DOCKETED

Docket Number:	17-IEPR-08
Project Title:	Barriers Study Implementation
TN #:	220875
Document Title:	Enervee comments on empowering low-income households to manage their energy
Description:	N/A
Filer:	System
Organization:	Anne Arquit Niederberger
Submitter Role:	Public
Submission Date:	8/23/2017 6:39:30 PM
Docketed Date:	8/24/2017

Comment Received From: Anne Arquit Niederberger
Submitted On: 8/23/2017
Docket Number: 17-IEPR-08

Enervee comments on empowering low-income households to manage their energy

Additional submitted attachment is included below.

2114 Narcissus Court
Venice, CA 90291
+1 844.636.7833
enervee.com/business

August 23, 2017

Empowering low-income households to manage their energy – one efficient consumer product purchase at a time
Docket #: 17-IEPR-08 | Barriers Study Implementation

Enervee participated in the panel discussion on "Plug Load Efficiency Opportunities for Low-Income Customers", which the CEC and CPUC hosted as part of their low income barriers study implementation workshop on August 1st, and we welcome the opportunity to share further thoughts and information on advancing the CEC recommendation 5e, which is that program administrators shall ensure low-income persons have product selection options and information necessary to avoid driving up their plug-load energy use, recognizing that low-cost appliances and consumer products are commonly less energy-efficient than other appliances and projects.

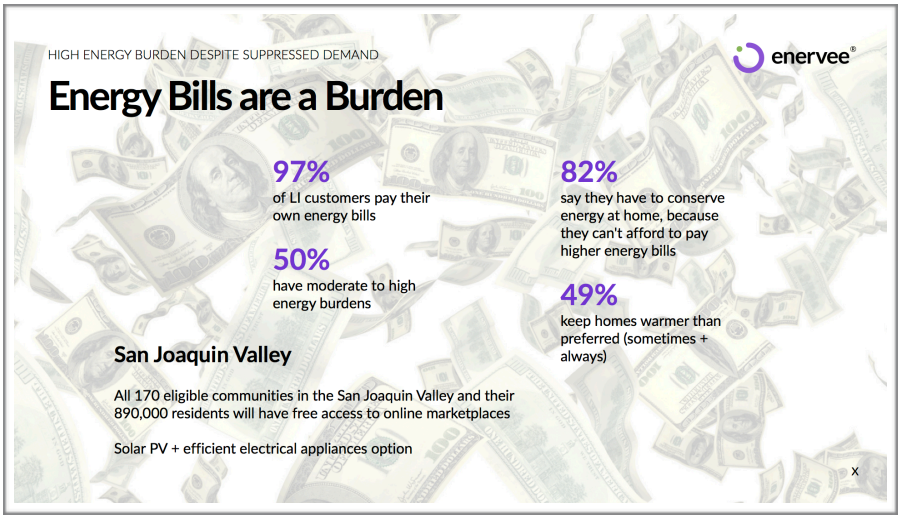
Our verbal remarks during the workshop[1] focused on the opportunity to leverage online marketplaces to address the recommendations in the barriers report. By the end of 2017, marketplaces will be available to all Californians, either through utility-branded market-places[2] or enervee.com, so we urge the CEC and CPUC to encourage experimentation surrounding this online shopping channel.

The following comments draw on some of the data and insights that we have gained through the daily updated market data behind the online marketplaces, as well as platform analytics and behavioral research.

[1] A transcript of that workshop is available at http://www.energy.ca.gov/2017_energypolicy/documents/index.html#08012017
[2] Via Resolution E-4820 from April 2017, the CPUC mandated all IOUs to have energy management technology marketplaces online by the end of the year. In addition to PG&E and SDG&E, LADWP already has a live marketplace, and all Californians have access to Enervee's national platform enervee.com.

1. **The largest untapped potential with respect to plug loads & appliances in the low-income segment lies with new product purchases – and online marketplaces can deliver targeted incentives effectively**

According to the 2016 LINA survey[3], nearly all California low-income customers pay their own gas & electric bills, 28% say they often or constantly struggle to pay their energy bills and four out of five say they have to conserve energy at home, because they can't afford to pay higher utility bills.



