

ENERGY STAR MOST EFFICIENT: EARLY EXPERIENCE SUMMARY
September 25, 2012

INTRODUCTION

ENERGY STAR is a powerful program, designating energy efficient products in more than 65 categories as well as homes, buildings and factories. Recognized by more than 80 percent of U.S. Households, ENERGY STAR is among the most influential environmental brands in the United States and is a globally recognized symbol for energy efficiency.

In an effort to do more with this powerful platform and move more efficient products into the market even faster, EPA and DOE partnered to explore a “top tier” program within ENERGY STAR. In 2010, EPA undertook formative research to inform how best to designate super efficient products in a way that would not undermine the ENERGY STAR brand. The ENERGY STAR Most Efficient marketing designation emerged as the best approach; and in 2011 and 2012, EPA pilot tested the new designation on a subset of relevant products.

Throughout the pilot period, EPA has been tracking the progress of the pilot to ensure that the marketing designation is fulfilling its intended purpose and to guard against any negative implications for the ENERGY STAR brand. This report provides a summary of key findings that informed the government’s decision to transition ENERGY STAR Most Efficient recognition out of the pilot phase and extend it as an ongoing element of the ENERGY STAR program. In particular, the report examines:

- The extent to which the number of super efficient models on the market increased during the pilot
- The potential to leverage private sector activities to increase visibility and ultimately consumer understanding of the designation
- Any early indication of harm to the underlying ENERGY STAR label
- Feedback on how the Most Efficient program can be improved

To inform its decision, EPA leveraged ongoing tracking and evaluation efforts including ENERGY STAR certified product lists; in-store assessment of ENERGY STAR use; annual analysis ENERGY STAR awareness and use; and feedback from partner outreach and media tracking as available. In addition, EPA hired The Cadmus Group to engage early users of the Most Efficient designation in guided discussions about their experience with the program. Discussions were conducted separately with each organization and tailored to their particular situation. Several organizations opted to have multiple individuals contribute to the discussion, which were held throughout August 2012. In total, five individuals from four manufacturers, four individuals from one retailer, and nine individuals from six energy efficiency program sponsors provided feedback. These discussions were intended to produce qualitative (not quantitative) feedback; however to the extent that numbers are referenced in this document, responses are counted at the organizational level.

BACKGROUND ON MOST EFFICIENT DESIGNATION

Goal

The goal of the ENERGY STAR Most Efficient program is to accelerate the availability of highly efficient products in the marketplace. This effort, which identifies the most efficient products among those that qualify for the ENERGY STAR in particular product categories, is designed to drive more energy efficient products into the market more quickly and is part of a broader commitment by EPA and DOE to maintain the credibility and value of ENERGY STAR to the general public while investigating opportunities to do more with this successful program.

ENERGY STAR Most Efficient targets early adopters and environmentally conscious shoppers and seeks to highlight for them super-efficient products within specific ENERGY STAR product categories in a given year.

The ENERGY STAR Most Efficient designation is intended for use at point of sale on point of purchase materials, product literature, and websites and is not allowed to be applied at the factory to products or packaging. In addition to developing recognition criteria, EPA supports the ENERGY STAR Most Efficient designation by:

- Analyzing ENERGY STAR product lists to identify eligible models
- Reviewing manufacturer submitted product information, where applicable (HVAC)
- Providing access to the ENERGY STAR Most Efficient designation graphic and guidelines for proper use
- Maintaining a consumer website highlighting ENERGY STAR Most Efficient products (energystar.gov/mostefficient)
- Supporting retail and energy efficiency program requests for marketing assistance and qualifying product lists

Formative Research

Research conducted in August 2010 was used to inform the ENERGY STAR "Most Efficient" marketing designation including:

- How to establish a top tier recognition without harming the ENERGY STAR brand
- Consumer willingness to pay more for greater efficiency
- Possible language to describe a highly efficient option for consumers
- Possible delivery channels (online, in store, etc.) for such an offering

Key research findings included the following:

- Consumers did not think that offering a top tier would undermine ENERGY STAR and trusted ENERGY STAR to identify the most efficient products
- A small subset of consumers is willing to pay more for the most energy efficient product on the market
- When researching a new product to purchase, consumers get most of their information from retail locations and the web
- When asked to choose among ways to describe a top tier offering, descriptive names like "Most Efficient" and "Maximum Efficiency," when shown in concert with the ENERGY STAR logo,

were most popular. Descriptions like "Top Tier" and "Best in Class" were not liked¹ (and potentially confusing/undermining of basic ENERGY STAR message).

