The Problem with Opt-Out EE Funding

Craig Williamson, Applied Energy Group

ABSTRACT

Energy efficiency programs often are funded by a surcharge on energy use. In some cases individual customers, usually large commercial and industrial (C&I) customers, can “opt out” of paying this surcharge. While this is usually a political compromise, the trend toward opt-out by large C&I customers complicates things in two important ways.

First, it creates a sense of entitlement among those who do not opt out. These customers tend to believe that because they paid into the cost of EE programs, if they do anything related to EE, they should receive a rebate or an incentive. This effect encourages free-ridership, as customers take an action that they had planned all along, and then demand their rebate. In our experience, this mindset can pervade both customers and utility/vendor implementers.

Second, there is no recognition that those choosing not to fund the EE resource should pay more in the future. If EE programs are well-designed and appropriately implemented, the reduction in energy is the least-cost future resource. Given this, these lower future costs should not benefit those who opted out of paying for this resource. But there is no effort to differentiate the future rates paid for those who fund EE and those who do not. So those who choose not to fund EE programs then become “free-riders” of future lower rates.

The key is to separate utility cost recovery of a resource from the creation of that resource. This paper describes the problem, provides some conceptual examples of this situation, discusses the implications of the effects, and then explores some ideas of how utilities and regulators might mitigate the effects, politically challenging though that would be.

Background

EE has been around for a long time, and very early on, utilities and regulatory commissions realized the fundamental disincentives that traditionally regulated utilities face when considering whether to help their customers buy less of the product they sell. Even if this seeming contradiction of selling less is reconciled, there are two levels of disincentive that should be acknowledged.

The first is that regulated utilities are businesses that make money by earning a return on investments. As the need arises, they build power plants to meet load, and they are allowed to earn a reasonable return on the investment in those power plants through the rates they charge. If, instead of building a power plant, they invest in EE, that EE investment should be treated equivalently to the investment they would have made in the power plant. If it is not treated the same way, the utility loses by investing in EE. This has been understood for a while, and is reasonably easy to fix through treatment of EE investments as capital investments that are included in rate base.

The second disincentive is the loss of utility revenue from decreased sales. Simply put, if there are kWh that are not sold because they were saved through EE, the utility is not paid for them. If those additional energy sales were provided by an additional power plant, the kWh would have been generated and sold, and the utility would have made more money. As above, the two options should be put on the same footing. This can be done by adjusting for lost revenue from EE, or by fully decoupling revenue from the total sales.

These are important considerations, but in this paper I focus on the way that these EE (and new generation) costs are recovered by the utility. These costs may include lost revenue adjustments and/or adjustments for the utility's return on investment as described above. But whatever is included, the most common way of collecting EE investments is to add a surcharge to all kWh consumed by customers. It is important to note that often, when a new generation resource (such as a power plant) comes on line, utilities will often be allowed, through the rate case process, to start collecting the costs associated with that new generation through a similar surcharge on kWh sold. Things become much more complex when rates are redesigned, with allocations between fixed and variable costs, but the idea is the same—customers pay so that the utility can recover the costs associated with their investment in resources to serve those customers.

In many ways, meeting the need for energy supply using EE resources is similar to meeting those needs with a generation resource, but there are some differences. One difference is that with EE, the resources are acquired from some of the same customers that are driving the need for (and paying for) that resource. So in some sense, the customers are buying power from themselves. Customers are paying the utility for all the resources to meet their energy needs, and the utility is taking some of that money, and using it to pay those same customers to reduce their energy use through rebates and incentives for EE.

While this connection happens because of the nature of EE, it is not a direct connection; it is really more of a coincidence. Unfortunately, it also tends to create a sense or a belief that the customers who are being paid for EE are somehow getting an unfair benefit from the system. If EE programs are implemented perfectly, without free-ridership and only on the most cost-effective basis, this belief is not valid. The program costs represent the cost of acquiring that EE resource. Who built a power plant to supply future load does not affect the surcharge used to recover the cost of building that power plant, so why is there a connection between who is paid for an EE resource, and how the cost of that resource is recovered? The acquisition of a resource and the recovery of the costs of acquiring that resource should be two separate transactions.

