Free-Ridership as a Way to Kill Programs - How Evaluation Policies Can Frustrate Efficiency Goals

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ABSTRACT

As evaluators, we understand the importance of distinguishing net savings from gross savings. It is important that program dollars not be wasted paying for measures that would have been installed anyway. Those are the free-riders. In a simple world, programs are discouraged from, or even penalized for signing up free-riders. Policymakers may constrain their evaluators by adopting evaluation rules that narrowly define who is a free-rider and who is not. There are also directions from policymakers for program managers to seek market transformation, and so they are encouraged to influence customers and markets in many ways other than simple incentives: through training, public awareness, upstream market interventions, and multiple year relationships with customers. On top of that, there are influences from outside the programs. Evaluators understand that there are many influences on customers and their energy efficiency decisions. These make it challenging to parse out what efficiency actions would have happened absent the programs and what would not. This paper is a thought piece with examples of how evaluation policies can define free-ridership, with the result of killing valid energy efficiency efforts. The intent is to illustrate for policymakers the consequences of their evaluation policy rules, and to alert evaluators to ways that evaluation practices may have unintended consequences for the success of energy efficiency program portfolios. By adopting an overly broad definition of free ridership, policymakers and evaluators underestimate the savings from programs. This can lead to cut backs or cancellation of programs that are actually delivering savings that would not have occurred otherwise, thereby reducing progress towards ambitious goals (market transformation, zero net energy, reduced generation and other long term goals).

Introduction

Free-ridership is a concept with both good and bad consequences for energy efficiency. It has been the subject of many learned papers, years of debate among evaluators, and lengthy policy debates. The basic concept speaks to the prudent use of energy efficiency dollars: they should be spent to encourage customers to take energy efficiency actions that they would not otherwise take on their own. If program dollars are spent on people who would have taken the actions anyway, without program support, then those people are free-riders, and those dollars were misspent. Evaluators are tasked with studying this counterfactual, measuring how much of a program's resources were misspent on free-riders, and what the program savings were, net of free-riders. The consequences of free-ridership measurements vary. In the mildest cases, the information is used to refine program plans to better target customers and to assess progress toward market transformation. In the strongest cases, when free-ridership levels are deemed excessive, program managers are penalized, savings claims are discredited, and programs are cancelled.

These applications of free-ridership information represent legitimate policy choices. Policymakers need to ensure that efficiency dollars are well spent, and that they are not given to people who don't need them. However, policymakers need a sophisticated understanding of the limitations of free-ridership measurement, and they also need to understand how free-riders fit within the larger market context. Recognizing that some degree of free-ridership is unavoidable, and may indicate

progress toward market transformation, free-ridership is not always bad. Moreover, free-ridership is notoriously difficult to measure with precision because it is a measure of a counterfactual (what would have happened); it cannot be measured directly, and the indirect measurement methods are famously controversial among evaluators.

With free-ridership measurements, the devil is in the details. To ensure consistency in measurement of free-ridership, all evaluators (and some policymakers) set ground rules for how their evaluations will measure free-ridership. Depending on how conservative those ground rules are, the resulting measured free-ridership levels can be high or low. If very conservative, a high percentage of program participants will be found to be free-riders, and the converse is also true. If conservative measurement rules are adopted, however, the resulting high levels of free-ridership can come into conflict with other policy objectives. For example, it is increasingly common for policymakers to require aggressive program activities to achieve ambitious savings goals (e.g., the acquisition of all cost-effective energy efficiency, or saving 1.5% of system load). Over time, these activities reach a large share of the market and influence it through multiple program paths. In this context, overly conservative free-ridership measurement rules will find that much of the resulting savings are due to free-riders, with very low net savings. This may result in the premature discontinuation of energy efficiency programs and an increased likelihood that energy policy objectives will not be achieved. In effect, this approach will pre-maturely kill many promising program activities, and the ambitious savings goals will never be met.