Recognition Criteria

During the first year of the pilot (2011), seven product categories—central air conditioners, air and geothermal heat pumps, furnaces, clothes washers, refrigerators-freezers, and televisions—were selected as an initial focus and key criteria were developed in concert with interested parties. Nearly 40 individuals and stakeholder groups submitted comments on the overall initiative and proposed product recognition criteria, which were finalized May 5, 2011.

In the second year of the pilot, EPA expressed its intent to maintain the same basic scope and, to a large degree, the same criteria for ENERGY STAR Most Efficient 2012 designation in its November 21, 2011, announcement to stakeholders.² Proposed modifications included adding boilers, clarifying HVAC communication requirements, increasing stringency for TVs, and adjusting refrigerator requirements to allow for greater selection. Fourteen individuals and stakeholder groups submitted comments; and criteria for 2012 designation were finalized January 19, 2012. Key criteria for ENERGY STAR Most Efficient 2011 and ENERGY STAR Most Efficient 2012 are highlighted in Tables 1 and 2.

Product Category	Key Criteria ³	Estimated Models (#) Initially Eligible	Manufacturers w/Eligible Models when Criteria Introduced (#)		
Commercial Air Conditioner (CAC)	≥18 SEER & 12.5 EER for split CAC, 16 SEER & 12 EER for packaged CAC; communications, diagnostics and automated configuration	~30-40	2		
Air Source Heat Pump (ASHP)	≥18 SEER, 12.5 EER, & 9.6 HSPF for split systems; 16 SEER, 12 EER & 8 HSPF for packaged systems; communications, diagnostics and automated configuration		2		
Geothermal Heat Pumps	Equivalent to Tier 3 levels established in the ENERGY STAR Program Requirements; communications, diagnostics and automated configuration	0	0		
Furnaces	97% AFUE; communications, diagnostics and automated configuration	~4-6	0		
Clothes Washer	Clothes Washer Volume	27	7		
	≤ 2.5 cubic feet			≥ 2.3	≤ 4.5
	> 2.5 cubic feet			≥ 3.0	≤ 3.3
Refrigerators-Freezers	≤422 kWh per year; at least 30% better than Federal standard	~8-10*	3*		
Televisions	$A < 400: P_{max} = (0.046 * A) + 13.0$	77	9		

¹ Proposal for Comment: Advancing the Market for Top Tier ENERGY STAR Qualified Product. October 8, 2010. http://www.energystar.gov/ia/partners/downloads/Top_Tier_Stakeholder_Proposal.pdf?79dc-8bb3

² http://www.energystar.gov/ia/partners/downloads/Most_Efficient_2012_Cover_Letter2.pdf?8e5a-cc30

	$400 \leq A \leq 1068: P_{\max} = (0.073 * A) + 2.0$ $A > 1068: P_{\max} = 80$ P_{\max} = maximum On Mode power consumption; A = viewable screen area in sq. inches		
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*Most Efficient was introduced during the transition to third-party certification and included a requirement for third-party certification. Based on energy use requirements alone, twice as many refrigerators would have been eligible for recognition.

TABLE 2. ENERGY STAR Most Efficient 2012 Qualifying Products					
Product Categories	Key Criteria			Estimated Models (#) Initially Eligible	Manufacturers with Eligible Models when Criteria Introduced (#)
Boilers	95 AFUE or higher; Oil Powered Boilers: 90 AFUE or higher			92	19
CAC	≥18 SEER & 12.5 EER for split CAC, 16 SEER & 12 EER for packaged CAC; communications, system status, and automated configuration			49	5
ASHP	≥18 SEER, 12.5 EER, & 9.6 HSPF for split systems; 16 SEER, 12 EER & 8 HSPF for packaged systems; communications, system status, and automated configuration				
Geothermal Heat Pumps	Equivalent to Tier 3 levels established in the ENERGY STAR Program Requirements; communications, system status, and automated configuration			39	1
Furnaces	97 AFUE; communications, system status, and automated configuration			55	3
Clothes Washer	Clothes Washer Volume	MEF	WF	24	8
	≤ 2.5 cubic feet	≥ 2.3	≤ 4.5		
	> 2.5 cubic feet	≥ 3.0	≤ 3.3		
Refrigerators-Freezers	≤ 481 kWh per year; at least 30% better than Federal standard			~15-20	6
Televisions	$P_{\max} = 82 * \text{TANH}(0.00084(A - 150) + 0.05) + 12.75$ Where: 1. P_{\max} = maximum allowable On Mode Power consumption in W 2. A = viewable screen area of the product in square inches 3. TANH =hyperbolic tangent function			63	9+

KEY OBSERVATIONS

Overall, and in some categories in particular, the number of recognized models increased over the pilot period

By the end of the first year of the pilot, more than 170 products from 21 manufacturers were recognized as ENERGY STAR's Most Efficient in all eligible product categories. As shown in Table 3, to date in the second year of the pilot, more than 1400 qualifying models from 74 manufacturers are recognized as ENERGY STAR Most Efficient 2012.

