How Public-Private Collaboration is Rethinking the Design of Retail Programs: The Market Transforming Impact of EPA's ENERGY STAR Retail Products Platform

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ABSTRACT

There is an ongoing discussion within the energy efficiency community about the need to address residential efficiency programs to make up for shrinking savings from lighting programs. Lighting programs have historically accounted the majority of residential savings in several areas of the country, creating a large challenge for program managers determined to fill the gap. One approach is to make existing non-lighting programs more effective, and to add new hard to reach products such as consumer electronics to existing portfolios.

Since 2015, a group of efficiency program sponsors have been working with EPA and leading national retailers to change the way retail programs work. The concept is based on two central strategies: shifting incentives to the retailers with a midstream program model, and coordinating nationally to make the scale of the program large enough to transform markets. Called the ENERGY STAR Retail Products Platform, the platform now includes all major retailers and efficiency program sponsors that serve 17% of the U.S. population. Participation is growing and is projected to serve 22% of the market by the end of 2018.

In this paper, the authors analyze the critical elements of success and the difficulties encountered in the early stages of development and discuss the primary barriers facing the initiative going forward. The examination will include interviews with key stakeholders, discussions with retailers and efficiency program sponsors, author's analysis, as well as a review of sales data trends and early program evaluations.

Introduction to The ENERGY STAR Retail Products Platform (ESRPP)

ENERGY STAR has partnered with utilities and retailers to bring energy-efficient products to consumers for nearly 25 years. In that time, stringent energy codes and standards have raised baselines for utility energy efficiency programs. One consequence of these successes is that the remaining energy savings opportunity can be difficult to achieve cost-effectively.

To address these issues, utilities looked to midstream energy-efficiency programs as a potential solution. In a midstream model, program sponsors provide incentives to retailers to encourage stocking, promoting, and selling a higher percentage of energy efficient products. One of the first retail focused, midstream energy-efficiency programs was designed by Pacific Gas & Electric (PG&E), based on an energy savings potential study of the electronics market in 2006 (Chase 2006). PG&E's analysis of the findings indicated that per-unit incentive amounts directed at the consumer would not lead to increased sales, but the potential total sales volume incentive amounts could motivate retailers to adjust their current practices. At the peak of the program, eight national retailers, who sell more than 70 percent of consumer electronics products, were participating with PG&E, Northwest Energy Efficiency Alliance (NEEA) and Sacramento Municipal Utility District. This early success showed that with the right program design and retailer participation, even difficult products like consumer electronics markets can be impacted (Lukasiewicz et al. 2017).

ESRPP represents an adaptation and expansion of this program by providing a national-level structure for program delivery and retailer engagement. In September 2014, EPA hosted an ESRPP kickoff meeting, and charter members began forming task groups to enhance collaboration in 2015. These task forces have focused on program areas such as evaluation, data, marketing, legal requirements, and product selection. With a goal of transforming markets by streamlining and harmonizing energy efficiency programs with retailers, ESRPP gives program sponsors access to a low-cost, retail-based program through national coordination.

