



ENERGY STAR®

Scoping / New Program Opportunity Clothes Dryers

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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



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