Product Categories	Unique Models (#)	Manufacturers with Recognized Models
Boilers	74	11
CAC	72	6
ASHP	60	4
Geothermal Heat Pumps	593	5
Furnaces	131	5
Clothes Washer	66	8
Refrigerators-Freezers	80	8
Televisions	337	27

In particular, there have been significant increases in models recognized as Most Efficient for the following product categories.

- In 2012, recognized clothes washers grew from 24 models to 66 models (as of 9/4/12)
- In 2012, recognized televisions grew from 63 models to 337 models (as of 9/4/12)

At the beginning of the pilot, there were no residential geothermal heat pump products on the market with two-way communication features, a key requirement for Most Efficient recognition of HVAC products. As of September 2012, there are about 600 models. Two-way communications, coupled with system status alerts, can help customers keep their equipment operating efficiently over time. Numbers of furnaces and central and air source heat pumps with these features also grew considerably as shown in Table 4 below.

<i>Quarter</i>	<i>GHP</i>	<i>Boilers*</i>	<i>CAC/ASHP</i>	<i>Furnaces</i>
Q2 2011	0		44	11
Q 3 2011	39		49	31
Q4 2011	39		49	55
Q1 2012	288	33	64	79
Q2 2012	593	71	132	131

*Boilers were not eligible for the ENERGY STAR Most Efficient Designation until 2012

The private sector is beginning to grow its investment in the ENERGY STAR Most Efficient designation

In 2011, ENERGY STAR Most Efficient was introduced by one utility efficiency program for a fall appliance rebate and a co-promotion between a utility and a national retailer occurred in another part of the country. These two efforts were expected to affect 200 stores with messaging reaching 1.9 million consumers. Sears showed early strong support for highlighting ENERGY STAR Most Efficient clothes washers in stores. Natural Resources Canada also launched a Canadian pilot of ENERGY STAR Most Efficient.

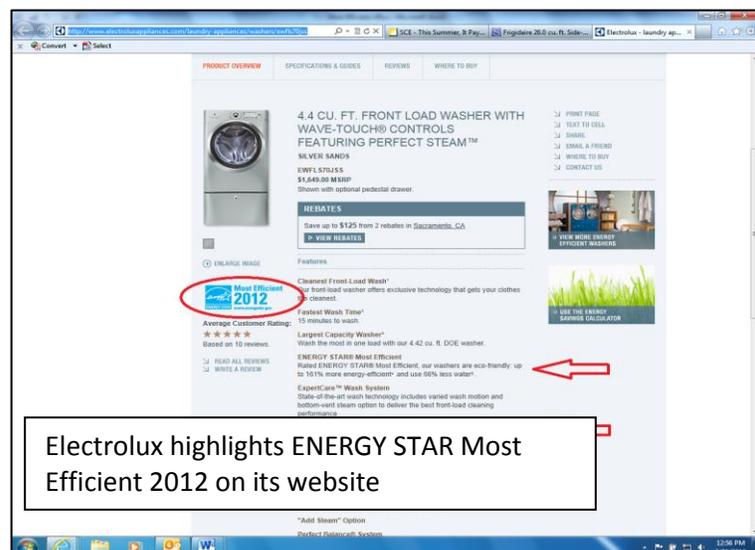
In 2012, in addition to ongoing support by Sears, eight efficiency programs highlighted one or more products in program outreach or incentive programs: three utilities promoted Most Efficient refrigerators, one utility promoted Most Efficient clothes washers, one utility promoted Most Efficient televisions, and two utilities promoted Most Efficient heating and cooling equipment. Two additional utilities provided education to their customers about the Most Efficient designation. ENERGY STAR Most Efficient also aired on national television--on June 16, 2012, an LG clothes washer recognized as one of ENERGY STAR's Most Efficient was featured on "The Price is Right." The Nielsen Audience rating for this airing was more than 4.5 million.