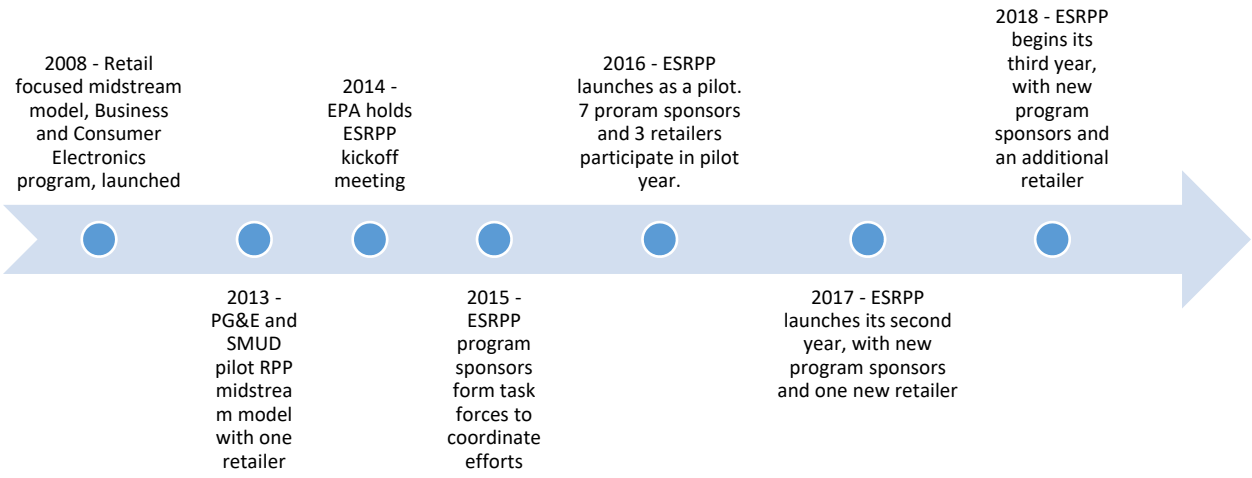

Figure 1. ESRPP timeline

Why Shift to Midstream?

Effectiveness of Downstream Programs

Traditional incentive programs operate on the economic theory of price elasticity: make a product less expensive and people will purchase more. Traditional efficiency programs started out with large consumer incentives that represented a significant percentage of the products purchase price. Over time, some programs have kept the same downstream program approach as their incentive levels shrunk (Lukasiewicz and Banwell, 2016) (Figure 2).

Figure 2. Eroding impacts of traditional incentive programs

In addition to shrinking incentive levels, the second major factor that is eroding the effectiveness of downstream rebates is that retailers have grown more competitive and no longer have enough time or staff to effectively administer the programs. If each efficiency program sponsor has different program requirements for legal, start and stop dates, point of purchase materials, training, etc., the retailers are only able to participate with the largest, best funded programs. Having ‘small” efficiency programs shut out of national retailer’s stores is a real loss

for the efficiency community, so with time as the ESRPP is refined, it could become an accessible platform/portal for any program, anywhere in the country (Figure 3).

