State Energy Efficient Appliance Rebate Program: An Assessment

Interim Findings

October 6, 2010
This Presentation

• Provides a brief overview of the program
• Offers initial findings on program implementation
• Examines projected versus actual (to date) results related to
  – Energy savings
  – Carbon savings
  – Dollar Savings
  – Water savings
Overview & Background

- State Energy Efficient Appliance Rebate Program, aka SEEARP, aka “Dollars for Dishwashers”
- Funded by American Recovery and Reinvestment Act of 2009
  - $300 million stimulus program
  - Funded programs in all 56 states and territories
    - Promotes replacement of old appliances with new, energy efficient models
    - Energy efficient = minimum of ENERGY STAR qualified
    - Provides consumer rebates
Major Steps to SEEARP

- **1975**: Energy Policy and Conservation Act (EPCA) established an energy conservation program.
- **2005**: ENERGY STAR® partnership between DOE and EPA established. ENERGY STAR was established via legislation in Sec. 131 of the Energy Policy Act (42 U.S.C. 8254a).
  - The Energy Efficient Appliance Rebate Program (EEARP) established by Sec. 124 of the Energy Policy Act.
- **2007**: Sec. 315 of the Energy Independence and Security Act amended the EEARP to include “products with improved energy efficiency in cold climates.”
- **2009**: ARRA-$300,000,000 shall be for expenses necessary to implement the program authorized under section 124 of EPACT (42 U.S.C. 15821) and the ENERGY STAR program.
Background & Overview

- Appliances approved by DOE for rebates
  - Clothes washers
  - Dishwashers
  - Refrigerators
  - Freezers
  - Room AC
  - Central AC
  - Heat pumps
  - Water heaters
  - Furnaces/boilers

State could petition DOE to add additional products
Guiding Principles of Program

- Rebates for residential customers only
- Funds must be used for a rebate – no up-stream or mid-stream buydowns
- For replacement products only
- Programs run by states but could be outsourced or run in partnership with utilities
- States could tailor program to meet their energy needs
• This was a stimulus program – not evaluated by cost-benefit tests
• Administrative costs capped at 25% of state grant award
• States could use grant funds for 50% of total administrative costs
• Almost all programs began between December 2009
Overview of State Rebates

52 PROGRAMS OFFERED REBATES ON AT LEAST 1 MAJOR APPLIANCE

Alaska
Northern Mariana Islands
Guam
American Samoa
Hawaii
Puerto Rico
U.S. Virgin Islands
District of Columbia
Overview of State Rebates

37 PROGRAMS OFFERED REBATES ON AT LEAST 1 HVAC PRODUCT
Overview of State Rebates

39 programs offered rebates on at least 1 water heater.
# Appliance Rebates

<table>
<thead>
<tr>
<th>PRODUCT TYPE</th>
<th>NUMBER OF STATES GIVING REBATES</th>
<th>LOWEST REBATE AMOUNT</th>
<th>HIGHEST REBATE AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIR CONDITIONERS (ROOM)</td>
<td>26</td>
<td>$20</td>
<td>$200</td>
</tr>
<tr>
<td>CLOTHES WASHERS</td>
<td>47</td>
<td>$35</td>
<td>$800</td>
</tr>
<tr>
<td>DISHWASHERS</td>
<td>38</td>
<td>$25</td>
<td>$400</td>
</tr>
<tr>
<td>FREEZERS</td>
<td>28</td>
<td>$25</td>
<td>$600</td>
</tr>
<tr>
<td>REFRIGERATORS</td>
<td>47</td>
<td>$50</td>
<td>$700</td>
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</tbody>
</table>
### HVAC Rebates*

