Exploring the Nexus of E-Commerce and Energy Efficiency

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About NEEP

NEEP was founded in 1996 as a non-profit whose mission is to serve the Northeast and Mid-Atlantic to accelerate energy efficiency as an essential part of demand-side solutions that enable a sustainable regional energy system. Our vision is that the region will fully embrace next generation energy efficiency as a core strategy to meet energy needs in a carbon-constrained world.

Disclaimer: NEEP verified the data used for this white paper to the best of our ability. This paper reflects the opinion and judgments of the NEEP staff and does not necessarily reflect those of NEEP Board members, NEEP Sponsors, or project participants and funders.

Abstract

In an effort to bring the most relevant and important program designs and techniques to efficiency programs in the Northeast and Mid-Atlantic, NEEP explored the nexus of e-commerce and energy efficiency. This whitepaper seeks to present industry background, explore key concepts, and provide several examples of current activities in the efficient e-commerce space. In addition to presenting the specific platforms, such as ENERGY STAR website, EFI's Online Store, TechniArt, Simple Energy, and Enervee, we also present the three distinct program models that rose to the surface through our research. The report concludes with program recommendations, including to: promote appliances and electronics online; have cohesive communication; segment customers; partner with retailers; take advantage of ENERGY STAR's resources; and keep an open mind on new methods. E-commerce has become commonplace, and efficiency programs in this region must exploit this opportunity; the future success of products programs depends on it.

Introduction

Online shopping and research has become the norm. The typical American spends an average of 11 hours each day on gadgets,[1] forcing the traditional methods of retail to transform to this heavily-altered consumer behavior. Customers are online and efficiency programs must meet them there. Energy efficiency programs are beginning to catch up with the e-commerce movement, capitalizing on opportunities that were nonexistent even a few years ago. With strong partnerships and a focus on customer convenience, efficiency programs are changing how this least-cost resource is captured online.

Most appliance and electronics home purchases, as NEEP has previously reported[2], are first researched online. In fact, according to a 2012 Price Waterhouse Cooper survey, "Eighty eight percent of US respondents said that they research a product online via their PC before buying."[3] Consumers seek to educate themselves on a product's price, review, features, and competitors for efficient or inefficient products alike. This creates opportunities for efficiency programs to work with customers at the critical research time and customers are ready for that level of interaction. According to an Accenture Consumer Report, "When considering a mobile application for their energy provider, 28% expect an online shopping feature to purchase new appliances with rewards and/or points."[4] As the internet continues to serve as the go-to place for product purchases, it can also help educate customers on efficiency levels and incentives.

In an effort to bring the most relevant and important program designs and techniques to efficiency programs in the Northeast and Mid-Atlantic, NEEP explored the nexus of e-commerce and energy efficiency. This document

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[1] "The Total Audience Report: Q4 2014." *Nielsen*, 2015. http://www.nielsen.com/us/en/insights/reports/2015/the-total-audience-report-q4-2014.html.
[2] Miziolek, Claire. "Business and Consumer Electronics: A Strategy for the Northeast." *Northeast Energy Efficiency Partnerships*, 2013. http://www.neep.org/business-consumer-electronics-strategy-northeast-2013.
[3] McPartlin, Sue. "Understanding How US Online Shoppers Are Reshaping the Retail Experience." *Pricewaterhouse Coopers*. https://www.pwc.com/us/en/retail-consumer/publications/assets/pwc-us-multichannel-shopping-survey.pdf.
[4] Masella, Tony. "The New Energy Consumer: Unleashing Business Value in a Digital World." *Accenture*, 2015. Accenture-New-Energy-Consumer-Final.pdf.

seeks to present industry background, explore key concepts, and provide several examples of current activities in the efficient e-commerce space. Finally, we conclude with some recommendations and next steps to help advanced products programs in this region.

Themes and Concepts in E-commerce

E-commerce did not develop with efficiency in mind. Rather, innovators realized that as consumers started to spend more time on the internet, there was an opportunity to meet them there for sales of various products. The opportunity for lower overhead by not operating brick-and-mortar stores was significant for some retailers, such as Amazon, who play primarily in the e-tail space. Over time both major and minor brick-and-mortar retailers started to set up websites for customers to browse and purchase products and services, ranging from appliances to clothes to television services and everywhere in between.

In order for successful transformation of the efficient products markets, efficiency must be a part of the decision making process for a customer researching a product online; once a customer has researched and made a decision on which product they want to purchase, it becomes nearly impossible to sway them to reconsider an efficient alternative. As such, finding a way to meet customers along their journey, or have their journey start with an efficient lens, is key to having products programs evolve into the next generation of energy efficiency. This section presents themes and concepts in e-commerce and describes some important examples of e-commerce efficiency efforts taking place right now.

Keeping it Simple: Successful E-commerce Platform Techniques

As the average consumer spends more time online, the ads which once caught attention start to blend into the background of the online experience. Online users know when they are being targeted for advertising, and Marketo, who makes marketing automation software, states that, “92% of buyers trust the opinions of their peers far more than they trust your company’s message on social networks.”[5] While being targeted for efficiency program promotion has a leg-up on most ads as they are typically looking to sell a product that saves energy coupled with an incentive, it is still a challenge to successfully advertise online. A streamlined buying process to minimize the clicks between the consideration and decisional stage is advantageous; the more complex the process, the more likely to lose a potential program participant. Social media, online reviews, and other sources where individuals have the chance to share their positive experience with a product or e-commerce platform can also help cut through the noise that is online advertising. Furthermore, most social media promotion is free or inexpensive, and can help to boost program participation from friends and family of existing participations. Integrating a Facebook or Twitter “share” link is a simple action that can have positive impacts.