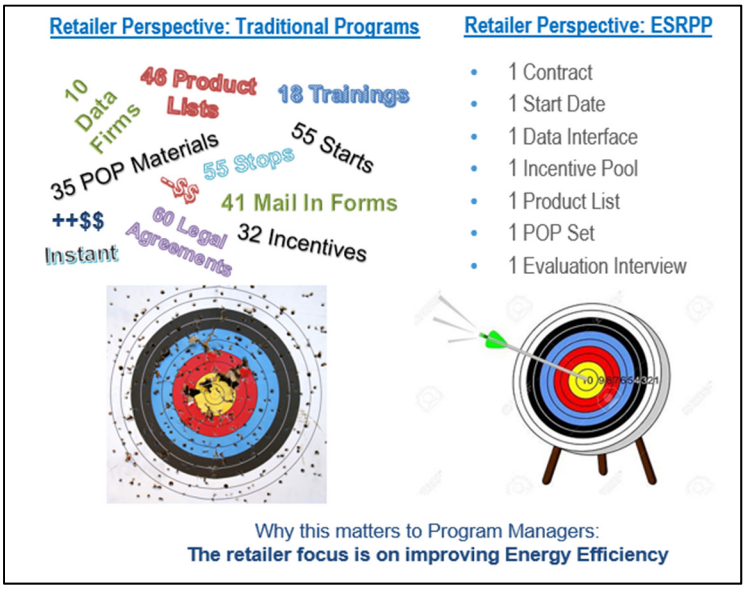

Figure 3. Comparison of traditional downstream rebate programs

Eroding Impacts of Traditional Downstream Incentive Programs

In a recent exchange, a national retailer indicated that downstream programs suffered from low consumer participation/redemption rates and that they have little or no impact on retailer sales. The example cited showed that for 5 of the 6 products where incentives were offered the incentive redemption rate was below 15% (P. Kilroy, President, Navitas Partners, pers. comm., February 2018). In a second example, analysis of sales data and redemption rates for a large Maryland utility indicated that redemption rates for refrigerators ($50 incentive) was only 16% (C. Walls, Residential Energy Efficiency Programs Manager, BGE, pers. comm., 2017). These examples illustrate the need to transition away from traditional downstream rebates in order to maximize energy savings, and push towards more effective program models.

Table 1. Redemption % from downstream program

Product	Redemption % of Total Category Sales
Air Purifiers	23%
Clothes Washer	13%
Electric Dryers	1%
Freezers	1%
Refrigerators	5%
Room AC	1%

Effectiveness of the Midstream Approach

The midstream approach has been shown to be an effective market intervention strategy, in both retail and wholesale markets for both plug load and other product types. Since 2016, ENERGY STAR has helped to facilitate a distributor-focused midstream incentive program. By shifting the incentive to wholesale distributors, program participation has often at least doubled, and in some cases, increased ten-fold[1]. In retail markets taking a rather modest $25 consumer incentive and allocating it to the retailer can have dramatic impacts. The reason for this is that retailers, being highly competitive, operate on small margins. While a $25 refrigerator incentive only represents a 3% price discount for a consumer, the same $25 can represent a 25 - 50% increase in profitability for a retailer (P. Kilroy, President, Navitas Partners, pers. comm., June 2018)

The incentives provided through ESRPP will motivate retailers to take three types of actions that will influence both the demand for, and the supply of, efficient products, (Figure 3):

1) Retailers influence demand for efficient products by offering more energy efficient models, thus leaving consumers with fewer non-efficient options.
2) Retailers also influence the choice architecture in which consumers make decisions by modifying factors like promotion, defined broadly to include product placement, sales associate training, and pricing.
3) Retailers influence the supply of efficient products by favoring the efficient products manufacturers offer and by specifically requesting that manufacturers increase the efficiency of their offerings. (Conzemius and Dunn 2018)