In addition, low-income customers are already adopting energy conservation behaviors (95% were in the medium or higher energy practices groups), with over 80% of households stating that they turn off lights and electronics when not in use.

Against this backdrop of energy burdens and conservation behaviors, the untapped potential lies with new product purchases, which are increasingly online.

[3] https://pda.energydataweb.com/api/downloads/1714/2016 LINA Banner Tables from Telephone Survey.xlsx

According to LINA, 85% of IOU LI customers have a wifi connection in their home, and 56% predominantly use their mobile device to access the internet, with another 21% using both mobile and computer equally. This is one of the reasons that Enervee's Marketplace 2.0 platform has been designed to be mobile first and responsive.

As a fully digital online experience, California's utility-branded online marketplaces and related digital marketing efforts have some distinct advantages when trying to reach disadvantaged or other hard-to-reach communities, including the ability to connect with LI households as they are researching product purchases online. In addition, the all-digital platform supports:

- Consumer choice and convenience by tapping into existing retail channels;
- Special incentives for income-qualified households/geographies;
- Instant online point-of-sale discounts to overcome the up-front purchase price barrier to early replacement;
- Targeted digital marketing, which can capitalize on the locational value of the energy savings and demand reductions to support higher incentives for (connected) super-efficient consumer products, such as room AC, so that direct install is not the only option to deliver low-income programs.

Finally, utility-branded marketplaces can support low-income households on an ongoing basis. This is important, because there are 15 times more households receiving CARE subsidies than are eligible for the Energy Savings Assistance (ESA) program in a given year[4] – and ESA does not address all consumer product categories, in particular miscellaneous plug load and electronics categories like TVs.

Ongoing support is addressed in CPUC Resolution E-4820, which calls for utilities to follow up with customers having bill payment issues on potential energy management technology solutions to reduce those customers' bills and avoid disconnection, including providing directions on how to access the online energy technology marketplaces and understand the relevant product information

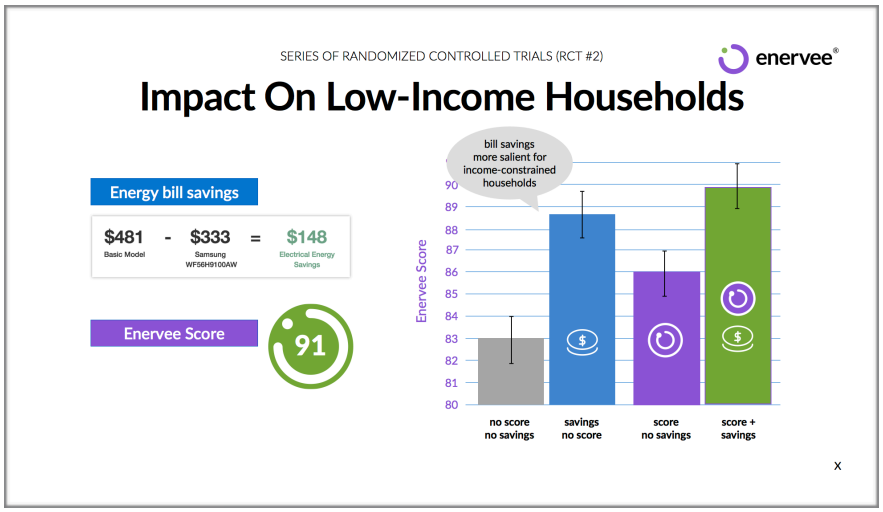
[4] Based on PG&E's Tier 2 AL 3830-G/5043-E (Pacific Gas and Electric Company ID U 39 M), which estimated that 1,413,324 households would participate in CARE by end 2017 and 90,030 households would be treated in 2017 under ESA.

that would be obtained there (product pricing, product rebates available, savings estimates for the products, customer reviews...). These online marketplace resource can be brought to the attention of all low-income households.