Note, when we characterize free-ridership measurement rules as conservative or liberal, that we are not talking about precision of measurement. Precision is a function of evaluation methods and sample sizes. One can make precisely conservative measurements or precisely liberal measurements. We will show how net impacts can be biased downward by taking an overly conservative measurement approach.

The following sections provide examples of how free-ridership measurement rules can come into conflict with ambitious savings goals, as cautionary tales for those setting policies on free-ridership measurement rules. Due to the nature of this paper, we do not seek to name names or point to specific programs. The lessons we illustrate are applicable to a wide variety of circumstances in the current energy efficiency world. Also note that, as a matter of convenience, we will refer to utility programs when describing various kinds of efficiency programs; this is a shorthand way of referring to any type of energy efficiency program or market intervention, whether done by a utility, a third-party implementer, a non-utility portfolio manager or a government agency.

Ambitious Goals

Other papers have pointed out that energy efficiency goals are becoming increasingly ambitious. "A number of states have set savings goals for utility-sector energy efficiency in the range of 1.5% - 2.0% of total sales each year" (Kushler, York & Witte 2009). While few states are actually achieving these levels of savings, many are ramping up their capabilities and their program offerings. In doing so, it becomes clear that traditional, transaction based programs - pay an incentive for a customer to install a measure - are not likely to get to the broader and deeper savings required to meet the goals. It will require a variety of market interventions that can:

- Reach more market segments,
- Encourage more integrated measures,
- Increase customer awareness and knowledge,
- Engage customer organizations in multi-year efforts,
- Leverage market allies', regional and national efforts,

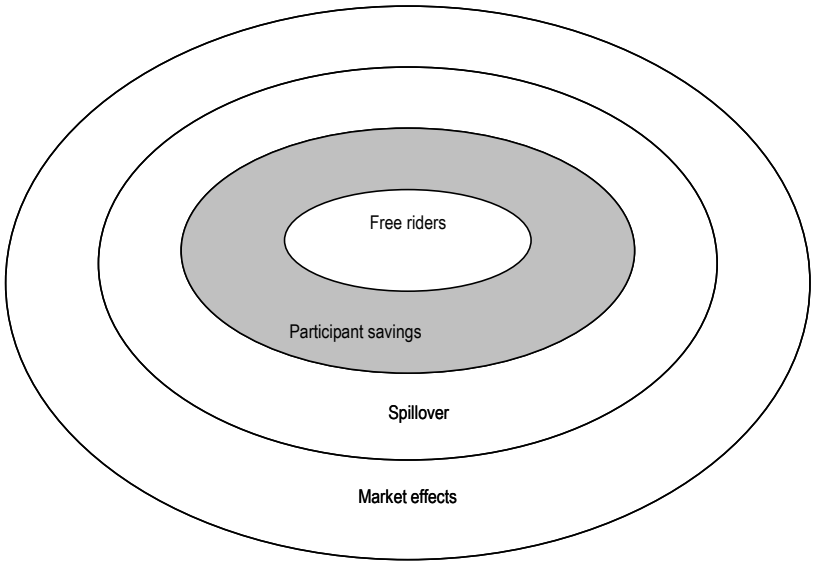
- Adopt more stringent codes and standards, and
- Provide public policy support to sustain those efforts.

This is not news to policymakers, program planners or evaluators. The challenge in meeting ambitious goals is to keep policies, program plans and evaluation procedures all pointed in the same direction. If there are conflicting directions, the entire energy efficiency effort will fail to meet the goals.

Interactions Between Programs

As we pointed out in our previous discussion of evaluation policy issues (Mahone& Hall 2009), the traditional evaluation paradigm assumes a measurement boundary around the program, as indicated in Figure 1 below.

