October 5, 2012

Amanda Stevens
U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

RE: ENERGY STAR® Clothes Dryers Draft 1 Version 1.0 Specification

Dear Ms. Stevens:

This letter comprises the comments of the Southern California Gas Company (SCGC) and San Diego Gas and Electric (SDG&E) in response to the Environmental Protection Agency (EPA) ENERGY STAR® Clothes Dryers Draft 1 Version 1.0 Specification.

The signatories of this letter represent some of the largest utility companies in the Western United States, serving millions of customers. As energy companies, we understand the potential of appliance efficiency specifications to cut costs and reduce consumption while maintaining or increasing consumer utility of the products and preserving electrical safety and grid reliability.

Clothes dryers have become ubiquitous in US households with nearly 80% penetration. In total, dryers now represent a $9 billion annual national energy bill – about 6% of residential electricity consumption and 2% of residential natural gas consumption. They consume as much electricity per year – 60 billion kWh – as the entire state of Massachusetts, and are responsible for 40 million metric tons of annual carbon dioxide emissions. Curbing energy consumed by these products has become a global concern. As EPA initiates its specification development for clothes dryers, we strongly urge EPA to consider the following comments.

SPECIFICATION LEVELS SHOULD BE STRICTER

The specifications should be more stringent, especially for electric dryers (20-25% versus the proposed 13%). We plan to retrofit an electric dryer by incorporating multiple cost effective improvements to demonstrate the energy savings potential. These improvements may include modulation, exhaust condensing heat exchanger, insulation, and motor and blower improvements.[1]

TEST PROCEDURE SHOULD REQUIRE TWO ADDITIONAL TESTS

[1] See for technology explanations: ENERGY STAR Market & Industry Scoping Report: Residential Clothes Dryers, November 2011.

We recommend that EPA require two additional tests: one for eco mode and one to more closely represent real-world conditions. The real-world conditions test, the most informative of the two tests, would incorporate post-cycle energy use, automatic termination, real-world clothing, and HVAC impact factors. Since the basic DOE test requires three repetitions, these two additional tests would bring the total number of tests to five. Below we explain the additions to the DOE test procedure.

a) Measure Eco-mode

We recommend measuring an eco-mode, if present. In our prototyping and modeling activities we will explore ways to reward the eco-mode, but unless it is measured, it is not possible to reward it.

b) Measure Post-cycle Energy Use

Most conventional dryers continue to tumble clothes after the completion of the drying cycle to keep clothes from becoming wrinkled. NRDC and Ecova's past research indicates that total dryer energy consumption could increase by approximately 10% if it continuously tumbles for an hour.[2] A simple solution that is already implemented on some dryers today is to tumble intermittently, which should be measured and rewarded.

c) Measure Automatic Termination

The DOE test procedure does not measure automatic termination and the current ENERGY STAR draft only proposes that temperature and moisture sensors be present, not that they function adequately. Correctly functioning automatic termination not only saves energy directly (~7%), but it also would provide more realistic estimates of other energy-saving technologies.[3] For instance, modulation at the end of the cycle would likely save more energy with automatic termination.

d) Use Real-world Clothing

Previous NRDC and Ecova testing indicated that real-world clothing requires approximately 35% more energy to dry, and significantly more time (see Figure 1).[4] Though this data was generated with actual clothing available in stores, we recognize the advantage of using standardized test clothing. Therefore, we 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.

[2] Dave Denkenberger, Serena Mau, Chris Calwell and Eric Wanless, "Residential Clothes Dryers: A Closer Look at Energy Efficient Test Procedures and Savings Opportunities." Prepared by Ecova for the Natural Resources Defense Council. November 9, 2011.

[3] Petition to DOE: http://www.gpo.gov/fdsys/pkg/FR-2011-10-11/pdf/2011-26169.pdf

[4] Dave Denkenberger, Serena Mau, Chris Calwell and Eric Wanless, "Residential Clothes Dryers: A Closer Look at Energy Efficient Test Procedures and Savings Opportunities." Prepared by Ecova for the Natural Resources Defense Council. November 9, 2011.