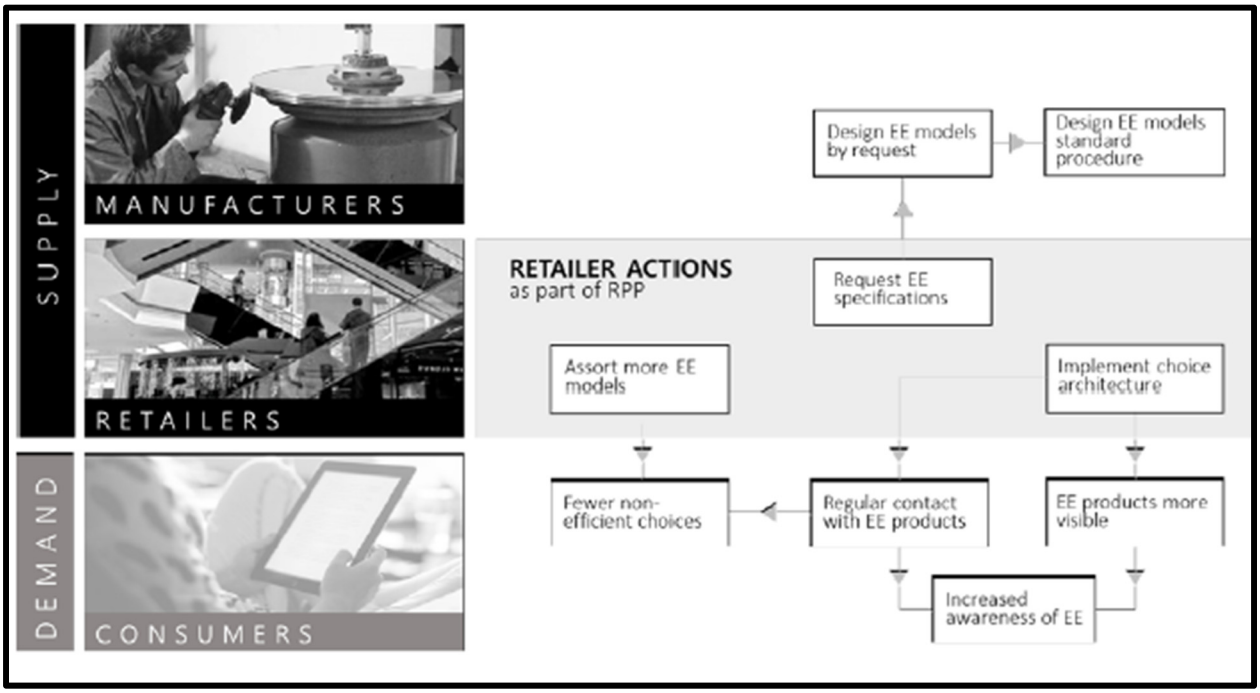

Figure 4. ESRPP behavior influence

[1] https://www.energystar.gov/products/retailers/midstream_programs/astonishing_results

ESRPP National Implementation

Program Sponsor and Retailer Engagement

As of June 2018, nine program sponsors in twelve states have joined ESRPP and committed to incentivizing qualified products with participating retailers. Residential customers in the service territories of these sponsors make up 17 percent of the US market. The collective, annualized incentive budget for the first year of the pilot, if all sponsors began the program at the same time, would have exceeded $5.4 Million.

Table 2. Current ESRPP Program Sponsors

Program Sponsor	Residential Customers	% of US Residential Customers
NEEA - PNW (WA, OR, MT, ID)	5,752,147	4.5%
PG&E – CA	4,679,175	3.6%
SMUD – CA	542,930	0.4%
Efficiency Vermont – VT	310,932	0.2%
Focus on Energy – WI	2,631,430	2.0%
XCEL CO	1,195,260	0.9%
XCEL MN	1,113,587	0.9%
Con Ed – NY	2,869,881	2.2%
EmPOWER Maryland (BGE, Delmarva, Potomac, PEPCO and SMECO)	2,158,914	1.7%
Energize Connecticut (Eversource / UIL Holdings	1,396,397	1.1%
Total	22,650,653	17.6%

Participating national retailers are product category leaders with stores in every corner of the U.S. Figure 3 below shows the concentration of stores in the service territories in the Northwest, Midwest, Northeast and Northern California. 15 percent of the participating retailers' stores are included in the pilot.