[5] Masella, Tony. "The New Energy Consumer: Unleashing Business Value in a Digital World." *Accenture*, 2015. Accenture-New-Energy-Consumer-Final.pdf.

Advanced Data Analytics: Putting Big Data to Work for E-commerce

As a buzz word, **big data** is often used to refer broadly to our internet-connected age. When it comes to efficiency program promotions, however, big data has a specific meaning and application. With today's customer, there is an opportunity to collect a great deal of data through many different mediums. Smart meters, customer profiles, and engagement tracking are significant data collection tools for efficiency programs. The large volume of information collected is referred to as big data and programs are also developing **advanced analytics** to explore that information. As described in the 2015 NEEP publication *The Changing EM&V Paradigm*[6]*,* "traditional analytical tools examine historical data and have produced business intelligence and operational insight for decades. Advanced analytics, on the other hand, are forward focused and predictive; they use statistical models on data about the past to predict the future.[7]"

There is an opportunity to ensure e-commerce marketing is targeted and relevant to specific customers using the customer data now available to programs. As utilities are increasing customer segmentation based on advanced analytics, the marketing approach used for various segments can be more customized and subsequently relevant to unique customer interests. Here are a few examples:

- For cost-conscious customers, emphasize the rebate, pay-back period, and dollar savings from investing in the more efficient unit, and feature low price-point product examples. For the environmentally-minded customer, emphasis the climate savings and "green movement" associations.
- Given the information we may already have about a customer based on smart meter data, their existing accounts (Gas, Electric, both), and previous rebate fulfillment, advanced data analytics can ensure that the message from the program administrator (PA) is targeted to rebate-eligible customers and in the context of their energy-saving potential.
- Going even deeper, some Home Energy Management Systems (HEMS) can tell you when a piece of equipment is failing. That information, coupled with a more in-depth customer profile, could mean you are sending a message prompting an early replacement of soon-to-fail equipment and truly influencing the purchasing of an efficient product.[8]

Proactive vs. Reactive E-commerce Opportunities

For e-commerce, there are proactive and reactive marketing approaches taken. A proactive approach may send a targeted email or letter to a specific customer with information on a deal or product offering. A reactive approach, on the other hand, would watch what steps a customer takes online and present messages in the background along the way as they go about their business. For example, they may upsell or cross-sell related products in the checkout cart; if the customer ends their shopping experience before completing a transaction, then they may receive an abandoned cart message. Depending on available budget, size of program, and access to advanced data analytics, there are pros and cons of either approach. With a smaller budget and fewer

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[6] http://www.neep.org/changing-emv-paradigm

[7] Davenport, Thomas H. 2014. Big data at work: dispelling the myths, uncovering the opportunities. Boston, Massachusetts: Harvard Business Review Press.

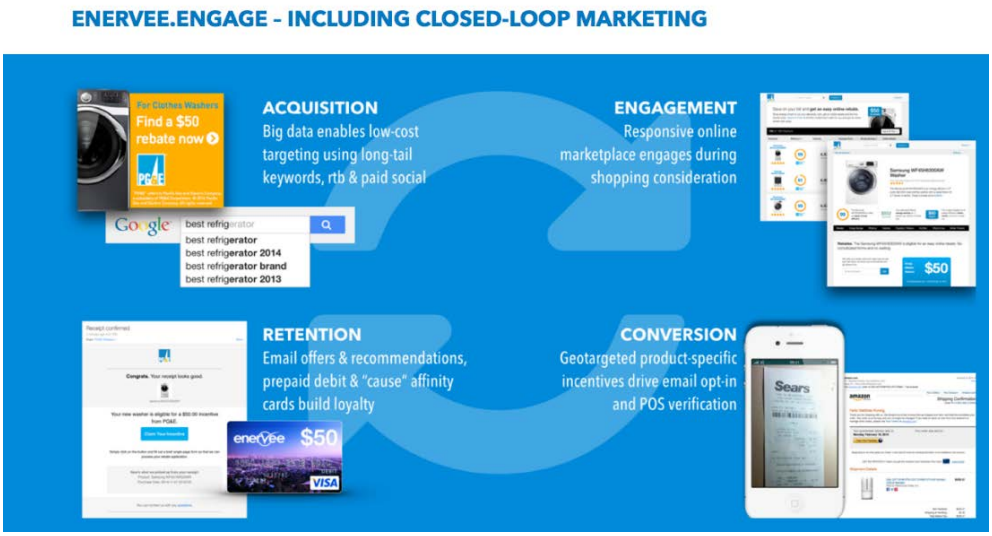
[8] More information can be found from August 2015 Opportunities of Home Energy Management Systems in Advancing Residential Energy Efficiency Programs, http://www.neep.org/opportunities-home-energy-management-systems-hems-advancing-residential-energy-efficiency-programs

analytics, but still looking to have a large impact, a proactive approach essentially pinging consumers with a potentially interesting offer would likely be best. However, those who have customer segmentation or other customer data from advanced analytics have much higher rates of customer participation through a reactive approach.