<table>
<thead>
<tr>
<th>PRODUCT TYPE*</th>
<th>NUMBER OF STATES GIVING REBATES</th>
<th>LOWEST REBATE AMOUNT</th>
<th>HIGHEST REBATE AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIR CONDITIONERS (CENTRAL)</td>
<td>24</td>
<td>$75</td>
<td>$1,000</td>
</tr>
<tr>
<td>BOILERS (GAS)</td>
<td>14</td>
<td>$100</td>
<td>$1,200</td>
</tr>
<tr>
<td>BOILERS (OIL)</td>
<td>8</td>
<td>$199</td>
<td>$1,000</td>
</tr>
<tr>
<td>BOILERS (PROPANE)</td>
<td>2</td>
<td>$200</td>
<td>$300</td>
</tr>
<tr>
<td>FURNACES (GAS)</td>
<td>28</td>
<td>$100</td>
<td>$500</td>
</tr>
<tr>
<td>FURNACES (OIL)</td>
<td>10</td>
<td>$99</td>
<td>$500</td>
</tr>
<tr>
<td>FURNACES (PROPANE)</td>
<td>6</td>
<td>$150</td>
<td>$500</td>
</tr>
<tr>
<td>HEAT PUMPS (AIR-SOURCE)</td>
<td>26</td>
<td>$75</td>
<td>$1,600</td>
</tr>
<tr>
<td>HEAT PUMPS (GROUND-SOURCE)</td>
<td>11</td>
<td>$75</td>
<td>$1,000</td>
</tr>
</tbody>
</table>

*Does not include 1 boiler reset control ($100).
## Water Heater Rebates*

<table>
<thead>
<tr>
<th>PRODUCT TYPE*</th>
<th>NUMBER OF STATES GIVING REBATES</th>
<th>LOWEST REBATE AMOUNT</th>
<th>HIGHEST REBATE AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELECTRIC HEAT PUMP</td>
<td>27</td>
<td>$50</td>
<td>$425</td>
</tr>
<tr>
<td>GAS CONDENSING</td>
<td>12</td>
<td>$99</td>
<td>$400</td>
</tr>
<tr>
<td>GAS STORAGE</td>
<td>29</td>
<td>$25</td>
<td>$300</td>
</tr>
<tr>
<td>GAS TANKLESS</td>
<td>32</td>
<td>$100</td>
<td>$400</td>
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<tr>
<td>SOLAR</td>
<td>18</td>
<td>$100</td>
<td>$2,000</td>
</tr>
</tbody>
</table>

*Does not include 1 indirect ($150) and 1 propane condensing ($300).
Key Preliminary Findings

• Major appliances outperforming projections
  – Clothes washers and refrigerators the most popular rebated items
  – HVAC products meeting projections
  – Water heaters underperforming

• Partner support has been essential to program success
  – Assisted in meeting administrative cost match
  – Provided additional incentives on rebated products in most states
  – Provided recycling services for replaced units
Key Preliminary Findings

- Administering 56 separate statewide programs was challenging
  - For retail and manufacturer partners
    - Tracking program details
    - Required multiple go-to-market strategies
  - For consumers (Why isn’t my state open/rebating this product/offering higher rebates?)
Projected versus actual: An overview of the data

- All 56 states projected
  - Number of rebates by product
  - Energy savings
- DOE collected actuals through June 30, 2010:
  - Represents over $98 million in rebate funds spent
  - Total of 689,000 rebates paid
  - Received reports from 53 of 56 states
What Data is in Special Progress Reports?

- State
- Product type
- Product brand
- Sub-brand
- Model number
- AHRI number
- SRCC number
- Date of purchase
- Date application received
- Date rebate paid
- Purchase price
- Rebate amount
- ZIP code of delivery
- Replaced product removed
- Replaced product recycled
- Additional recycling rebate
Electric Savings

**PROJECTED SAVINGS**

- Appliances: 52%
- HVAC: 21%
- Water Heaters: 26%

**ACTUAL SAVINGS***

- Appliances: 71%
- HVAC: 23%
- Water Heaters: 5%

* Actual savings based on products rebated and reported through June 30, 2010.