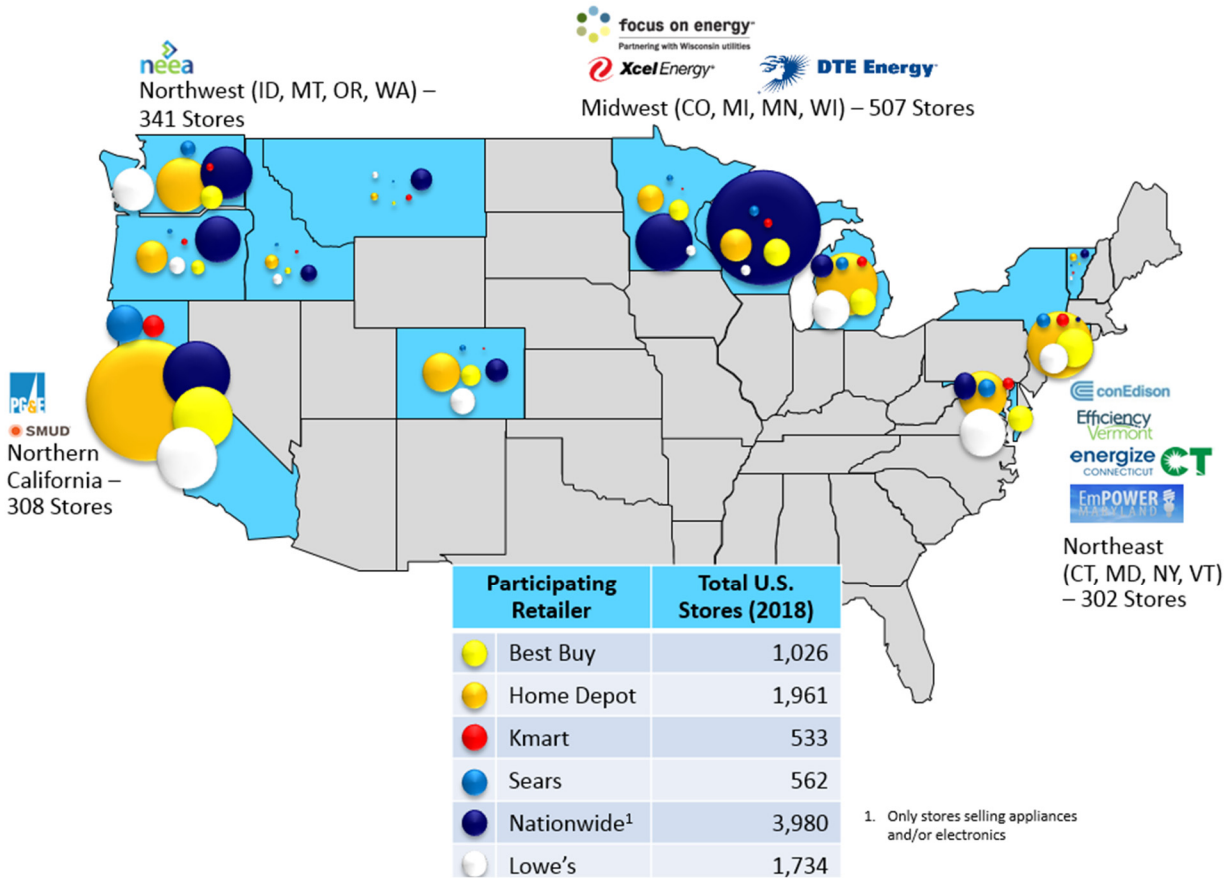

Figure 5. Retailer participation in ESRPP

While EPA provides overall program support and facilitation, the individual program sponsors participate actively in decisions through task forces. Participating program sponsors meet regularly to review progress of program development, to resolve issues or questions, and to plan for the pilot and subsequent program years. Task forces include members from program sponsors, EPA, and supporting contractors.

Table 3. ESRPP Task Forces

Task Force	Goal
1. EM&V/ Regulatory	To develop "new" approach to EM&V, create guidance to serve as foundation of individual EM&V plans
2. Data	To create secure, centralized, machine-to-machine data exchange infrastructure and processes. Retailers will use as a central repository for sales data; Sponsors will use as central source for program management & EM&V
3. Products	To create a coordinated process for product portfolio management, including product additions and retirement, tiers, relationship to ENERGY STAR specifications, etc.

4. Outreach	To educate the stakeholder community about the ESRPP. Outreach includes EEPS, program implementers, retailers, manufacturers, and the EM&V/regulatory community.
5. Marketing	To build a consistent core look & feel for EEPS program materials, including key messaging and design elements and retailer pre-approved POP templates.
6. Retail & Legal	Creates master agreement templates for ESRPP, and address other legal issues of concern to the group. Facilitates the ENERGY STAR Retail Action Council (ESRAC)

Initial Research and Evaluation

Logic Modelling

One of the critical first steps in developing guidance for the design and evaluation stages of ESRPP was the creation of a logic model. The development of a logic model serves as a conceptual framework for evaluation by showing the activities, outcomes, timing and outputs of the ESRPP. In addition to understanding the logic model it is important that program sponsors evaluate ESRPP using a market transformation framework. As the logic model shows, the goal of the program is to create long term structural changes to the marketplace, rather than possible temporary changes from traditional consumer incentives.