Figure 1. Single Program Evaluation Components

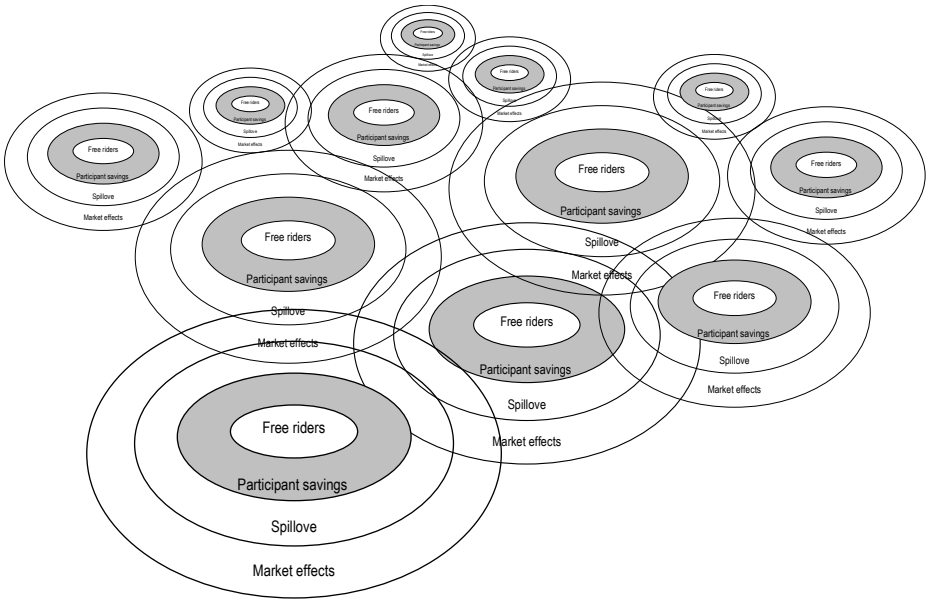


The participant savings, which are the verified savings from the efficiency measures installed through the program transaction with the customer, are shown in the shaded circle. Any of those savings attributable to free riders are subtracted out (inner circle), leaving the shaded donut of net participant savings. If there are spillover savings, either from additional measures installed by participants without program incentives, or from measures installed by non-participants who were indirectly influenced by participants' actions, these may be added to the total. Finally, as the programs begin to affect the market, e.g. by inducing retailers to sell only efficient equipment in response to market demand, there may be additional savings, called market effects. These additional savings would expand the shaded area of countable program savings.

This traditional approach to program design and evaluation worked well when efficiency program portfolios were limited in scope and focused on simple transactions with customers. However, with the evolution of integrated portfolios of programs targeted at broad and deep savings goals, the diagram now looks more like Figure 2. Note that the overlaps are, in practice, even greater than this simplified diagram would suggest. Often, the participant savings also overlap between program

offerings, and one program's participants may be another program's free-riders. The overlaps can also occur over time, with one program's influence extending to the next generation of programs. The point of the diagram is to suggest that the simple evaluation strategy of drawing a boundary around each program over a single program cycle will encounter the problems of multiple program influences. This can lead to biased estimates of savings, either higher or lower than actual.

Figure 2. Multiple Program Evaluation Overlaps



The following sections will illustrate various ways that free-ridership estimates can be biased by overly conservative measurement methods. When this happens, it can result in programs being penalized or even prematurely killed.

Killing Due to Unmeasured Spillover

Some methods of measuring free-ridership seek to compare efficiency measure adoptions among the participant population to a comparable non-participant population. For example, if 30% of the non-participant population is seen to be adopting a given measure without program support, then it is assumed that 30% of the participant population would also have adopted the measure on their own. These, then, become the free-riders in the participant population. This can be a problem if there is unmeasured spillover from the participant to the non-participant population. Continuing the example, let us say that half of the non-participants who adopted the measure (15% of that population in this example) did so because of indirect program influences. These could be influences from neighbors who participated in the program and were pleased with the measure, from customers who saw the program's information materials and were persuaded to adopt the measure but didn't want to hassle with the rebate paperwork, or from other program-related influences. If the free-ridership measurement does not account for these spillover influences on the non-participant population, it would, in this example, effectively double the level of free-ridership and overly penalize the program. It becomes a double penalty: the program is not credited for the spillover, and then it is penalized again because spillover is treated as free-ridership and further reduces program savings. While it can be difficult to measure the level of spillover, it is clearly more than zero, and it can significantly skew free-ridership measurements

that are based on this comparison group methodology. Most evaluators agree that failing to report participant spillover savings results in a downwardly biased estimate of overall true net savings.