Because of this sense of unfairness, and because EE is often viewed not just as a resource, but as a way to provide a benefit to customers, there can be opposition from customers to paying for EE resources. Most often this comes from large energy users such as industrial customers. Because EE costs are usually recovered through a surcharge on each kWh, these customers see themselves as having to pay more than their fair share, since they consume more kWh. Note that these customers also pay more for any rate increases that apply on a per kWh basis, including a rider or surcharge generally used for the cost of new generation—so this situation is not unique to EE. These customers also tend to be more active in rate cases, and in many jurisdictions, they have successfully called for "opt-out" provisions in EE cost recovery mechanisms. These opt-out provisions allow some customers to choose not to fund EE. It is usually seen as a choice not to participate—those who do not pay are also not eligible to participate in programs. Many see the inability to participate in EE programs as a sufficient penalty for not paying for EE—if you don't pay in, you can't get any money out. But such a perception discounts the value of EE as the least cost resource, and also lets customers who opt out get a free ride—in effect, those who pay in are subsidizing those who opt out.

EE programs are growing across the country. California's loading order puts EE at the top—the first resource that should be considered (CPUC 2004). This has driven the growth of EE in California and other states. It is also important to note that the loading order assumes that EE and DR should be considered as resources on the same footing as generation. EE is not just a way to make customers happy—it is a resource for meeting future energy needs.

However, giving some customers the option not to pay for EE creates problems and unfairness in several ways, which will be the substance of the remainder of this paper.

Brief Overview of How Utilities Acquire and Pay For Future Resources

The planning function of a utility is complex and multidimensional, but basically, it involves forecasting future energy and demand needs, and then acquiring resources to meet those needs. Throughout this paper, I generally refer to supply side resources as power plants, but the same concepts apply to transmission and distribution facilities and planning. Before EE and demand response (DR) became prevalent, the resources acquired were almost always power plants. This meant that over time, when the energy needs grew, utilities invested in building new power plants and transmission and distribution facilities. With each new investment, utilities could earn more, so they saw slow but steady growth in their business. However, starting in the 1970s, energy costs increased dramatically, and rather than just build more power plants, regulators and utilities began to look at EE as a resource.

Over time, with the reduction or elimination of disincentives for utilities to support EE, the industry came to generally embrace EE as a viable option to meet future load. I now look at the utility planning process, and how EE fits into it. By necessity, the description here is simplified, but the general concepts are consistent with the process most utilities use.

Most of the discussion in this paper deals with traditionally regulated utilities. Industry changes over the last two decades mean that utilities in some jurisdictions have been deregulated or restructured, and are therefore no longer vertically integrated utilities. This changes the dynamics of the planning processes, especially depending on whether a jurisdiction has a capacity market or not. But there is still a need for acquisition of resources, and so while the different context changes the game somewhat, the fundamental concepts are similar.

Forecasting

The first step is to predict the future energy needs of the utility's system. Energy and demand forecasting are an integral and complex part of the planning process. Economic and statistical methods are used to estimate the future energy needs that the utility will have to meet. There are important distinctions between resource planning for energy and demand, but for simplicity I only look at energy here. Figure 1 shows a hypothetical example of a utility's long term energy forecast of annual GWh sales. Note that energy use grows over time, which reflects the current expectations of the industry for slow but steady increase in energy use over time.[1]

[1] EIA predicts national electricity use will increase 0.7% per year (EIA 2014)