EPA and some program sponsors are now using logic models, coordinated through the evaluation task force, to track program implementation. For example, one activity outlined in the ESRPP logic model is to "Set product specification criteria for products in ESRPP portfolio". To address this activity, the ESRPP Products task force met with ENERGY STAR Product Development leads to participate in technical planning call for the ENERGY STAR Refrigerator specification. This initial planning call was exclusive to ESRPP participants and was the first step in an ongoing process, utilizing ESRPP data and other technical support.

> *"Recognizing the diminishing returns in savings for current refrigerator technologies, insights from ESRPP members is a vital element of strategic planning EPA is doing to pull significantly more efficient refrigerators into the US market. EPA is relying on the ESRPP involvement in pulling these technologies into the market."*
> *U.S. EPA, March 2018*

Retailer Interviews

The logic model points to the importance of retailer participation as key driver of program success. It is important to demonstrate that retailers are making short term changes to their practices, using indicators outlined in the logic models. In order to reveal these indicators, a nationally coordinated interview process was established. EPA facilitated and coordinated national interviews with retailers participating in ESRPP. EPA developed the research tools in coordination with evaluation experts and the EM&V task force and sought stakeholder alignment on the research objectives to be addressed. This process is expected to be an annual occurrence, so that changes in retailer behavior can be measured over time.

The first interviews with retailers, which included discussions with merchants, sustainability, and marketing staff, documented relevant current business practices, retailers' viewpoint of energy efficiency, and the potential impact of ESRPP. (EPA, 2016) The results of these conversations indicate retailers' buying motivations, which is an important consideration for ESRPP implementers. Research indicated that their product selection decisions include customer needs, product performance, profitability, price points, and brands and marketing decisions follow a national strategy, with some regional and, in rare cases, local differences. Profitability is the most important deciding factor for product selection, while energy efficiency is typically not a major consideration. ENERGY STAR is important to retail merchants because of its high brand recognition, which helps customers to quickly identify an energy-efficient product. These interviews were useful to program sponsors because some of the important building blocks for long term changes are underway.

Qualitative Data

Measuring the success of a market transformation program requires different metrics than a resource acquisition program and qualitative data from key market actors will play an important role in both assessing attribution and supporting the estimates of market lift that a quantitative analysis generates. Qualitative research supports this in three ways, as described below.

- Qualitative findings can verify that the conditions exist for program influence to occur. Merchants need to be aware that incentives are available when making purchasing decisions.
- Qualitative data can provide a sense of the role that incentives play in retailers' decisions. Previous research shows that retailers see incentives as a tie-breaker when making assortment decisions.
- Qualitative data can identify specific actions that retailers have taken to more precisely focus quantitative analyses. (Conzemius and Dunn 2018)

Due to the collaborative nature of ESRPP, feedback between program participants occurs regularly. These interactions are an important aspect of the program, and documenting them provides program participants with valuable insights into how program interactions align with program theory.

Tracking qualitative data allows ESRPP program sponsors and EPA to collect feedback from the retailer's perspective. The ESRPP program model includes the collection of "implementation plans" from participating retailers (Navitas, 2017). At the ENERGY STAR Partner Meeting in October 2017, retailers participating in ESRPP provided updates on their marketing and implementation efforts. More than one retailer noted that their merchants are changing behavior to bring more value to customers, due to ESRPP. One retailer noted that a freezer merchant passed on a supplier that did not have ESRPP qualified products. This type of information is valuable to Program Sponsors as they evaluate whether ESRPP is having the intended effects.

Progress is tracked using market transformation indicators, which are based on the outcomes outlined in the program logic model. Potential outcomes occur at different stages and are therefore organized into short term, medium term, and longer term to demonstrate when changes may be observable.