A more progressive free-ridership measurement would credit the program for spillover in both participant and non-participant populations, or at least would control for non-participant spillover in the comparison group.

Killing Upstream Programs

Several kinds of programs that promote energy efficient consumer products (CFLs, refrigerators, washers/dryers, etc.) have made use of so-called upstream incentives, where incentive dollars are directed at the manufacturer or the regional distributor to buy down the cost of the product before it goes to the retailers. This not only reduces the product cost directly, but there are also indirect savings due to reduced retailer markup (typically a percentage of wholesale product cost). This approach often includes additional incentives to the retailer to assist them in promoting the product and stocking it. The result at least reduces the first cost of the product for the consumer, and at best provides a variety of strong motivators for the customer to buy the product. This can even include eliminating stocks of competing, less efficient products on the retailers' shelves. Free-ridership measurements are often done through customer interviews at point-of-sale, asking them what their awareness was of the products' benefits, which benefits (cost, convenience, performance, etc.) were most important, what influenced them most to make the purchase, etc. If the free-ridership measurement is looking for direct evidence that the program influences were the primary motivators for purchase, the program may be in trouble. With this kind of program, customers are often clueless about the program efforts and dollars spent upstream. Even if the program logo is affixed to the product or the product display, they may not notice it. Furthermore, the customer's awareness of the product benefits may have come from indirect utility sources (advertising, bill inserts, etc.), with little memory of where that information come from. If the free-ridership measurement gives considerable weight to that sort of awareness, the program is deeper in trouble. The effect could be severe enough to force program managers to discontinue their upstream incentives.

As we indicated in Figure 2 above, the multiple, overlapping influences on customers will make clear attribution difficult for these sorts of upstream programs, which could result in high free-ridership rates. A more progressive free-ridership measurement would not be limited to gauging customer memories of influence, and would make further measurement of the multiple program and non-program influences on consumer decision-making before assigning free-ridership numbers and reducing program net savings estimates.

Killing Organizational Efficiency Programs

There are programs that work with institutional or corporate customers to develop internal policies to maximize energy efficiency as equipment is replaced or new facilities are developed. In doing so, the customer organizations pre-determine that decisions will be made to seek extra levels of efficiency. These programs also encourage those customers to take advantage of utility offered incentives in making their efficiency investments. This all seems effective, even prudent, for programs as a way to work within the institutional decision-making structures of large organizations, particularly where a customer is expected to contribute toward the cost of the efficiency investment.

The problem arises when subsequent projects undertaken at the customer organization are evaluated for free-ridership. Often, the free-ridership measurement entails interviews with current staff at the organization, and often the staff say, in effect, "Of course we would have made those efficiency decisions. We were following established company policy to take advantage of incentives and make our

project as efficient as we could." A conservative approach to free-ridership would rule that the projects represented free-ridership, because the customer clearly would have done it under their existing policies. This, then, would downgrade program savings and could kill the program for having high levels of free-ridership. Even if the program was not killed, program managers would get a clear signal that it was a waste of program resources to encourage customers to adopt energy efficiency policies on the promise of future incentives, because they would be cancelling out their future savings; they would be deemed free-riders.

A more progressive free-ridership methodology would account for the utility role in the development of the energy efficiency policies, and would treat the subsequent efficiency decisions as the extension of those program activities. This would have the opposite effect to killing the program, and would encourage program managers to help overcome organizational barriers to energy efficiency.