In terms of the perceived value of participating in the ENERGY STAR Most Efficient pilot, six partners mentioned that ENERGY STAR has high brand recognition and added value to their product promotions. They expressed that Most Efficient helped them differentiate products through a brand that consumers were already aware of and comfortable with. Experiences specific to different partner types included:

- For three of the interviewed manufacturers, the Most Efficient designation on their products gave them another selling point with their retail channel partners because they could differentiate their products as “best of the best,” commenting that ENERGY STAR and Most Efficient continues to help drive competition for more efficient products, but cautioning that the value of the Most Efficient designation was its scarcity (availability on a limited subset of products within a product category).
- Another manufacturer felt that having more appliance product categories eligible for Most Efficient would improve recognition and commented that the payback relative to ENERGY STAR was not significant given the likely higher price tag for Most Efficient.
- The participating retailer thought it was a good opportunity within certain product categories that have high ENERGY STAR penetration.
- Efficiency program sponsors were split on the usefulness of the Most Efficient designation for their promotions. Some found Most Efficient was a helpful way to tier the products for different rebate values. Others were concerned that the incremental savings between Most Efficient and ENERGY STAR were not compelling as a sales feature.

Use of the ENERGY STAR Most Efficient designation by partners was consistent with guidelines put forth by EPA that the designation is intended for use at point of sale on point of purchase materials, product literature, and websites and is not allowed to be applied at the factory to products or packaging. Partner feedback on use is as follows:

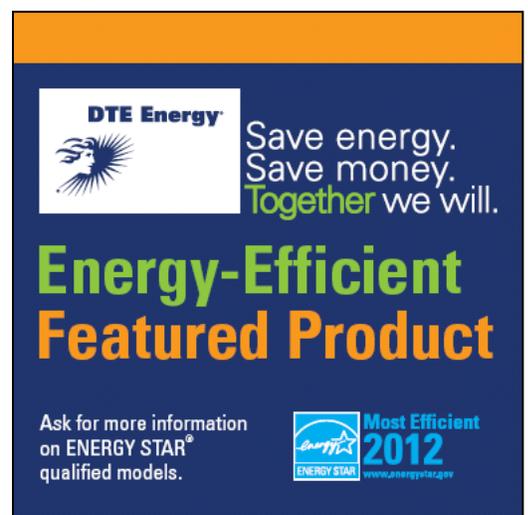
- All the partners participating in the Most Efficient pilot stated that they used the designation in marketing materials or on their website.



- Four efficiency program sponsor partners had recently run successful programs that promoted Most Efficient clothes washers, refrigerators, and/or televisions. One program sponsor that had a pilot rebating Most Efficient refrigerators reported meeting goals for the program year within the first few months of program launch. Another utility reported being pleased at their success in getting wholesalers in their service territory to stock and sell Most Efficient furnaces for the first time and in customer response to their related furnace rebates over the summer despite record heat (158 Most Efficient units [11% of program approved rebates]).
- Several of the participating program sponsors used the designation in their rebate materials and in retail stores.
- Manufacturers reported using the mark online and in internal communications with sales staff and retail partners. One manufacturer also reported running print ads with the Most Efficient designation.
- Some partners said that when they use the designation, they are also working to provide explanations about the program to both sales associates and consumers.



Sample point of purchase materials from So Cal Edison and DTE Energy



Partners did not report making an effort in the pilot phase to specifically target early adopters for their promotion of Most Efficient, although the manufacturers and the retailer felt that a niche market existed for Most Efficient and indicated that they were working on strategies moving forward, specifically:

- The manufacturer partners felt that a specialty market, albeit small, existed for Most Efficient products; and they were working to refine their message for different target audiences. They felt that the Most Efficient designation could act as a strong “tie-breaker” for consumers already interested in higher quality and energy efficient products.
- The retailer felt that the program appeals to a niche part of the market. Stating that the Most Efficient typically also means it’s the most expensive, they knew that this would appeal to the early adopters--the more technologically advanced customer where price wasn’t necessarily an issue.

- By contrast, many of the program sponsors were primarily focused on promoting ENERGY STAR and then incorporating Most Efficient into that effort (usually through tiered rebates or other financial incentives). As one program sponsor explained, their main message is to let customers know that they are trying to help them save money.

