dryer test procedure final rule specifies in section 3.3 that for the automatic termination test cycle, other optional cycle settings that do not affect the program, temperature or dryness settings shall be tested in the as-shipped position. As a result, eco-mode would be included as part of the test cycle if it is activated by default in the as-shipped position and does not affect the requirements for the cycle program, temperature, and dryness level settings. Similarly, if wrinkle prevention mode is activated by default in the as-shipped position or if manufacturers' instructions specify that the feature is recommended to be activated for normal use, the cycle shall be considered complete after the end of the wrinkle prevention mode.

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46	Test Method	<p>Stakeholder provided a summary of new field study research that measured the plug load of over 1,700 homes across the Northwest. Laundry energy use and behavior was monitored in 50 of these homes for one month. Data suggest the clothes dryer energy use may now exceed lighting, contributing on average 920 kWh per year to a home's energy bill in our region. Clothes dryers offer a large untapped opportunity for efficiency. Stakeholder does not believe that available DOE test procedures provide realistic estimates of energy use. Stakeholder is engaging with DOE on the test procedure, but in the meantime, recommends introducing a correction factor for ENERGY STAR's annual energy use estimates to more accurately characterize actual energy use in the near term, until a more realistic test procedure can be adopted.</p> <p>Stakeholder provided a summary of field research findings relevant to the test method, including:</p> <ol style="list-style-type: none"> <li>1) consumers' washers may have high spin speed capabilities, but may not be used to the same extent DOE assumes in its 2011 clothes dryer test procedure and standards analysis. Or loads may not be sufficiently balanced to achieve a high spin speed.</li> <li>2) Loads per year; data suggests that users may not have consolidated loads to the extent assumed;</li> <li>3) A wide range of flow rates were observed, representing different levels of duct restriction; on average, air flow was 79 CFM, lower than the average of 96 CFM measured in the lab by some stakeholders under the DOE clothes dryer test.</li> <li>4) Consumers selected automatic termination for more than 70% of cycles, indicating it is essential for ENERGY STAR to assess the actual cycle time of the clothes dryers labeled with operating in automatic termination mode. Awarding a fixed energy savings credit to dryers with automatic termination capability fails to accurately account for the impact on energy use of automatic termination, and the differences in clothes dryers in accurately sensing when to stop the drying process. Data indicated the majority (52%) of consumers in the Northwest selected the medium drying temperature setting, and that a significant fraction (42%) of consumers use the 'very dry' setting in addition to the 'normal' setting (57%). The latter suggests that the finding that people are satisfied with the dryness of their clothing on normal dryness is not universally true.</li> </ol>	<p>In the Draft 2, EPA has estimated the baseline energy use of 769 kWh/year for an electric clothes dryer, or 2.66 kWh/load (based on the assumed 283 cycles/yr. in the referenced DOE test procedure, Appendix D2). EPA noted that the NEEA data suggest an energy use per dryer of 920 kWh per year and 337 loads per year, or about 2.73 kWh/load. EPA noted these two estimates of the baseline energy per cycle are relatively close (less than 3% difference).</p> <p>EPA appreciates stakeholders' research efforts to collect data that further illuminates opportunities for characterizing clothes dryer energy use and potential efficiency opportunities. DOE considered these comments regarding field use data for different test conditions in the DOE test procedure as part of the clothes dryer test procedure final rule. For the reasons discussed in the test procedure final rule, DOE indicated that it does not have sufficient information at this time to make a definitive conclusion regarding these different test conditions (annual cycles per year, initial RMC, exhaust conditions, test settings) for the final rule, available at: <a href="http://www.gpo.gov/fdsys/pkg/FR-2013-08-14/pdf/2013-18931.pdf">http://www.gpo.gov/fdsys/pkg/FR-2013-08-14/pdf/2013-18931.pdf</a> .</p> <p>As noted above, with the publication of DOE's final test procedure, EPA is now releasing this Draft 2 specification making use of this test procedure that includes methods for more accurately measuring the effects of automatic cycle termination.</p>
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47	Drying Time	<p>Field data also indicates that ENERGY STAR underestimates drying time. Factors that increase the drying time in the NEEA data set relative to the ENERGY STAR parameters include higher initial moisture content, automatic termination, greater duct restriction, medium instead of high heat, and more diverse and complex load composition (three-dimensional articles). The average measured drying time in the field is more than double the drying time typically measured by the DOE test procedure for full-size vented electric clothes dryers. Put another way, more than 80% of the drying cycles measured in the field ran for a longer period of time than a typical dryer runs on the DOE test procedure. Having an accurate sense of drying times will help users purchase those models that can achieve energy savings without sacrificing performance, and will help ENERGY STAR establish a reasonable upper bound for allowable drying times for labeled products.</p>	<p>In Draft 2 EPA is proposing that the time to complete the DOE test at Appendix D2, be recorded during the test and reported for ENERGY STAR certification. Testing using Appendix D2 will capture the energy use and time associated with cool-down/tumbling period. Given this, EPA believes that measuring the length of the drying cycle under Appendix D2 will provide more accurate, standardized information to consumers who are seeking information on drying time and energy efficiency.</p>
48	General	<p>ENERGY STAR specifications are an important first step to accelerate the manufacturing and adoption of more efficiency residential technologies. Stakeholder seeks to replicate success in electric water heaters, with ENERGY STAR's help, with clothes dryers.</p>	<p>EPA appreciates this feedback and support for the ENERGY STAR clothes dryer specification development, which, along with supporting efforts (such as the ENERGY STAR Emerging Technology Award, Super Efficient Dryer Initiative, recent and ongoing research by many efficiency groups) will help consumers save energy and money with an ENERGY STAR clothes dryer.</p>