**TOTAL PROJECTED ANNUAL SAVINGS**

296,923,185 kWh HOURS

**TOTAL ACTUAL* ANNUAL SAVINGS**

83,665,176 kWh HOURS
Therm Savings

**PROJECTED SAVINGS**

- HVAC: 42%
- Appliances: 19%
- Water Heaters: 40%

**ACTUAL SAVINGS**

- HVAC: 53%
- Appliances: 31%
- Water Heaters: 16%

* Actual savings based on products rebated and reported through June 30, 2010. Includes Natural Gas Products Only.
CO$_2$e Savings

**PROJECTED SAVINGS**

- Appliances: 43%
- HVAC: 28%
- Water Heaters: 29%

**ACTUAL SAVINGS***

- Appliances: 61%
- HVAC: 31%
- Water Heaters: 8%

*Actual savings based on products rebated and reported through June 30, 2010.*

TOTAL PROJECTED ANNUAL SAVINGS: 650,467,951 POUNDS OF CO$_2$e

TOTAL ACTUAL* ANNUAL SAVINGS: 177,488,431 POUNDS OF CO$_2$e
Dollar Savings

**PROJECTED SAVINGS (ANNUAL)**
- Appliances: 60%
- HVAC: 21%
- Water Heaters: 19%

**ACTUAL SAVINGS* (ANNUAL)**
- Appliances: 76%
- HVAC: 19%
- Water Heaters: 5%

* Actual savings based on products rebated and reported through June 30, 2010.

**TOTAL PROJECTED ANNUAL SAVINGS**
$84,252,361

**TOTAL ACTUAL* ANNUAL SAVINGS**
$27,525,678
## Energy Savings by Product Category*

![Energy Efficiency & Renewable Energy logo](image)

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>REBATES</th>
<th>kWh per REBATE</th>
<th>TOTAL kWh</th>
<th>THERM per REBATE</th>
<th>TOTAL THERM</th>
<th>ENERGY AND WATER SAVINGS per REBATE</th>
<th>TOTAL ENERGY AND WATER SAVINGS**</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPLIANCES</td>
<td>615,764</td>
<td>96.77</td>
<td>59,592,047</td>
<td>1.8</td>
<td>1,113,024</td>
<td>$34</td>
<td>$21,052,840</td>
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<tr>
<td>HVAC</td>
<td>56,499</td>
<td>346.32</td>
<td>19,566,688</td>
<td>34</td>
<td>1,934,228</td>
<td>$91</td>
<td>$5,153,992</td>
</tr>
<tr>
<td>WATER HEATERS</td>
<td>17,265</td>
<td>261</td>
<td>4,506,440</td>
<td>33</td>
<td>582,916</td>
<td>$76</td>
<td>$1,318,846</td>
</tr>
</tbody>
</table>

*Actual savings based on products rebated and reported through June 30, 2010. **Dollar savings represent annual savings, not lifetime.
Water Savings

TOTAL PROJECTED ANNUAL SAVINGS
3,943,638,051
GALLONS

TOTAL ACTUAL* ANNUAL SAVINGS
1,713,970,670
GALLONS

* Actual savings based on products rebated and reported through June 30, 2010.
## SEEARP’s Leveraged Sales*

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>REBATES</th>
<th>AVERAGE REBATE AMOUNT</th>
<th>TOTAL VALUE OF REBATES</th>
<th>AVERAGE SALES PRICE</th>
<th>TOTAL SALES</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPLIANCES</td>
<td>615,764</td>
<td>$121</td>
<td>$74,689,183</td>
<td>$876</td>
<td>$539,456,136</td>
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<tr>
<td>HVAC</td>
<td>56,499</td>
<td>$360</td>
<td>$20,354,663</td>
<td>$5,137</td>
<td>$290,222,674</td>
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<tr>
<td>WATER HEATERS</td>
<td>17,265</td>
<td>$191</td>
<td>$3,294,691</td>
<td>$1,106</td>
<td>$19,096,992</td>
</tr>
</tbody>
</table>

*Actual savings based on products rebated and reported through June 30, 2010.
Next Steps

- Continue support for active programs
- Assure Phase II programs are successful
- Continue robust data analysis
- Share program lessons and outcomes
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