Closed Looped Marketing

Closed Looped Marketing refers to how marketers can track "a consumer's online shopping journey and automatically provides information and product offerings based on search parameters and pages visited. For example, a shopper using online search engines to gather information about refrigerators is identified and tracked using sophisticated software programs. Armed with that data, retailers customize online advertising to attract that consumer to their site to explore similar products."[9] As Figure 1 shows from the efficiency perspective, closed looped marketing would identify a customer's interest in making a product purchase for which a more efficient alternative exists, greet them with efficiency or rebate messages, and encourage them to purchase the product through available channels and confirm their purchase to allow for claimed savings.

Figure 1: Enervee's Representation of Closed Loop Marketing for Efficiency Programs



White Labeled vs. Vendor Branded Platforms

There are two approaches to how a customer experiences an efficiency e-commerce platform. Sites that are **vendor branded** have a look and feel independent to the vendor supporting the platform. They are useful for programs administrators or customers to explore in terms of functionality and format, but typically have lower traffic rates as many e-commerce vendors are relatively small or new companies without widespread brand recognition. On the other hand, sites can be **white-labeled** to appear in the style and theme of the program partner who is sponsoring the information presented there, while still managed by the external vendor. By taking on the look and feel of the program, many e-commerce vendors can leverage existing recognition of the utility or efficiency program brand, as well as further position the brand as a trusted energy advisor. In many

[9] "Informing the Next Generation of Energy Efficiency Promotion: Learnings and Recommendations from the TopTen USA Experience."*TopTen USA*, 2015. http://enervee-static.s3.amazonaws.com/topten/TopTen USA Legacy Report.pdf.

cases, vendors are choosing to do both—host a vendor branded public site available for anyone as well as a white-labeled, customized sites based on partnerships.

Super-Efficient Products are Valued Online

Not all products are created equal; while baseline products may not offer energy saving features, their efficient alternatives will. **Super-efficient products**, on the other hand, have energy savings that surpass even the recognized efficient options. While those in the efficiency industry understand the value of super-efficient products, it can be challenging for consumers to appreciate their benefits, especially if they come with a higher price tag. For super-efficient products in particular, it is critical to present these alternatives early in the decision making process; by the time someone has selected the features they want and is at the store to make a purchase, it is far too late to convince them to switch gears to a super-efficient alternative.

Online, however, super-efficient products are easier to market. TopTen USA[10], a website that was active from 2009-2014, was a successful example of marketing super-efficient products in the online space. TopTen showed the top 10 most efficient products within given categories and several programs provided incentives for these products above and beyond their ENERGY STAR level of incentive. Furthermore, labels such as *ENERGY STAR Most Efficient* provide lists of super-efficient products in many categories; for product categories where *Most Efficient* does not exist, there are opportunities for dynamic lists to show a ranking of the most efficient products. All of these options are relatively simple to show online and help explain the benefits of a super-efficient product that performed well above the baseline standard or, in some instances, over ENERGY STAR.

Another reason super-efficient products do well online is availability; if these products are more niche and specialized, it is less likely that every store would have them in stock when a consumer was looking. As such, dynamic websites that can pinpoint which stores have which products in stock will make it much easier for consumers to complete the purchase of these super-efficient products. Findings from a TopTen USA report found "super-efficient products are not always readily available at retail…[but] sophisticated internet search tools are now available to efficiency programs so that they can now suggest to their customers products that are readily available for purchase."[11] Furthermore, as will be discussed further, there are opportunities for programs to claim savings based on the specific energy use of a super-efficient model sold, which would mean more savings claimed above the efficient baseline.

Real World Examples: Platforms

Several program administrators have started to integrate e-commerce principles and elements into their activities. The examples highlighted in this section range from some of the more familiar, long-standing efforts to new and cutting edge opportunities. This information is the result of interviews with program administrations and e-commerce platform providers. In addition to presenting the specific platforms, we also present the three distinct program models that rose to the surface through our research.

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[10] "TonTen USA." http://www.toptenusa.org/

[11] "Informing the Next Generation of Energy Efficiency Promotion: Learnings and Recommendations from the TopTen USA Experience."*TopTen USA*, 2015. http://enervee-static.s3.amazonaws.com/topten/TopTen USA Legacy Report.pdf.

ENERGY STAR Website

ENERGY STAR is a well-known U.S. Environmental Protection Agency (EPA) voluntary program that recognizes efficient products with the ENERGY STAR mark to help businesses and individuals save money and protect the environment through superior energy efficiency. In recent years, the ENERGY STAR program has implemented third–party certification requirements and testing, and updated their data management and processing system. This system receives testing data from certifying bodies and can allow access to that data through a few different means. While ENERGY STAR does not sell the products it certifies and is therefore not an example of an e-commerce platform, the certified products list ENERGY STAR manages are the key building blocks to efficient product promotion. ENERGY STAR's website provides consumers with access to energy efficiency information in 40 categories of ENERGY STAR products[12]. Among the various tools are the Product Finder, APIs, and Rebate Finder.