Killing Through Complementary Government Policies

Another variation of an organizational efficiency program is a complementary government program. These are efficiency programs adopted by governmental organizations that seek, themselves, to leverage utility programs. One example is an affordable housing agency that requires all applicants for government tax subsidies to present projects that beat the energy code efficiency levels by some percent, fully intending that those applicants would also qualify for utility program support to achieve those efficiency levels. Another example would be a local government that adopts a resolution requiring all new buildings in their jurisdiction to show that they meet efficiency levels under a green rating system; again, with the intention that those buildings would qualify for utility program support. This should be seen as an admirable way to leverage influence on energy efficiency. The problem comes when these government agency policies become mandatory (or effectively mandatory); at that point the contribution of the utility program comes into question. The conservative judgment would be that, because participants must comply with the government agency's policy, then they become free-riders when taking advantage of utility program resources. Under that judgment, the local government program, even if carried out with the encouragement and support of the utility program, effectively kills utility programs for their participants, which may kill the savings despite the policy mandate. The policy question is whether the utility should be encouraging or resisting this kind of support from government agencies.

A more progressive free-ridership methodology would recognize the synergistic and mutually beneficial nature of these kinds of programs and policies, by at least sharing the savings success between the government agency and the utility. It could even be argued that the existence of the utility program and its resources is a necessary condition for the existence and success of the government policies, because those policies were predicated on the existence of program resources being available to ensure the cost-effectiveness of the policies they adopt. Experience with local government partnerships supports the claim that many governments could not mandate or enforce requirements for energy efficiency without the rebates, training, and other support provided by utility programs.

Killing Multi-Year Programs

Some of the biggest energy savings come from large, integrated projects which can take years to complete. A new hospital is a clear example, as are many comprehensive commercial retrofits. These projects achieve savings through interactive effects, economies of scale, and better integrated design than a series of individual measure installations could achieve. Even large residential new construction projects can take years to build out. These types of projects do not fall neatly within program cycles, even those that run for three or four years. For example, a three-year project would have to be initiated

in the first months of a three year program cycle in order to have any hope of completing within the cycle.

Some jurisdictions adopt a policy which requires savings to be counted only for measures that are recruited for the program, and are then completed, within a single program cycle. Even for a simple measure such as CFL replacements, recent analysis has shown that significant savings can come in later program cycles. For example, analysis of the 2009 upstream lighting program in California (KEMA 2011) estimated that 20 million CFLs rebated in the 2006-08 program cycle were installed in 2009. This represents over 20% of the total 2006-08 rebated CFLs. Ignoring the savings from these bulbs, because they do not fit neatly into one program cycle, unnecessarily reduces the program's effectiveness.

This approach makes even less sense for comprehensive projects such as major retrofits, which can take years to complete. Where such a policy is in place, a conservative approach to free-ridership would be to declare that any project completed in a later program cycle would not be counted in that later cycle, but would be deemed a free-rider, because it was responding to an earlier market influence. With such a policy, program managers would only focus on projects having a strong likelihood of completing within the program cycle. Large, long-timeframe projects would only be recruited in the opening months of a program cycle, and the program focus would shift to short-range projects as the end of the cycle approached. That's if the program wasn't killed outright for wasting resources on projects that couldn't produce measurable savings within the program cycle.

A more progressive free-ridership methodology would acknowledge prior program influences when they were clearly responsible for initiating a project, even if it has taken several years for the project to reach completion.

Killing Program Leveraging

Best practices studies and evaluator recommendations often urge program planners to leverage the education and promotional efforts of other organizations to help them reach and persuade customers to act on efficiency projects. For example, programs may ally with the federal ENERGY STAR® program, adopting its logo and its reputation in the market to help engage customers. Programs may enlist trade allies' training and marketing resources to complement their own. Programs may even adjust their marketing efforts to "sell the sizzle" instead of push the rebate transaction, emphasizing the non-energy benefits (comfort, improved indoor air quality, green bragging rights, etc.) that customers may value more than the energy or dollar savings. This alignment can be more effective at reaching customers, and so can represent a good use of program resources.