The online marketplaces are also a ready resource to support utility call center staff, direct-install ESA contractors and multi-family building owners. Enervee stands ready to work with utilities to develop suitable outreach materials or new functionality tailored to the needs of these groups.

2. **Online marketplaces eliminate the most fundamental and previously intractable barrier to private investment into efficient products – market intransparency – by making efficiency visible with a zero to 100 energy efficiency score and providing information on the energy bill and total cost of ownership implications of product choices**

The presence of the Enervee Score has been demonstrated through a series of randomized controlled trial experiments to lead consumers to make more efficient product choices[5]. Our experimental results suggest that the effect on lower socio-economic status participants is at least as strong as for the general population. While the effect of the score has proven robust across product categories, political inclination, buying context, and demographic characteristics, we found that energy bill savings information is particularly salient and impactful for low-income shoppers.

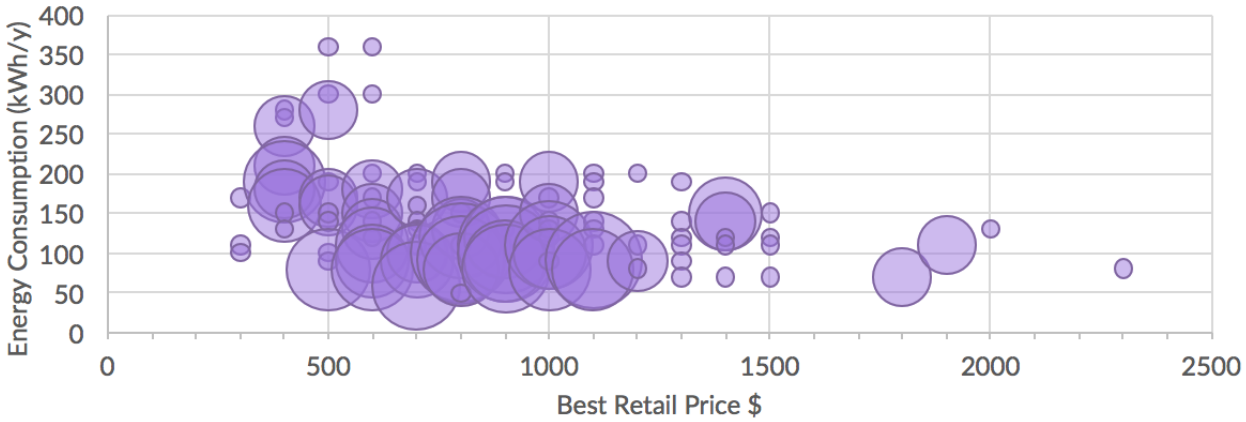


Since many resource-consuming devices are not included in existing direct-install or rebate programs, it is important to give low-income households the tools they need to make smart purchasing decisions on their own, considering both up-front purchase price and operating costs. With very few exceptions, there are super-efficient products with Enervee Scores of 90+ available on the market that cost less than the average of all models on the market.

[5] https://link.springer.com/article/10.1007/s12053-017-9542-3

And since any shopper is only in the market for a single model, there are important nuances that more granular, model-level data, combined with daily updated retail prices, make visible. If we take the example of the US washer market[6], and consider the 111 models with a capacity between 4 and 5 cubic feet, it is possible to purchase models in the $300—$500 price range that consume as little as 90 kWh per year or as much as 300 kWh/y.

Online Washer Market Snapshot (24 July 2017)
(bubble size = number of models; capacity = 4 to 5 ft^3)



Finding the proverbial "needle in the haystack" used to be a nearly impossible task, but the utilities' online marketplaces simplify the search for affordable and efficient products—some of which can save enough energy over the lifetime of the washer to pay for themselves.

The difference in utility bills between these two affordable model extremes cited above is $580 (assuming a residential tariff of $0.23/kWh), which exceeds the purchase price of the efficient model. If we consider the CARE tariff ($0.14/kWh), the savings still amount to $350, which more than offsets the incremental cost and covers 70% of the purchase price of the super-efficient product.