The ENERGY STAR **Product Finder** is a public online tool where consumers can search for and compare different products using the ENERGY STAR database. The Product Finder has a user-friendly consumer interface to help refine, filter, compare, and sort through large data sets of energy efficiency product information. The tool also offers a platform to support the complex data analysis required by efficiency program partners and third parties. Users can create filtered views of ENERGY STAR data that are automatically updated as new products are added to the datasets. The filters can be set by program administrators to meet their needs. By creating an account, users can save and share their work; export and embed the data-sets they've designed; and support their goals and missions. In addition to the data platform, users can download a static excel file with the information for deeper information and analysis.

In the beta version of an update to the Product Finder designed for ENERGY STAR Most Efficient products[13], ENERGY STAR is working to include real-time price and purchase location information. This information will update in real-time from multiple retail sites several times a day. While this added capability will be helpful to program administrator partners, how this information will integrate and evolve into the programs remains to be seen.

Beyond the public facing web-tool, ENERGY STAR has built an open **Application Program Interface (API)** for stakeholders to use to connect their tools to ENERGY STAR's database. In general, an API is a set of programming instructions for accessing software, applications, or tools so that other entities can use and design products powered by their software. A common use of the ENERGY STAR API is for efficiency program fulfilment. Program contractors use the lists to compare products sold in their territory. It is important for programs to know when a product no longer qualifies for an ENERGY STAR specification and is removed from the list. Improvements in accessing retroactive data for updated specifications have been indicated as a priority. Additionally, third party companies use ENERGY STAR's API as one of many data sources for their models and when combined with retail websites, APIs can provide current market and energy information.

[12] "EPA ENERGY STAR Product Finder." http://www.energystar.gov/productfinder/.
[13] "EPA ENERGY STAR Most Efficient 2015." https://www.energystar.gov/products/energy_star_most_efficient

Finally, ENERGY STAR's **Rebate Finder** provides a place for program administrators to feature active promotions for efficient products. This tool includes basic information on the offers and provides links to the program administrators' websites with details on incentive fulfillment.

Energy Federation, Inc. Online Store

For efficiency programs, many of the first steps in e-commerce were through partnerships with Energy Federation, Inc. (EFI), a proactive e-commerce platform who has been promoting and distributing products for efficiency programs for over 30 years. Pioneering the first mail order catalog program in the country in the mid 1980's for CFLs and fixtures, EFI then launched the Online Store in 1999. EFI now has over 50 Online Stores in efficiency programs with over 30 utilities across 24 states. In addition to the Online Store, EFI also has product distribution, fulfillment, and energy savings 'kit' initiatives.

Efficiency programs direct their customers to the white-labeled web portal by incorporating the Online Store into their marketing materials and campaigns. When customers are shopping in the store, EFI can verify which individuals are eligible for incentives based on simple customer information (i.e. zip code, mailing address, etc.). If eligible, the incentive is incorporated at the time of purchase. This product ensures customer verification and allows for a greater attribution of savings. EFI specializes in items such as light bulbs, shower heads, power strips, and controls. In the past, EFI sold heat pump water heaters, but there are several logistical challenges with appliances and higher priced electronics. The larger items often require special delivery and potentially an installation contractor. The current suite of products on the Online Store can be installed by the average consumer.

An example of EFI's Online Store capabilities is their work with Duke Energy;[14] in early 2013, Duke Energy approached EFI to provide their customer base with an online store that launched in April, 2013. This store serves over 3 million electric customers across five states. Through Duke's successful print and online marketing initiatives, the order rates spiked up to five times higher than usual without any disruption to customer support or order fulfillment services. Since the beginning of the program, over 80 thousand orders were filled and over 1.2 million products shipped.

TechniArt Online Platforms

A newer player to the efficiency program space, TechniArt offers pop-up retail stores to educate individuals about energy-efficient products and services. They operate in conjunction with retail markdown programs, similar to brick-and-mortar retailers. TechniArt's experience in pop-up retail has led to the development of an online platform for their program administrator partners. Their online platform has been functional for several years, but it has only been since 2014 that TechniArt has seen an uptake in its usage. Similar to EFI's Online Store, TechniArt specializes in items such as light bulbs, shower heads, power strips, and controls.

In partnership with Cadmus, TechniArt has developed two types of proactive online platforms that compliment efficiency campaigns: Online Promotion and Limited-Time Offer. TechniArt's online promotion[15] feature provides a white-labeled online store for customers to engage in everyday or special promotions. These special

[14] "Development & Management: Duke Energy." *Energy Federation Inc. Online Store*, 2015.
[15] "E-commerce." TechniArt. https://www.techniart.com/utility-programs-e-commerce.php.

promotions can be for residential, mid-stream, or commercial efficiency programs. Conversely, the limited-time offer campaign[16] mirrors TechniArt's physical pop-up stores and is heavily marketed via social media. Typically, the temporary e-tail campaigns run for 2-4 weeks.

The Massachusetts program administrators have partnered with TechniArt and Cadmus to trial limited-time-offer programs which are promoted through social media. From January 2014 to date, the Sponsors of Mass Save—Cape Light Compact, Eversource, National Grid, and Unitil— have sold 16,292 energy-efficient product packs accounting for 70,210 products through eleven 10-day limited-time online sales promotions. In addition to the Sponsors of Mass Save, National Grid in Rhode Island has also had success with TechniArt's limited-time offer program. As part of the program, energy efficient products such as CFL and LED bulbs, showerheads, Tier 1 and Tier 2 advanced power strips (APS), and air purifiers are sold through these promotions. Especially of note is Mass Save's sales of Tier 2 APS; in both 2014 and 2015, Mass Save sold a combined total of 935 units (488 in 2014 and 447 in 2015). In 2014, this promotion accounted for 99% of total Tier 2 APS units sold in Massachusetts.