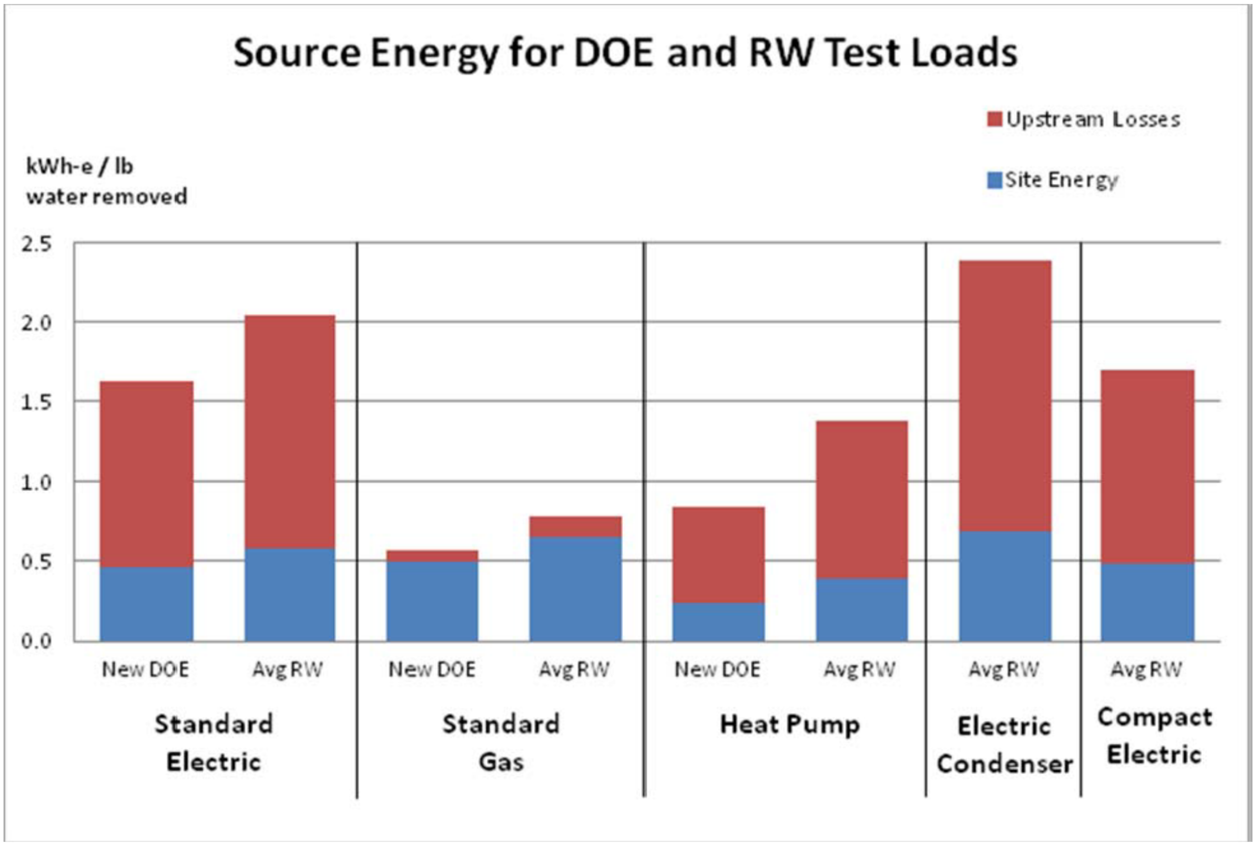

Figure 1. Site and source energy use of different dryer technologies and test methods

e) HVAC Impacts: Measure HVAC Impacts and Take into Account Regional Differences

Dryers can impact HVAC energy used in one or more of the following ways:

1. Heat released directly to the room, especially by ventless dryers
2. Vented dryers drawing air from the outside during operation
3. Air infiltration from the wall penetration when dryer is not in use
4. HVAC needed to heat and cool the indoor space where the dryer is located

Heat released directly to the room

Ventless dryers must release the heat of condensing water vapor into either room air or water that goes down the drain. We support ENERGY STAR's proposal that ventless dryers that release the heat into water should not be eligible for ENERGY STAR because of the large water use. The remaining ventless dryers release a significant amount of heat into the ambient air. In fact, if all of the water vapor is condensed, nearly all of the electricity consumed by the dryer ends up as heat released into the room.[5] However, condensation efficiency is typically not 100%. Measuring the amount of water condensed would allow the calculation of the amount of heat released into the room, resulting in a more accurate estimation of HVAC impacts.

Ventless dryers are less efficient than vented dryers. However, this can be counteracted in northern climates since the heat transferred to the room is valuable. But we believe that ventless dryers in

[5] Some heat can remain in the condensed water, but this is, at most, a couple percent of the total electricity use.

southern climates should not be eligible for ENERGY STAR because of the significant negative HVAC impacts. There is precedent in ENERGY STAR making a regional distinction for windows.

Drawing air from outside during operation
For vented dryers, a simple change in the test procedure would be to measure the air flow rate to understand the amount of air the dryer draws from the outside.

Air infiltration from the wall penetration when dryer is not in use
If the dryer is ventless, it would not have a wall penetration. If the dryer is vented, the leakiness of the dryer would need to be tested in order to estimate the HVAC impacts of the wall penetration. We recommend that the costs and benefits of such a test be investigated.

HVAC needed to heat and cool the indoor space
Most dryers take up the same amount of space, and therefore would require the same amount of HVAC energy to heat and cool the space. However, compact dryers would take up slightly less space. Furthermore, if the dryer is a combination washer-dryer or a stackable unit, there would be less space to heat and cool.[6] Simply reporting the dimensions of the dryer and whether it is stacking would be sufficient for this HVAC impact estimation.

A POINTS SYSTEM SHOULD BE USED TO REWARD OTHER DESIRABLE CHARACTERISTICS

We support ENERGY STAR's proposal to have energy efficiency and drying time qualifications for the label. In addition, we propose a points system to reward other desirable characteristics. Not all of these characteristics have to be related to energy use. An example is the connected (or smart grid) functionality. Rather than permitting an additional allowance of 5% more energy use associated with connected functionality, it could be rewarded through this points system. Table 1 lists some of these characteristics that could be included. We propose how heavily to weight the different characteristics. High weighting would mean more possible points in that particular category. A threshold number of points would be required for at ENERGY STAR certification.

An advantage of the point system would be that, in a minor update of the specification, the number of points required could simply be raised. A major renovation could involve altering the rewarded characteristics and/or how much each characteristic is weighted.

[6] In the case of a combination unit, this also requires less embodied energy, but these are excluded from the current specification.

Table 1. Factor weightings for points system

Factor	Proposed weight	Comments
Higher efficiency with the DOE load than required by the specification	High	
High real-world clothing efficiency	High	
Low post-cycle energy use	High	
Low detrimental or even beneficial HVAC impacts	High	
Low clothing wear and tear	High	Clothing wear and tear is similar economic cost to energy (can be estimated by weighing the lint that accumulates in the lint filter)
Connected capability	High	We support ENERGY STAR's proposal that does not give a connected incentive to natural gas dryers
Low real-world clothing drying time	Medium	
Presence of duct clogging sensor	Low	Safety
Lint filter clogging sensor	Low	Safety
Low temperature heater	Low	Safety

In conclusion, we thank EPA for the opportunity to be involved in this specification development process and encourage EPA to consider the recommendation outlined in this letter.

Sincerely,

Chip Fox
Residential Programs and Codes & Standards Manager
San Diego Gas and Electric Company

Lance DeLaura
Southern California Gas Company