A conservative free-ridership measurement may seriously downgrade the net savings because of these program strategies. If customers report that they remember the ENERGY STAR logo or information more clearly than the program's marketing materials, that may be taken as an indicator that it was ENERGY STAR, and not the program, that was the motivator. The same could be true if customers remember the influences of trade allies more strongly than the program influences. Likewise, if customers report that they implemented the measure because they knew or cared more about its non-energy benefits, conservative free-ridership measurements may deem them to be free-riders, because it looks like they would have implemented the measure even without the program's rebate. These kinds of evaluation judgments can have the effect of discouraging program implementers from using leveraging strategies, as they end up being penalized for doing so. The result could be less cost-effective programs, fewer savings, or even dead programs.

A more progressive free-ridership methodology would credit the program for marshaling all those program leveraging influences to persuade the customer to participate in the program.

Killing Market Transformation

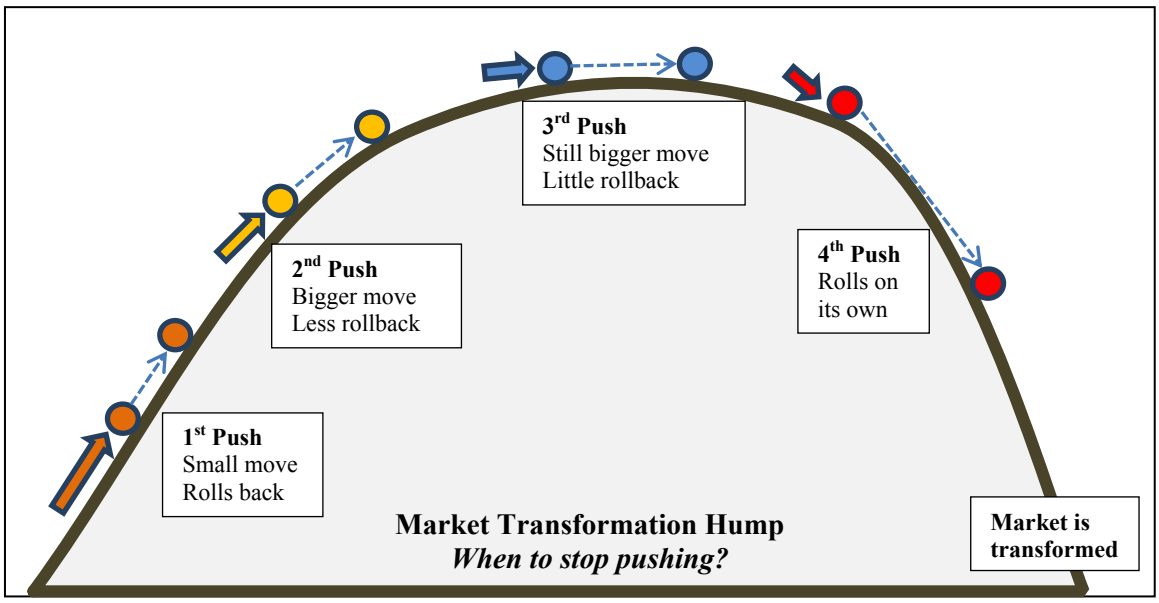
For most energy efficiency programs, the ultimate goal is market transformation, that magical point in the life of an energy efficiency measure when it has been embraced by the market and requires no further assistance from energy efficiency programs in order to continue with widespread adoption. When market transformation has been achieved, it becomes a waste of program dollars to continue pushing the measure. Virtually everybody can agree that this is clearly a time when no more program resources should be expended on the measure. The problem is in determining the point at which market transformation has been achieved. Over the lifetime of a product, and of the programs encouraging it, the rate of free-ridership will change as market conditions change.