In order to provide high rates of savings attribution, the limited-time offer promotion asks users to enter their zip code. Additionally, certain products may only be available through electric programs and the customer must identify whether they are electric, gas, or both customers. After shopping among a variety of incentivized products, the last step involves order confirmation and shipping information. Again, shipping information is used to corroborate the zip code entered earlier.

Simple Energy Online Platform

Another newcomer to the efficiency program e-commerce ecosystem is the Simple Energy Marketplace, a proactive e-commerce platform that connects utilities and consumers by offering a curated set of energy-saving household products and services with instant rebates. Its goal is to empower customers to reduce energy consumption and make informed purchasing decisions by delivering individualized energy-saving tips and recommendations.[17] By using behavioral motivation and user data to tailor Simple Energy's Marketplace product offering, Simple Energy offers individualized recommendations. Simple Energy's Marketplace is white-labeled for their utility partners; on behalf of the PA, they drive traffic using strategies such as weekly white-labeled emails with energy-saving recommendations. They also run a separate call customer center with email, phone, and live onsite chat support to address questions from shoppers, such as asking questions about products or getting updates on shipping or tracking activities. Simple Energy uses data across their marketing channels (emails, paid ads, referrals, social media, interviews with press, etc.) to quantify and support their platform impact.

Simple Energy conducted a survey throughout Colorado to measure individuals' familiarity with smart thermostats. 40% of the respondents surveyed[18] stated that they may be interested in a smart thermostat but didn't know where to purchase them; an online store, therefore, that can meet consumers wherever they are, seemed to be a perfect fit for those customers. In the case of the Xcel Energy Store (available to all eligible Colorado and Minnesota Xcel customers) and the Consumers Energy Store (available to all Michigan Consumers

[16] "Pop-up E-tail." TechniArt. https://www.techniart.com/utility-programs-pop-up-etail.php
[17] "Simple Energy Marketplace." Simple Energy. http://simpleenergy.com/marketplace/
[18] "A Smart Way to Help Save: The Smart Thermostat." *Simple Energy,* July, 2015.

Energy customers), Simple Energy is able to offer instant incentives or rebates to utility customers. Additionally, customer data collection is integrated into the online store, so there are no rebate forms to fill out. Simple Energy does all customer verification in-house, pays the initial rebates to utility customers, and utilizes utility funds in escrow to reconcile the cost of incentives.

Simple Energy has partnerships with manufacturers and distributors in multiple product categories. In the example of smart thermostats, Simple Energy partners with Nest, Ecobee, and Honeywell, although each smart thermostat manufacturer differs in direct customer engagement. For some products Simple Energy delivers the product directly through its third party logistics provider and for others it is delivered directly by the manufacturer to the customer. Simple Energy is expanding their portfolio of energy efficient products and services on the Marketplace. They are also launching demonstration projects with three utilities as part of New York's Reforming the Energy Vision (REV) process including Orange and Rockland Utilities, and Rochester Gas & Electric[19]. These projects will deliver energy-efficient products and services with instant rebates that enable customers and distributed energy resource providers to directly transact with each other.

Enervee Website and Tools

Another efficiency oriented e-commerce platform is Enervee, which works with retailers, manufacturers, governments, and utilities through an integrated product recommendation platform that processes product sales, energy data, utility rate data, aggregated product reviews, and information on product incentives on a daily basis. Enervee provides customer estimates of energy bill savings to help understand the true cost of their product purchase and ranks products by translating technical efficiency metrics into a 1 to 100 scale to help make efficiency visible. Their tool has dynamic re-ranking capabilities, reflecting changes occurring in the market on a daily basis. Enervee is white-labeled for their Program Administrator partners with customers able to purchase products via their preferred online or brick-and-mortar retailer. They verify and process rebates for their utility customers.

Enervee is a reactive site and employs closed-loop marketing tactics to tracks a consumer's online shopping journey and automatically provides information and product offerings based on search parameters and pages visited[20]. Their marketing channels include paid advertising, sweepstakes, email marketing, social media, blog, as well as through partners and utility clients. In addition, to their utility-focused offerings, Enervee has a *Charge* product that helps retailers engage customers around efficient products with utility incentives. Enervee also recently announced a partnership with Opower, which will allow Enervee to integrate its Software as a Service (SaaS) Marketplace solution with Opower's customer engagement platform; customers will receive personalized shopping recommendations to help turn Opower's insights into concrete actions.

One innovative part of the Enervee model is the potential opportunity for more accurate model-specific savings based on the efficiency of the specific product purchased. Rather than abiding by a Technical Reference

[19] French, Melissa. "Reforming the Energy Vision: How Digital Marketplaces Deliver Results." *Simple Energy*, September 24, 2015. http://simpleenergy.com/reforming-the-energy-vision-how-digital-marketplaces-deliver-results/.
[20] "Informing the Next Generation of Energy Efficiency Promotion: Learnings and Recommendations from the TopTen USA Experience."*TopTen USA*, 2015. http://enervee-static.s3.amazonaws.com/topten/TopTen USA Legacy Report.pdf.