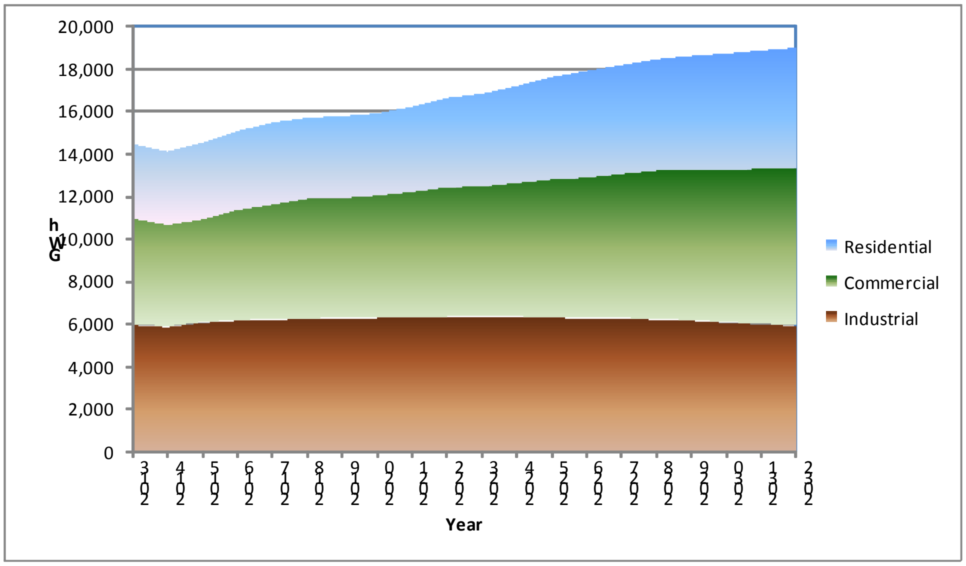

Figure 1. Forecasted sales by customer class for a hypothetical utility.

The hypothetical utility has sufficient resources to cover the current needs, but once the energy needed grows beyond the current capacity of the system, additional resources will be needed. Our hypothetical system can deliver 15,000 GWh. So starting in 2016, new resources will have to come on line to meet the additional energy sales. Again, this is an oversimplification using energy as a proxy for both demand and energy to illustrate the concept.

Acquiring the Resource

Many utilities go through an integrated resource planning (IRP) process to determine how to meet future energy use growth. The focus of IRPs is usually meeting future system demand, but the concepts are the same—how can future energy use needs be met reliably and for the least cost? The answer is often EE. The levelized cost per kWh of EE is considerably lower than any new generation (Chittum 2011). It may be a combination of new generation and EE, with EE (which can be made available much faster than generation) providing the short term relief, while the longer term needs are met by both EE and new generation.

Based on the IRP, the utility must acquire the appropriate resource. For generation, this means investing in the design and construction of a new generation facility. For EE, acquiring the resource means designing and implementing programs. Which programs are implemented should be based on which are the most cost-effective—the goal is to minimize the cost of the new resource. The more cost-effective the EE program, the more energy and demand reduction is delivered per dollar invested.

In either case, the utility must acquire the resource, and does so to meet the combined future energy needs of the whole system—all customers.

Paying for the Resource

A fundamental concept of utility regulation is that costs should be allocated fairly to customers. If customers receive the benefit of a utility investment, they should share in the recovery of the cost of that investment. The need for new resources is driven by the collective energy needs of all customers, and the reliability required by the system, which also benefits all customers. If a new power plant is built, the utility can recover the cost of that resource from their customers. If EE is the resource, the utility pays the cost of acquiring that resource, just as they would if they built a power plant, and then they recover the cost of acquiring the resource from their customers.

Because all customers benefit from the added resources, all customers should pay for those resources. This is never in question with generation resources. However, in many jurisdictions, large industrial customers have argued that they should not have to pay their share of the cost of EE resources. In 2011, 24 states were reported to allow large energy consumers to opt out of paying all or part of EE cost-recovery surcharges (Chittum 2011). The situations vary by state, with some states allowing a pure opt out, and others requiring large customers who opt out to "self-direct" the amount they would have through the surcharge to EE projects in their own facilities. Others (Chittum 2011) have focused on the effectiveness of self-direct options. I focus here on what happens when customers opt out of the surcharge.

Opting Out of EE Funding

When customers opt out, they give up the opportunity to participate in any utility funded EE programs. They cannot receive utility rebates or incentives for any EE measures they install in their own facilities. Of course, they can (and in many cases do) install measures without incentive, based on the cost-effectiveness of the measure itself.