Table 4. ESRPP Indicators

	Indicator	Activity
Short Term	Increase the total incentive pool as more program sponsors participate. Expand the eligibility of regional households eligible for RPP Increase the number of national retailers	Adding and recruiting additional program sponsors. Two new program sponsors joining in 2018 program year. New retailer joining in 2018 program year.
Medium Term	Increase the ENERGY STAR market share for targeted product categories. Decrease the unit energy consumption for ESRPP products at the category level.	Utilizing common data portal, which provides access to full-category sales data for products in ESRPP portfolio. Reliable market share and per unit savings inform program design, product tiers and create avenue for ESRPP program sponsors to collaborate
Long Term	Increase standards and codes at the state level. Increase standards, codes, and ENERGY STAR levels at the federal level.	Use task forces to coordinate with EPA's product development process.

Quantitative Data: Product Sales

One of the unique and valuable elements of the ESRPP is the high-quality sales data that comes from the participating retailers. The sales data available include monthly sales of both qualified and non-qualified products, at the territory level for all of the stores that are participating. Since retail sales data are highly confidential the data are sorted by a data services company who acts as a go between for the retailer and program sponsor. These data sets can be used to look at pre- and post-program impacts over time, and to set baselines, using one year of historical sales that retailers provide for each product type in the ESRPP. This real-time sales data coupled with historical sales data serves as the primary basis for evaluating program impacts.

Data reliability and management issues were uncovered in the pilot phase of the program, but coordination between EPA, the data task force, and the data provider resulted in significant data improvements. Figure 4 below shows aggregated sales of ENERGY STAR and ENERGY STAR Most Efficient clothes dryers between the Quarter 2 2015, when data first became available, through Quarter 4 2017. This data alone does not provide direct evidence of the impact of ESRPP, but this level of detail is not available through any other program. Instead of having

to count rebates and use external reports to estimate market share, program sponsors participating in ESRPP now have direct access to full category sales data.

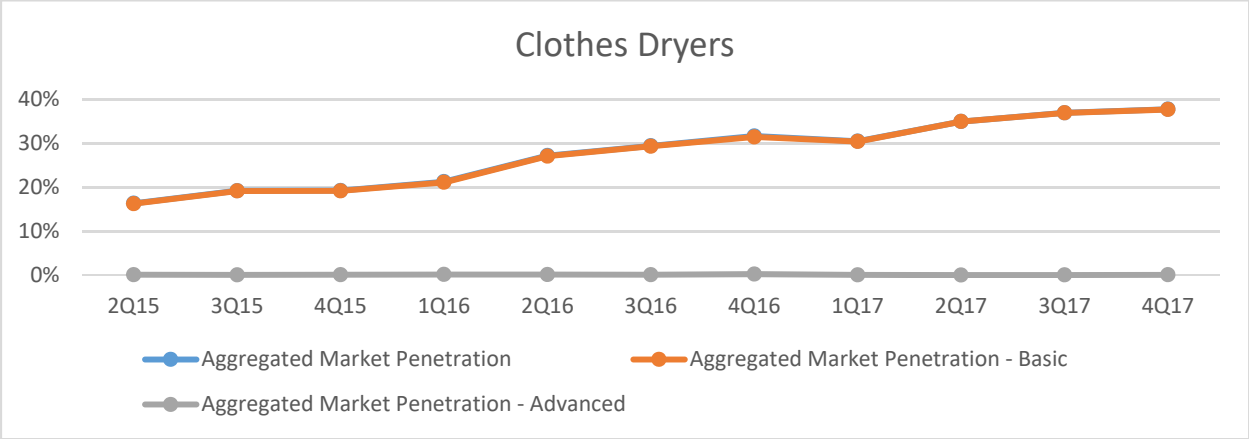

Figure 6. Market penetration of ENERGY STAR and ENERGY STAR Most Efficient clothes dryers through ESRPP.