Manual's (TRM) average savings for a class of products (i.e. ENERGY STAR refrigerators save 124.9 kwh/year[21]), Enervee's platform makes it possible for programs to claim model-specific savings because the sales data is tracked down to the individual unit. This could mean more credit and a higher incentive for super-efficient products that go above and beyond the ENERGY STAR level.

One Enervee partner, Pacific Gas and Electric (PG&E), wanted to have a greater presence online and become part of their customers' shopping journey. They partnered with Enervee and launched a marketing pilot where customers engage with Enervee's interface to choose an efficient product. Customers email Enervee proof of their purchase, which is collected and sent over to PG&E's third party rebate processor via secure file transfer for processing and completion; Enervee does not access PG&E's customers' data. Enervee's initial validation is based on zip code and qualifying product. Since there was little integration around rebate processing, set-up time with the PG&E pilot was relatively quick. On the part of the customer, sending the documentation (in the form of an email receipt or a photo of physical receipt) and primary information to Enervee is simple and straightforward. Beyond emailing receipts, customers can still mail-in their rebates or apply through the on-line portal.

When teasing out the numbers for PG&E, Enervee is a fraction of the total rebated volume for each product contributing up to 15% for electric water heaters, gas water heaters, and clothes washers. Since this was a marketing pilot, however, PG&E did not have rebate number expectations since their objective was primarily about traffic and engagement. On that front, when engagement was compared from the Enervee site versus category pages on PG&E's website, there was a lower bounce rate, higher traffic, and longer engagement time. In order to better understand these results, PG&E is in the process of developing and deploying a survey on customer feedback to compare to overall composite survey results against those who have gone through other channels. PG&E is also working to develop alternate methodologies for incenting customer actions, such as sweepstakes and social impact cards, to show that a monetary incentive may not be required in order to claim savings. Receipts or other proofs of purchase are still required, but the Enervee marketing pilot is part of this experiment to figure out other designs to claim savings without a rebate

Eversource Connecticut Envervee Case Study

Connecticut has long been interested in e-commerce. The two utilities, United Illuminating (UI) and Eversource CT (under the umbrella of EnergizeCT), started working with TopTen USA to connect customers to rebates on the top ten most efficient products in several categories in 2012. After TopTen's phase-out in 2014, the utilities decided to pilot Enervee as an e-commerce platform for Connecticut consumers. Compared to TopTen's product lists that were pre-designed tables updated at designated intervals throughout the year, Enervee's robust product lists are updated in real time. Enervee offers real time prices and customers are able to redeem efficiency program rebates through the site. The e-commerce focus for Connecticut is around their rebate programs and driving more participation. They claim savings no differently than before the online market place, the only difference is their increased participation and a digital presence.

[21] "Mid-Atlantic Technical Reference Manual Version 5.0." *Northeast Energy Efficiency Partnerships*, June, 2015. http://www.neep.org/sites/default/files/resources/Mid-Atlantic_TRM_V5_FINAL_5-26-2015.pdf

Enervee is responsible for processing rebates and validating whether the customer subscribes to Eversource or UI. The customer can then receive a rebate by paypal or with a debit card. Program administrators interviewed at Eversource appreciate this system because not only is the rebate processing happening all with one partner, but Enervee's processing fee is less expensive than other alternatives. At the end of each month, Eversource receives invoices from Enervee in addition to data for the rebates submitted. Details on the level of sales through Enervee for Eversource CT is in Table 1.

Table 1: Eversource CT Comparison of Top Ten USA to Enervee 2013-2015

Appliance	2013 (TopTen USA)	2014 (TopTen USA)	2014-2015 (Enervee)
Clothes Washer	230	251	340
Freezer	12	8	27
Refrigerator	196	104	90
Dryer	N/A	N/A	225

Overall, Eversource considers Enervee to be a very robust website. Customers are able to take advantage of the product information in real time. Eversource has reduced the turnaround time on rebates from 3-4 weeks to 2 weeks. Additionally, there is the opportunity to connect customers with other programs or savings opportunities by following up via email.

Regional Participation in E-Commerce Programs

The Northeast and Mid-Atlantic is a leader in efficiency efforts, with states in this region occupying six of the top ten spots on the ACEEE efficiency state scorecard from 2015 (including the #1 spot)[22]. Participation in e-commerce programs is no different, however there still exist major opportunities to increase participation. As Table 2 shows, most Northeast and Mid-Atlantic programs participation in EFI and TechniArt activities, but only Connecticut works with Enervee, and three of the five New York utilities work with Simple Energy. This shows a significant opportunity for further engagement by program administrators with e-commerce partners.

Table 2: Northeast and Mid-Atlantic Participation in E-commerce Programs

		EFI	Enervee	Simple Energy	TechniArt
Connecticut	Eversource	X	X		X
	United Illuminating	X	X		X
Massachusetts	Cape Light Compact	X			X
	Eversource	X			X
	National Grid	X			X
	Unitil	X			X
New Hampshire	Eversource	X			X
	Liberty Utilities	X			X
	NH Electric Cooperative	X			X
	Unitil	X			X

[22] "The State Energy Efficiency Scorecard." American Council for an Energy-Efficient Economy. http://aceee.org/state-policy/scorecard

New York	All	X (just PSEG-LI)		3 NY Utilities	X
Rhode Island	National Grid	X			X
Vermont	Efficiency Vermont	X			
Washington DC	DCSEU				

Different Program Models

In our interviews and investigation, we found three models emerge for how efficiency programs work with e-commerce sites.