There are several problems with allowing large customers to opt out of EE funding. First and foremost, they are not paying for a resource that they benefit from. Given that EE is the lowest cost resource, if it were not acquired, a higher cost resource would have to be acquired to meet the future energy needs. EE keeps rates lower for everyone, including the large customers who choose to opt out. Allowing customers to opt out also represents a missed opportunity, since it reduces funding for EE. This reduced funding means that cost-effective EE might be "left on the table" and not implemented, driving costs up for everyone based on higher cost resources that would then need to be acquired.

Some states that allow large customers to opt out do address one piece of this by requiring (or allowing) customers who want to opt out of paying the EE surcharge to "self-direct" what they would have paid for the EE surcharge to their own EE projects (Chittum 2011). If these projects are cost-effective, and evaluated properly, then this approach does mitigate the problems with opt out—the customer opting out does pay for a resource, albeit different from the EE resource that the rest of the customer population pays for. There is potentially a slight difference in the cost-effectiveness of the installed EE, in that the amount self-directed may not correspond to the combination of the surcharge not paid and the incentive not received. But at least in this case, those customers self-directing are contributing to the funding of the EE resource.

I now look in more detail at two of the issues that arise when some customers are allowed to opt out of EE funding surcharges.

I Deserve a Rebate!

Giving some customers the choice of opting out of EE funding and the potential for participating in programs further cements the inappropriate connection between the cost recovery of EE and the acquisition of the resource, specifically the delivery of EE programs. As described above, the delivery of EE should be focused on getting the resource (reduced kWh) in the most cost-effective, efficient, and reliable way. As such, it is important to limit the number of free riders that receive rebates or incentives for EE measures that they would have done anyway without the program. High free ridership can make programs less cost-effective, raising the cost of the resource.

However, when customers have the choice to opt out, this engenders a sense of entitlement to rebates and incentives. The argument is "I paid in; I deserve to get some of the benefit in the form of rebates or incentives for EE." We have seen this in our evaluation practice—customers believe that they should receive rebates for anything that they do or have done in the past. Even though EE program rules usually specify that customers need to submit an application in advance of an EE project (which helps limit free ridership), customers insist on incentives for projects after completion. The intent of incentives is to encourage customers to take action, to install more energy-efficient devices than they had planned, or to upgrade existing equipment. The incentive can't provide the motivation to do this if it is retroactive. And if the incentive did not drive the decision, then it is not necessary. Unnecessary costs drive the price of the resource up.

We have also found that this sense of customer entitlement also can make its way into utility EE organizations. Program managers tend to be more accommodating with customer incentives in situations where the customers can opt out. The same argument that "they paid in, so they deserve something back" is used to give incentives to customers who did not follow program rules, or who do not qualify. While this is somewhat understandable, especially among utility program managers who work hard to ensure high customer satisfaction, in most jurisdictions, the program will eventually be evaluated. And when it is evaluated, the savings will likely be discounted for not following program rules, or through a net-to-gross adjustment for free ridership. The discounted savings lead to lower cost-effectiveness of programs, and could hurt utility revenue by impacting utility incentives where present.

This sense of entitlement, among both customers and program managers, is really driven by the linkage of the payment for the resource (the EE surcharge) and the acquisition of the resource (the EE programs). As discussed above, this linkage does not exist for supply side resources. The equivalent of this on the supply side might be that a construction contractor would insist that it should be hired to work on the construction of a power plant because that customer paid (or will pay in the future) for the energy generated by that power plant. Most would agree that for a supply side resource, this would not be a reasonable demand.

Long Term Implications

It is also important to consider the long term implications of allowing some customers to opt out of EE funding. Cost-effective EE can offset current and future generation needs. In the short term, it can reduce carbon output from fossil fuel generation by reducing the total kWh generated. In the long term, when EE is the least cost resource, as it often is, it can reduce the cost of energy in future years. This latter effect is important when looking at the impact of opt-out provisions for paying for that resource. The idea is that if a customer chooses not to pay for the cost of a least cost future resource, they should pay the incremental cost of the higher priced resource in the future. In situations when customer opt-outs reduce the revenue available to acquire EE, thereby reducing the EE that is acquired, other, more expensive resources must then be acquired to cover the future energy needs. To avoid subsidies, those who opted out of EE surcharges should then pay more to cover those higher priced resources. I now walk through a simplified example showing this situation.