Critical Elements of Success

One of the main goals of the ESRPP pilot year was to ensure that the coordination efforts required to successfully implement the program were executed. EPA also strove to align ESRPP with ENERGY STAR's internal teams. To achieve that goal, EPA assigned marketing and technical resources to the appropriate task forces and worked to align the ENERGY STAR and ESRPP marketing calendars. The EPA assigned leads in each task force played an active role in providing insights from EPA's perspective. For ESRPP to work well on a regional or national scale, program sponsors require a uniform data management approach to accurately and consistently report energy savings and to minimize the impact of the data collection costs on the cost-effectiveness of the ESRPP concept.

Since the pilot year, participating retailers have delivered total category sales data to the data processing services company to validate and warehouse. They reported another one million sales for products under consideration for the 2017 program to help sponsors prepare energy consumption and market penetration baselines.

Retailers have uniformly reported their satisfaction with the RPP concept. Standardized program implementation across sponsors has allowed them to appropriately allocate their resources. A single point of contact with the ENERGY STAR RPP has allowed the communication of a uniform message to retailer's merchants and has enabled relatively quick resolution of issues.

> *"I see the RPP as a huge opportunity for innovative new program design. It flips traditional methods and takes a market transformation approach. It is delivering the incentive to the retailer in a midstream model, rather than pushing it along. A $20 rebate on an $800 item doesn't make much of a difference to a customer, but in aggregate, it allows us to take increased action such as additional advertising or promotion. These activities can really help drive the product volume and the associated savings."*
>
> *(Home Depot Manager, AESP 2017)*

As ESRPP grows in scale and becomes successful, EPA expects its role to change from facilitator to stakeholder. They will have progressively less leadership responsibilities and will remain an important collaborator in market transformation. EPA aims to utilize RPP's collective marketing power and rich data sources to guide and potentially accelerate specifications for efficient products. Towards the end of 2016, this transition has begun as program sponsors assumed leadership of many ENERGY STAR RPP task forces.

Barriers to Program Growth

Barriers to new program sponsors joining ESRPP have included competition with existing downstream programs, lack of market transformation policies, evaluation challenges, and requirements for competitive procurement. Task forces have initiated activities to develop information, refine guidelines and establish new processes to help overcome these barriers and increase the scale of the collaboration in the future.

From the list above, the biggest barrier to program growth right now is program evaluation. Because the ESRPP is fairly new there have not been successful program evaluations completed, except in the NEEA service territory, which has a very favorable regulatory scheme for market transformation programs such as ESRPP. Without a successful evaluation to point to from another programs sponsor, some are struggling with an unfamiliar leadership role. In order to address this barrier by providing some national guidance, the EMV task force joined the U.S. Department of Energy's Uniform Methods Project to develop a guidance document on how to evaluate midstream market transformation program like ESRPP. While the group is coordinating as much as possible, evaluations are done in response to regulatory guidelines in specific regions, and are therefore not generic tools that can be developed and distributed. This leads to a timing problem since most of the early adopters may already be participating, and the next fleet of program sponsors may take years to come around. If the number of program stays relatively flat over the next several years, there is some concern that retailers may pull back some of their program support. Continued growth in the number of program sponsors is essential for the long-term viability of ESRPP.

Conclusions

The progress to date described in this paper indicate that the experiment has been working and ESRPP is delivering large energy savings today – however the future is not certain. With continued national coordination the ESRPP program sponsors plan to refine the program elements, bringing cost reductions which will make the program more attractive. In addition, early successful evaluations may clear roadblocks for new program sponsors.

Focusing on purchasing behavior change with the retailers, and specifically a small handful of the retail merchants, rather than millions of customers represents a paradigm shift for efficiency programs in the U.S. A small group of program sponsors, consultants and EPA have laid the groundwork for what could be the future of retail-based efficiency programs in the USA if participation continues to grow in 2018 and beyond.

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