Model 1 – Referral

In the referral model, certain products have been pre-screened by program administrators and are featured on an e-commerce platform. While the customers can view those products on the platform, they are referred out to online retailers to complete the purchase. This model is exemplified by Simple Energy's San Diego Gas & Electric, Enervee's PG&E, and the forthcoming ENERGY STAR Product Finder 2.0 for Most Efficient Products.

Model 2 – Rebate Processing

In the rebate processing model, the e-commerce site is responsible for processing the rebate, but the customer does the commercial transaction with the retailer. The e-commerce provider is then refunded by the efficiency program at the end of a specified time-period. Some programs have been hesitant to begin their e-commerce pilots with this model due to the increased complexity; more typically, programs might begin with referral model. The focus for most programs using this model will be around their rebate programs and driving participation. They claim savings no differently than before the online marketplace, the only difference is their increased participation and digital presence. Efficiency programs are most familiar with this model through their participation in EFI's online store, but it is also exemplified by TechniArt Online, Simple Energy's instant rebate stores, or Enervee's Energize Connecticut.

Model 3 - No Incentive

The no incentive model is a novel pilot exhibited by Enervee with PG&E. PG&E lists products without rebates on their Enervee site as part of their study to determine if, in the absence of a rebate, they can leverage the displayed information to the customer to potentially claim savings.

By implementing **sweepstakes** and **pledges,** programs are experimenting with alternative mechanism that may be used in lieu of incentives to drive strong program participation. Sweepstakes, in particular, have engaged many more utility customers that might not have engaged in traditional rebate programs. The non-incentive programs are cost-effective as the PA sets up a fixed cost for running a sweepstakes. Sweepstakes don't scale depending on the number of participants and could have an unlimited participation for the same cost. For the pledge model, individuals promise to purchase an energy efficient product and then submit the receipt from purchase. While the concept of this model is very promising, program attribution has not yet been established for this type of model.

Conclusions and Recommendations

Challenges and Barriers

Internal Program Challenges

An almost universal response from interviews with program administrators and e-commerce platform providers highlighted the possibility for delayed pilots due to internal program bureaucracy. The e-commerce web-based platform is unique in that it necessitates bringing together various branches of a utility. Departments such as rebate processing, marketing, products programs, as well as external stakeholders must be brought in before a launch to ensure they are all on the same page. The lack of streamlined program onboarding and cross-department communication has led to pilot delays and frustration.

Once a program is up and running, since e-commerce is a newer program design, there are fears such as leakage and attribution that can be barriers to widespread adoption. While e-commerce platforms can counteract that fear by providing zip codes for order shipments, customers email addresses, and even the opportunity for implementers to confirm customers according to program specification before orders are shipped, until this type of program is more mainstream, this will likely still be a barrier.

Marketing Challenges

Part-in-parcel with several e-commerce platforms are a suite of novel individualized marketing tactics. In some cases, there has been hesitation on the part of program administrators to transition to these new marketing tactics. However, marketing methods and brand management that is not up-to-date does not resonate with modern online customers interacting with digital marketing. Resistance to novel and relevant marketing tactics can mean missed opportunities for customer engagement and participation, and program administrators need to be comfortable with different and new styles of marketing. One example of a key new marketing method is closed-loop marketing, and the associated data that helps retailers customize online advertising. Currently, most programs are waiting for the customer to find efficiency rebates on their own and are not reactively seeking out shoppers in the market for new products.

Regulatory Challenges

Even when an e-commerce program is in place, a challenge can arises in getting regulators to change the way that they allow utilities to claim savings. Each state has different regulatory constraints, but California and the Northeast have some of the more elaborate regulatory processes in the nation. With new and yet to be adopted program designs, such as PG&E's goal to claim savings without an incentive, it remains to be seen how regulators will react to this approach.

Strategies and Recommendations

Given the important role that online marketing and advertising plays for the modern consumer, it is important the program administrators step into the e-commerce space for efficient product marketing or even purchases. As described in this whitepaper, there are several current partners and approaches with a range of risks and benefits. Regional organizations such as NEEP can be used as a clearinghouse for this type of information and can help facilitate communication between programs on successes or challenges in the e-commerce space. Specifically, NEEP offers the following recommendations:

Start Promoting Appliances and Electronics Online

Throughout the region, program administrators have done a great job establishing partnerships with e-commerce providers such as EFI and TechniArt for lighting and advanced power strips. There is a great opportunity, however, for PAs to engage the e-commerce space for appliance and electronics in order to have a greater impact on a customers' decision making process. Specifically, we recommend the following:

- Consider promotion of products that require research. We know that most major appliances and electronics, especially those with complex features, will be researched online. Select a few of these to start targeted messaging through proactive or reactive (or both) e-commerce platforms.
- Consider moving promotions of super-efficient products online as these are much better appreciated in the online space before customers have made up their mind about what is most important to them in a product.
- A low risk approach to starting off with e-commerce could be focusing on products that currently have low uptake through other channels. If your program is selling only a low number of a specific product category, why not pilot e-commerce marketing tactics? As you are figuring out your key messages and preferred vendors and approaches, you won't be interfering with a product category pulling reliable and significant savings.