An increase in the in-store visibility of the Most Efficient marketing designation was observed over the pilot period. In fall 2011, as part of its regular audits of the use of the ENERGY STAR label on products at retail, field staff identified and documented use of the ENERGY STAR Most Efficient designation for clothes washers in Sears stores in five metropolitan areas. By spring 2012, the field team observed increased use of the Most Efficient designation. Most Efficient 2011 and 2012 designations were found in Home Depot, Lowe's, and Sears locations in all four metropolitan areas where the assessments were conducted. The majority of the Most Efficient designations were found on clothes washer models, but three instances were documented for one refrigerator model.



Photo of LG clothes washer in Sears taken in Baltimore October 2011. Most Efficient designation is shown on a channel pricing sign.



Photo of Samsung clothes washer in Lowe's taken in Atlanta May 2012. Most Efficient designation is shown on a sticker applied to product in the store.

Additional samples of collateral and marketing material can be found as a separate Appendix to this document.

No discernible adverse impact in terms of consumer perception of the ENERGY STAR label

In the first year of the pilot, in the fall of 2011, the Consortium for Energy Efficiency conducted its annual household survey of ENERGY STAR household awareness, understanding and use. Survey results confirmed that ENERGY STAR awareness, understanding and use remained strong. More than 80

percent of households recognized and demonstrated understanding of the ENERGY STAR label. Of those who knowingly purchased an ENERGY STAR product, 75 percent reported the label as influential in their purchasing decision. Importantly, loyalty to ENERGY STAR remained strong--nearly 80 percent of purchasers said they were likely to recommend products that have earned the ENERGY STAR to friends.

Loyalty to ENERGY STAR ⁴
[Base = Recognize label (aided) and purchasers]

Likelihood Recommend ENERGY STAR Products	% Households	
	2011 (n=320)	2010 (n=577)
10 - Extremely likely	32%	29%
9	22%	24%
8	13%	16%
7	11%	10%
6	6%	7%
5	11%	8%
4	2%	2%
3	0%	1%
2	0%	1%
1	2%	1%
0 - Extremely unlikely	0%	2%
Total	100%	100%

Notes: Q11: "How likely are you to recommend ENERGY STAR-labeled products to a friend?" is measured on an 11-point scale, where 0 = "Extremely unlikely" and 10 = "Extremely likely."

Newly added survey questions specific to the ENERGY STAR Most Efficient designation help establish a baseline for recognition and interest in Most Efficient. When asked "Have you seen or heard of ENERGY STAR Most Efficient," nineteen percent of all respondents indicated they had.⁵ Of those respondents, about half (52 percent) recognized the ENERGY STAR Most Efficient graphic when it was shown to them indicating that there may have been some false positives. (By contrast when asked about the ENERGY STAR label, more respondents recognize the label when it is shown to them).

Would buy a product because it is ENERGY STAR Most Efficient	2011 (n=59)
Strongly disagree	11%
Somewhat disagree	8%
Neither agree nor disagree	22%
Somewhat agree	35%
Strongly agree	24%

Among respondents who had seen or heard of ENERGY STAR Most Efficient designation and recognized the Most Efficient graphic, 59 percent agreed somewhat or strongly with the statement that "All other things equal, I would buy a product because it is designated as ENERGY STAR Most Efficient."⁶ This

⁴ EPA Office of Air and Radiation, Climate Protection Partnerships Division. *National Awareness of ENERGY STAR® for 2011: Analysis of 2011 CEE Household Survey*. U.S. EPA, 2012.

⁵ Ibid.

⁶ Ibid.

finding is consistent with formative research findings that the Most Efficient designation will appeal to a subset of consumers rather than the broader ENERGY STAR consumer base. CEE and its members are making slight modifications to questions to better understand whether respondents who report they would be influenced to buy a product because of the designation share characteristics with early adopters. Results from the 2012 survey should be available in early 2013.

SUGGESTIONS FOR IMPROVEMENT

Based on discussions with early users of the ENERGY STAR Most Efficient designation including manufacturers, retailers, and energy efficiency program sponsors, EPA has identified aspects of the program that will be the focus of improvement going forward.

Program Planning

When asked whether EPA should continue with the Most Efficient designation, nearly all the partners explained that they support continuation of Most Efficient and see it as a natural progression of ENERGY STAR. However, several program partners suggest that uncertainty about the future of Most Efficient has hampered investment. Specifically,

- A few partners expressed that they were hesitant to invest much in future Most Efficient marketing efforts because of year-to-year uncertainty of the program.
- Two efficiency program sponsors commented that they have been unsure about the future of the Most Efficient program as a whole—whether it was just a pilot or if it would continue to grow—and would like to see EPA make a bigger commitment.