Example of Long Term Implications

Figure 2 shows the same forecast as Figure 1, but has a line overlaid showing currently available resources. It is clear that after 2016, there will not be enough resource to meet the energy needs of the utility's customers.

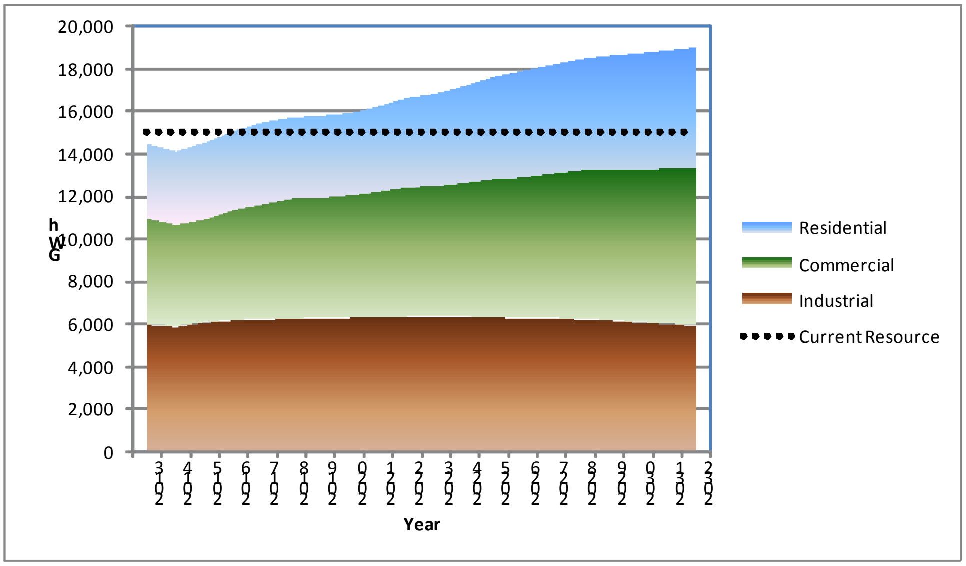

Figure 2. Forecasted sales and currently available resource.

Either through an IRP process or the utility's internal planning process, additional resources will be identified to meet the additional energy needs. I assumed that for this case, the potential cost-effective EE resource available is sufficient to meet the additional energy needs through the end of the 20-year planning cycle.[2] I assume a startup of new programs in 2015, acquiring all cost-effective EE with the total cumulative savings growing over time. This results in a total resource corresponding to the solid black line shown in Figure 3. This line is the total resource available if all EE is acquired. Note that in our example, that resource is sufficient to meet the future energy needs.

Note that EE is shown as an addition to the resources available. In fact, because EE is energy savings, it would actually reduce the energy consumed. In this case, the EE would reduce the total energy below the current resource line. EE can be thought of as a resource that supplies kWh that offset some of those future kWh in the forecast, or it can be thought of as a reduction in energy. In reality, there are complexities about both interpretations that are well beyond the scope of this paper, but the two interpretations are basically equivalent. Showing EE as a resource better reflects the IRP or least-cost planning process.

[2] If this were not the case, additional supply side resources would need to be acquired, which would change things somewhat, but the basic results due to the incremental loss of EE would be the same.