Cohesive Communication

It is critical for the success of e-commerce platform that communication within the efficiency program and with key stakeholders is clear and cohesive. Some specific actions in this space would be to:

- Start discussions with regulators early. Online sales has not been a long standing approach for efficiency programs, especially employing new methods such as closed loop marketing and no incentive program design. It is important that regulators become familiar with these legitimate approaches early to ensure appropriate attribution later.
- Speak to internal marketing and IT to get a sense of what online efforts are already in place. It is likely that there is already some level of online marketing in place designed to attract internet searches regarding efficiency and bringing them to your program's website. It is important to not compete with those efforts, but rather to add on much more targeted marketing
    - i.e. if someone searches an efficiency keyword and is matched to an IP address in Vermont, it is likely that general banners and information about Efficiency Vermont will start to follow them through the internet. That is a positive thing, but with an e-commerce program there may be more targeted opportunities for those searching for specific appliances or other products to get followed with other specific rebate and/or efficiency messages. It is important that these efforts don't compete with each other for a customer's attention.

If you aren't Segmenting Customers, Start!

Customer segmentation can be daunting, but in today's world, customers expect to be understood by those marketing to them. As more data is collected and needs to be analyzed, even very basic customer segmentation will improve messaging, especially online where customers may be particularly skeptical of offers and deals based on inundated messaging. For proactive e-commerce platforms where you may be sending an email out to

customers to direct them to visit an online store, it is more effective to have specific messaging that speaks to different customer segments.

Partner with Retailers

Traditional retailers are key to the success of efficient products programs. As such, it is really important to build off of existing partnerships with retailers and their online stores when possible. Retailers are already trying to capture online sales—if an efficiency message or rebate information can be layered onto those existing efforts, there is an opportunity for larger impact. Part of the discussion with appliance, HVAC, and electronics retail partners would be answering the key question: what are you doing in the online space and how can we overlay the efficiency message early in the process to ensure customers are keeping efficiency in mind as the narrow down their product selection? Online retail partnerships can be in coordination with other e-commerce platform activities.

Taking Advantage of ENERGY STAR's Resources

ENERGY STAR has long been an ally and integral part of efficiency programs. As PAs move online, ENERGY STAR is there ready to help yet again. Specifically, we see opportunities for programs to use ENERGY STAR's APIs, Product and Rebate Finder, and in the future, potentially the enhancements such as product price and availability for Most Efficient Products.

Keeping an Open Mind on New Methods

The online space offers a great opportunity to try new things. Don't dismiss some more experimental approaches to e-commerce. Specifically, keep an eye on two trends:

- No rebate savings, which is currently being explored by PG&E in their partnership with Enervee. If successful, this would open up a huge opportunity for programs to extend their budgets and transform markets.
- Capturing per unit saving, which is not a new idea for some efficiency programs, but which has the opportunity to place higher value on the higher savings models, including potentially incorporating dynamic rebating (to provide a flexible system for higher rebates for those products providing higher savings, not just static tiers) and potentially even coupling product sales with recycling programs to show a true savings delta based on the pre and post models. This is still experimental, but could potentially be done with products such as refrigerators that have wide-spread recycling programs.

Conclusion

The e-commerce space is ripe for efficiency programs to enter. With a range of vendors, partners, and approaches, program administrators with varied motivations and budgets can step into the online space more fully. E-commerce has the opportunity to help move efficiency programs to 'Utility 2.0' as it could integrate various opportunities, from products to distributed energy resources such as renewables and storage. New players are entering this space, as cloud-based utility software firm, Opower, just launched a Marketplace Suite, with Enervee. "The energy landscape is changing," said Opower CEO Dan Yates. "With the rise of electric vehicles, distributed generation, smart thermostats and battery storage, customers have more options for

energy products and advice than ever."[23] Efficiency programs have the opportunity to be at the center of this evolving world by connecting consumers with resources online.

As e-commerce becomes more deeply entrenched with everyday efficiency program activities, there are opportunities for further collaboration and potentially complication with existing efforts. Programs such as the national Retail Products Platform facilitated by the EPA, for example, are working mid-stream to provide incentives to retailers to promote more efficient products. The opportunity for RPP to engage more with online product sales would be monumental; if the efficiency of RPP products on a national retailer's website were presented across the nation, which would likely make a significant impact in the decision making of customers.

Furthermore, as more consumers engage in e-commerce, there is an opportunity that direct-to-consumer sales from manufacturers might grow in popularity. NEEP works throughout the region to advance the transformation of markets; the efficient products market has been a major area of focus historically and as this market evolves, NEEP is committed to helping the region evolve with it. While the ultimate future of efficient product sales is unknown, the present is clear: e-commerce has become commonplace, and efficiency programs in this region must exploit this opportunity—the future success of products programs depends on it.

[23] "New Opower Platform Links Products, Utility Brand." *SmartGrid Today*, November 12, 2015. https://www.smartgridtoday.com/members/login.cfm?hpage=New-Opower-platform-links-products-utility-brand.cfm.