Furthermore, the total cost of ownership is 36% lower for the most efficient washer ($893) than for the cheapest ($1402). The online marketplaces reveal such insights to shoppers.

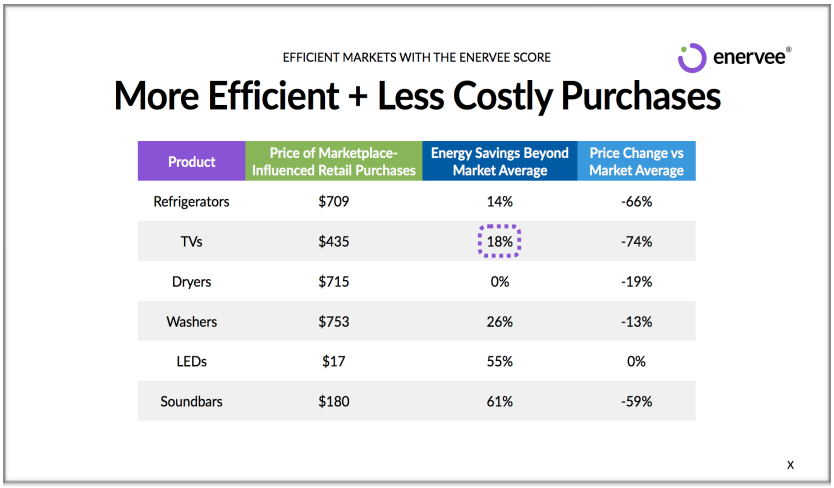
Efficiency does not always come with a higher price tag, but consumers (and PAs) have, until recently, had no way of knowing this – and intuition tells us that efficiency costs more. Consistent with the randomized controlled trials, data from affiliate programs shows that Marketplace-influenced retail purchases are both more efficient and less costly than the market average (see chart on next page).

Why is that? A key reason is that product data are presented on the market-places in a way that takes into account behavioral science theory. Shoppers not only see the best retail price and

[6] For a similar analysis of the TV market, see: https://blog.enervee.com/seeing-the-bigger-picture-2ab0132f04ea

efficiency for each model; they also get a price worthiness index that appears to switch off the energy efficiency lay theory that efficient products necessarily cost more[7].

When shoppers are given actionable information, they make energy-smart shopping choices.


EFFICIENT MARKETS WITH THE ENERVEE SCORE

enervee

More Efficient + Less Costly Purchases

Product	Price of Marketplace-Influenced Retail Purchases	Energy Savings Beyond Market Average	Price Change vs Market Average
Refrigerators	$709	14%	-66%
TVs	$435	18%	-74%
Dryers	$715	0%	-19%
Washers	$753	26%	-13%
LEDs	$17	55%	0%
Soundbars	$180	61%	-59%

x

This allows policymakers and program implementers to rely on market forces to a much greater extent, freeing up scarce resources for targeted financial incentives that address the specific needs of low-income households and disadvantaged communities identified through a better understanding of product markets, consumer behavior and private investment barriers.

3. Investments into super-efficient products (with Enervee Scores of 90+) have a high benefit to cost ratio and should be pursued in low-income programs

Our data on the online retail prices and consumption of the most efficient products currently on the market, coupled with assumptions about an illustrative program design[8], show that targeting low income customers with higher incentives on super-efficient products with Enervee Scores 90+ (roughly corresponding to product models at the 10th percentile and below in terms of energy consumption) can have the following benefits:

- Total benefit to cost ratio > 6:1 (not including grid benefits)
  - Every program $ reduces CARE subsidies by $2
  - Every program $ reduces bills by $3 (assuming CARE-subsidized rate)
  - Every program $ reduces Social Cost of Carbon by $1.17
- Every program $ leverages 50 cents in investment from low-income households
- For every $ that a low-income household invests, they save over $5 in energy bills
- CARE subsidy savings are 3.8X greater than investments required of LI households
- Program cost (incentives + marketing) per avoided kWh = $0.05/kWh

[7] https://blog.enervee.com/when-our-decision-making-skills-get-in-a-spin-56ef0dce06a4
[8] The program design for which results are presented is not optimized to achieve any particular program outcome. We assumed that incentives would be provided for 19 product categories, with at least 10% by number applied to air conditioners, refrigerators, LED bulbs, and TVs.