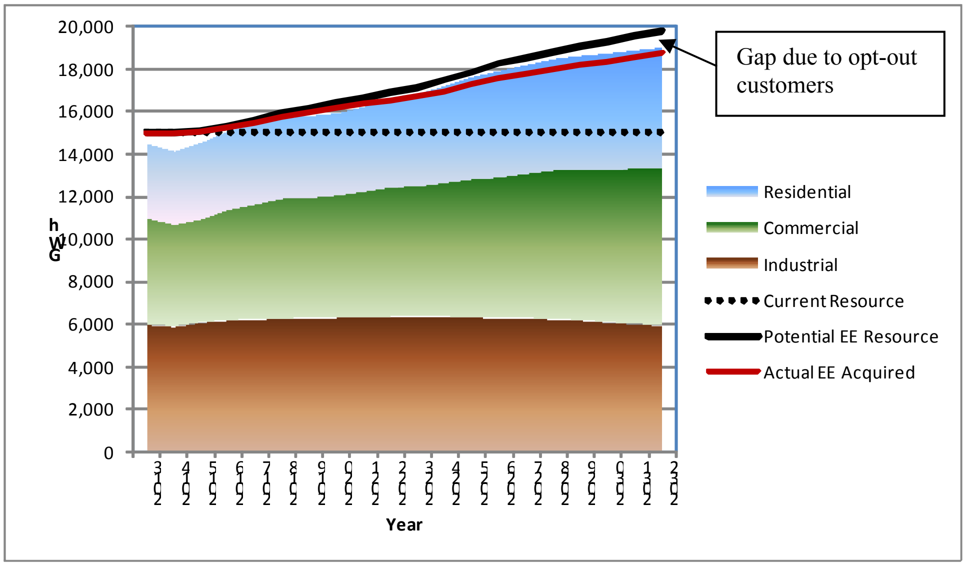

Figure 3. Forecast with currently available resource and total resource with different levels of EE.

But if some customers are allowed opt out, less funding will be available, and so less EE will be acquired. The red line represents the total resource available with the smaller EE resource. Note that the red line does not provide enough total resource to meet all the future energy needs. Because of this, additional, more expensive resources will need to be acquired to meet the future need. This will increase costs for all customers over time, above what they would have been if customers were not allowed to opt out, and more EE was acquired.

If customers are allowed to opt out of paying for the least cost resource, then those customers that do opt out should pay higher rates over time. They should pay a surcharge equivalent to the difference between the cost of the resource that was acquired and the cost of the EE that would have been acquired had they paid their fair share.

Of course, charging only certain customers higher rates in the future based on the choices they make now is logistically difficult if not impossible. Customers may go out of business, change ownership, and possibly decide not to opt out, but rather to start funding and participating in EE programs again. In these cases, it would be inappropriate to charge the full, long-term penalty. And in fact, it could be politically impossible and perhaps even illegal, as it could be considered as charging different rates for the same service. Ironically, under some interpretations, that may be what exactly is happening when regulators allow customers to opt out of paying for a resource for which they receive a future benefit.

Conclusions

Allowing large customers to opt out of paying EE surcharges is often a political compromise. While it may seem fair or at least relatively harmless on the surface, there are subsequent consequences. On the one hand, there are perceived consequences such as the presumption of entitlement discussed above. At the same time, there can also be very real consequences in the form of higher future rates and subsidization of those who opt out by those who do not. This paper describes a simplified example of what can happen with opt-out provisions, and admittedly the real world is much more complex. However, the fundamental concept is that opt-out provisions reduce the amount of EE acquired, since there is less funding to spend on EE. When less EE is acquired, it follows that a more expensive resource will have to be acquired to meet the need. This will result in higher rates over time for everyone, and this means that those who pay for the EE resource are subsidizing those who opt out.

We have considered ways to adjust for the long-term implications of certain customers opting out of EE funding, but none that we can conceive of are feasible and practical to implement. While the possibilities have clearly not been exhausted, it seems unlikely that any method could be developed. Because of the subsidies that inherently arise from opt-out provisions, combined with the lack of an apparent way of adjusting for those subsidies, regulators should exercise caution when they are pressured to allow customers to opt out of funding acquisition of a resource that benefits all customers, including EE.

References

Chittum, Anna. *Follow the Leaders: Improving Large Customer Self-Direct Programs*. ACEEE Report Number IE112, October 2011.

CPUC (California Public Utility Commission). 2004. *Decision 04-12-048 December 16, 2004.* http://docs.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/43224.htm.

Energy Information Administration (EIA) Annual Energy Outlook. 2014, Annual Projections to 2040. http://www.eia.gov/analysis/projection-data.cfm#annualproj.