This concern should be alleviated by EPA's recent announcement that the ENERGY STAR Most Efficient designation will move beyond the pilot phase and become an ongoing element of the ENERGY STAR program.

Another concern raised was that the criteria need to be announced earlier so that the market and programs have more time to prepare. Given the range of products and programs involved, it would be difficult to provide ideal alignment of timelines for all interested parties; however, EPA is making efforts to address this issue by announcing criteria as early as possible.

Specification levels

When asked whether the Most Efficient criteria effectively highlight cutting-edge performers in terms of efficiency, participating partners shared the following opinions:

- Most participants thought EPA was doing a good job of identifying the most efficient products. Many of the efficiency program sponsors also used an additional tiering system, such as CEE or the Business and Consumer Electronics collaborative (BCE) to define efficiency levels for their rebates.
- One manufacturer felt the refrigerator criteria could use more definition by including more specific size categories or breaking the criteria out by platform (2-door, 3-door, etc.).
- Another manufacturer felt the bar could be raised for cooling equipment.

EPA will continue to seek stakeholder input on the products selected and the recognition criteria established for ENERGY STAR's Most Efficient each year. The Agency will also continue to strive to present proposed criteria in the context of a clearer explanation of the principles they are serving.

Program Promotion

Pilot participants said they would like to see EPA more engaged in the process of promoting the program, both with consumers and partners. Specific partner suggestions for engaging consumers and partners included the following:

- Social media posts
- A 1- or 2-page point of sale piece that defines Most Efficient
- More advertising and promotion around Most Efficient products
- Improvements to the energystar.gov/mostefficient website including making it more visible from the ENERGY STAR home page, making it more consumer-friendly and easier to navigate, and improving consistency between the qualifying product list online and the list partners receive directly from EPA
- Convening a partner panel to continue to get feedback on the Most Efficient criteria, ideas for improving the program, and ways to educate consumers
- Graphics and promotional guidance that can help partners educate retailers, sales associates and consumers.

EPA is considering these suggestions as it develops plans for outreach and education for 2013 and beyond and will prioritize activities based on available resources and discussions with partners.

In-store Product Availability

Product availability came up as an issue in the context of the Most Efficient pilot in two ways. Some pilot participants indicated that certain appliance product models designated as Most Efficient did not appear on the sales floor. They felt this was likely because they didn't meet sales volume requirements to be displayed. Concern was also expressed that a number of recognized televisions appeared on the lists prior to their availability in the marketplace.

EPA plans to explore both of these issues further. A number of changes are being made to the way certified product models are reported to EPA and verified, which should improve the Agency's ability to list products only when they are available on the market.

Sales Staff Training

There was very little experience among pilot participants with customer confusion about the Most Efficient designation, but several participants felt that consumer confusion was a possibility. One efficiency program sponsor received feedback from field staff that customers did not understand why a standard ENERGY STAR product is not the most efficient product. The retailer actively engaged in training its sales associates to avoid that potential.

EPA supports a proactive approach to training sales associates and plans to integrate tools for helping communicate the Most Efficient designation in its training resources.

CLOSING

Early indications are that ENERGY STAR Most Efficient designation will serve its intended purpose of driving more highly efficient products to the market more quickly. In particular, there have been notable

increases in Most Efficient product availability for clothes washers, televisions and heating and cooling products.

The ENERGY STAR Most Efficient designation remains a niche tool for marketing highly efficient products to consumers and is used by a small but growing number of ENERGY STAR partners who help increase the visibility and, ultimately, consumer understanding of the designation. Nearly all interviewed partners explained that they want to continue promoting Most Efficient and see it as a natural progression of ENERGY STAR. In-store observations confirm usage is growing and consistent with EPA guidelines for use of the marketing designation. EPA hopes that the increased certainty surrounding the program's future will lead to continued and expanded investment by program partners.

Importantly, there is no evidence that the Most Efficient designation has harmed the ENERGY STAR label--consumer awareness, understanding and loyalty to ENERGY STAR remain strong. Nonetheless, addressing any potential for consumer confusion and playing a more active role in educating consumers and partners about the designation will be a priority for this next phase of the program.

EPA will consider the valuable feedback provided by early users of the designation in planning and resource allocation with a particular focus on opportunities to improve the Most Efficient website; how it communicates criteria decisions; and training and outreach materials that articulate the value of the Most Efficient designation. EPA will also explore mechanisms for receiving ongoing feedback from program partners on the ENERGY STAR Most Efficient Designation.