These calculations show some great justification for investing in online marketplace incentives that will get super-efficient products scoring 90+ into low-income households. If we assume that 1/3 of all incentives projected statewide fall under a dedicated scheme with incentives high enough to limit LI co-investment requirements to $137 per product purchase, on average (ranging from zero for LED replacement bulbs to $273 for gas water heaters), the program cost (net of marketplace revenues) would be only in the tens of millions of dollars, a small fraction of the total CARE budget, while delivering hundreds of GWh in electricity (and hundreds of thousands of tons of GHG) savings annually.

Note that savings were calculated based on the difference between the 10th percentile consumption of products on the market (all of which have Enervee Scores 90+) and the 90th percentile consumption of products, which is conservative, given that we are talking for the most part about early replacement of existing appliances by low-income households.

This also points to some interesting new data-driven approaches to determining energy savings associated with plug load & appliance incentives, initially in the context of low-income programs. For each product category on the online marketplaces, we know each day what the statistical distribution of product models is for a wide range of characteristics, including best retail price and annual energy consumption. This allows us to establish a system of dynamic market benchmarks (e.g., 90th percentile annual energy consumption of new products), against which actual model purchases can be compared to determine savings.

4. **Innovative strategies should be developed to capitalize on favorable market trends, leveraging utility-branded online marketplaces, and the regulatory framework for low-income programs should encourage experimentation**

One immediate opportunity to pilot the approach suggested above of offering higher incentives on super-efficient products for qualified households is within the context of the San Joaquin Valley proceeding. Enervee has been approached by one of the target communities for assistance with estimating the benefits of solar plus super-efficient appliances. Enervee is ready to work with the CPUC to support this type of analysis by communities, so that they may consider alternatives to building out expensive gas infrastructure, as well as with utilities to design and implement effective incentive programs.

Online point-of-sale functionality could be introduced to the marketplace experience, which would go a long way towards addressing the purchase price barrier (early replacement, incremental cost).

Utilities should be encouraged to make full use of their online marketplaces to modernize low-income programs and scale the associated energy and carbon savings, such as performance based incentives for reducing CARE subsidy requirements through special low-income incentives offered

via the marketplace. They should not have to wait for the next CARE/ESA cycle to begin experimenting, and should be encouraged to do so, in the context of SB 350 and AB 793.

The CPUC could also adjust policies and guidance, such as encouraging IOUs to leverage their online marketplaces to incentivize super-efficient products across a wider range of categories relevant to low-income households, and take advantage of new data available, such as considering a move from relying on DEER default values to estimating savings based on dynamic (daily-updated) market benchmarks and individual model consumption data – which would reflect the range in efficiencies across products, driving innovation. In general, low-income programs may require streamlined application and eligibility requirements and verification procedures to scale through digital channels.

In conclusion, utility online marketplaces are well placed to overcome barriers and drive efficiency among low-income customers and disadvantaged communities. Customer expectations are changing rapidly, and low-income programs will need to deliver a better user experience, if they are to be accepted against the backdrop of experiences offered by telecom, transportation and entertainment companies among the increasingly influential cohort of millennials[9]. There is great potential to deliver benefits to low-income households, the energy system and society at large – by implementing digital, market-based programs that incentivize super-efficient product purchases and nudge consumers towards them.

Taking a customer-centric approach and piloting new low-income program interventions that leverage utility-branded Marketplaces – and the consumer product market intelligence and behavioral insights they generate – should be a key strategy to drive low-income energy efficiency.

Sincerely,

Anne Arquit Niederberger, Ph.D.
VP Market Development
anne@enerve.com | 707 590 8660

[9] https://blog.enervee.com/big-consumer-trend-much-greater-interest-in-energy-management-7fee6fe8e600