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](http://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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