



ENERGY STAR®

Scoping / New Program Opportunity Clothes Dryers

Sean Southard, ICF International

ENERGY STAR Partner Meeting

Charlotte, NC

November 10, 2011



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New Opportunities: Scoping



- EPA, through ENERGY STAR, continually searches for new opportunities to promote efficient and cost-effective products
- **Purpose of ENERGY STAR Scoping**
 - An initial snap-shot of the market, technology, industry, and savings potential of various products
 - EPA uses findings to inform and prioritize product specification development work
- Scoping reports are available on the ENERGY STAR Web site:

www.energystar.gov/scoping

Guiding Principles



- ENERGY STAR criteria are designed to balance a varied set of objectives, including:
 - Significant energy and/or water savings
 - Cost effective
 - Energy consumption that can be measured and verified with testing
 - Equivalent or enhanced functionality and performance
 - Achievable through several technology options; at least one of which is non-proprietary
 - Label provides meaningful differentiation

Clothes Dryers Scoping



- EPA has scoped residential clothes dryers this year, as one of 5 appliance product categories
 - Clothes dryers are the single largest residential energy use in the U.S. where no voluntary or mandatory labeling programs exist, or no utility incentives are offered
 - High household penetration of clothes dryers
 - Advances in test procedure and technologies are presenting new opportunities for savings from clothes dryers

Select Findings from Scoping



- Key Market Data
 - 6.5 million dryers sold in U.S. in 2010 (>99% vented)
 - 79% of households have a clothes dryer, and about 80% use it every time clothes are washed
 - 80% are electric dryers and 20% are gas dryers
- U.S. Consumer Preferences
 - Key purchase criteria: reliability, features/functions, price, and drying times
- Analyzed savings from efficient dryers in two scenarios: 10% (gas and electric); and 20% (gas) to 30% (electric) energy savings compared to the baseline average dryer energy consumption

Estimated Savings Opportunities with Dryers



- *Estimated* efficient dryer savings of Scenario 1 (implementing technologies for incremental savings):
 - **Annual unit energy savings**
 - Gas – 4 kWh and 0.24 Mbtu; Electric – 65 kWh
 - **Lifetime unit energy cost savings**
 - Gas – \$47; Electric – \$114
 - **National savings (annual energy, annual energy cost, and annual CO₂ emissions)**
 - *25% market penetration of efficient gas and electric dryers: 86,000 MWh and 76 Bbtu, \$10.1 million, and 141 million lbs of CO₂*

Estimated Savings Opportunities with Dryers



- *Estimated* efficient dryer savings of Scenario 2 (implementing technologies for aggressive savings):
 - **Annual unit energy savings**
 - Gas – 9 kWh and 0.47 Mbtu; Electric – 196 kWh
 - **Lifetime unit energy cost savings**
 - Gas – \$95; Electric – \$342
 - **National savings (annual energy, annual energy cost, and annual CO₂ emissions)**
 - *25% market penetration of efficient gas and electric dryers: 256,000 MWh and 152 BBtu, \$30 million, and 412 million lbs of CO₂*

Technology Options for Dryer Savings



- Examples of energy efficient technology options:
 - *Dryer controls and drum upgrades* - improved termination, modified operating conditions, improved drum design
 - Up to 15% energy savings
 - *Heat generation options* – heat pump, modulating heat
 - Up to 20-60% energy savings
 - *Exhaust recovery* – recycle exhaust heat, inlet air preheat
 - Up to 18% energy savings
 - *“Eco-Mode”* – using a variable heat source, reducing power output, lengthening the drying process
 - Up to 40% energy savings

Other Considerations for Dryer Savings



- Site vs. Source
 - Compared to electric dryers, gas dryers offer:
 - Source energy savings, significant CO₂ emissions savings, and cost savings
- HVAC Effects
 - Dryers can have a substantial impact on home heating/cooling loads
 - Estimated impact on home heating/cooling load
 - Vented Dryers – 6%
 - Ventless Dryers – 11%
 - Using outside air intake and/or heat recovery could offer significant savings

Thoughts on Preliminary EPA Approach for Dryers



- Opportunity ripe to transform the clothes dryers market by expanding the availability and visibility of energy efficient dryers
- EPA plans to move forward with specification development efforts for clothes dryers
 - Build on the momentum achieved by the EPA Emerging Technology Award and SEDI activities
- Utilize two-step/tiered approach to build up the market for more efficient dryers
 - **Step 1:** Focus in on savings opportunities from collection of more incremental design options
 - **Step 2:** Look to a longer-term aggressive savings opportunity of at least 30-40% efficiency gains

Next Steps



- Engage with interested stakeholders to continue collecting feedback on scoping report, and to discuss potential direction of specification development
- Specification development planned launch in early 2012:
 - **Framework Document:** Discusses EPA's idea on possible direction of the program, and provides stakeholders an opportunity to help shape direction of specification.
 - **Call for Data:** Combined Energy Factor (CEF) data, automatic termination performance data, and other data needed to inform investigation of potential efficiency levels

Clothes Dryers Product Development Contacts



Amanda Stevens
EPA ENERGY STAR
Appliances PD Lead
202-343-9106

Stevens.Amanda@epa.gov

appliances@energystar.gov

www.energystar.gov/productdevelopment

Douglas Frazee
ICF International
Senior Technical Specialist
410-279-1093

DFrazee@icfi.com

Sean Southard
ICF International
Associate
202-862-1585

SSouthard@icfi.com