Figure 3 provides a simplified way to think about this challenge, for a hypothetical efficiency product with a relatively short measure life compared to the life of a program that promotes it (i.e., the program will touch customers multiple times as they use the product). In the early days of an energy efficient measure's product life, there is a steep hump of market resistance to overcome. Customers are unfamiliar with the measure, contractors are not encouraging its use, suppliers are charging a premium, the measure is not widely available, etc. This is the point that an efficiency program may provide the first push to encourage market adoptions. That push may require a lot of education, high levels of incentives, demonstration projects, and other market interventions. It is also possible that a substantial fraction of the program participants are early adopters and free-riders; that is often part of the price of introducing new efficiency measures into the market. When that first push has run its course, if the program doesn't continue, the measure is likely to slip back in market adoptions and may get nowhere.

If the program continues with a second push on the measure, it will encounter less resistance and will make more progress in market adoptions. This is the point at which a conservative free-ridership measurement can do active damage. Part of the reason for the lesser resistance may well be that some of the influences from the first push are still resonating in the market, or that there has been some spillover from the first push. If the free-ridership measurements deem those first push influences on participants as causing free-ridership, then the success of the second push will be diminished, the program may be killed, and any progress in the market may be rolled back.

If, however, the program continues with a third push on the measure, it may encounter only small resistance and may win high levels of market adoption. Some might characterize the measure, at this point, as "low-hanging fruit" that the program should be de-emphasizing in favor of measures that are not as far up the adoption curve. If the free-ridership measurements find the influences on this third push to be largely hold-overs from the first and second pushes, and deems many of the participants to be free-riders, then, again, the program may be killed. This may not lead to a market roll back, but it may stall market progress.

Figure 3.Pushing Over the Market Transformation Hump



If the program survives to apply a fourth push on the measure, then it will find very little resistance, and will enjoy widespread adoption. If the consequences of the previous pushes are counted as free-rider influences, then most of the participants may be deemed free-riders, and the program would therefore be hit hard with very low net savings. The problem rests with the question of whether the product would ever get over the hump without that fourth push.

This example illustrates the difficulties of deciding when to pull the plug in the life of a successful program, and the role of free-ridership measurements in making that decision. If overly conservative free-ridership measurements are taken, and if free-ridership is used to penalize programs, then a lot of program efforts may be killed prematurely before market transformation or ambitious levels of savings are achieved.[1]

This example also illustrates that importance of estimating program spillover. As the measure is moved up the market transformation hump, spillover should increase as there are more satisfied customers, buying more of the measures even without the rebates, and influencing non-participants to do the same. Indeed, without the snowball effect of spillover, programs have a large burden to push the measure up and over the hump entirely on their own. While spillover can be difficult to measure, it is not zero, and it can be estimated.

Partial or Binary Free-Ridership?

These examples all beg the question of whether program-driven market interventions to encourage energy efficiency are the triggering factor in helping a customer to adopt a given measure at a given point in time. The basic concept of free-ridership is that, for those participants who are free-riding, something other than the program was the trigger, and their use of program resources was unnecessary or wasteful of ratepayer dollars.

[1] Of course, different products will have different lifecycles and different rates of adoption, so the trajectory of market adoption will vary. If this is accepted as normal, and the process of market adoption is considered by evaluators and policymakers, then programs and products can be smarter in adapting their approach to the market over time.

That said, few market observers would say that utility program interventions are ever the only factors needed to bring efficiency measure savings the market. To do so always requires other market actors: manufacturers, distributors, retailers, contractors, early adopters, organizational supporters, marketers, etc. Yet the simple, conservative concept of free-ridership implicitly asserts that efficiency programs should be the primary cause of action. If the programs get help from other sources, then their participants are free-riders to some degree. These are known as 'partial free-riders', and the extent of influence from other factors determines the degree of free-ridership. From this perspective, partial free-ridership measurements grossly under-estimate the degree to which these other market factors are needed to achieve program savings, and so they grossly under-estimate partial free-ridership. As a practical matter, every participant would be a partial free-rider.

An alternative way to measure free-ridership would seek to identify when the program influences were the trigger to achieving savings, rather than the degree to which they may have contributed. Under this view of free-ridership, program savings would be credited whenever the program's intervention was necessary for a given program participant to achieve the savings at that time. This would be a binary, yes/no determination for each participant in the program and the free-ridership study. The only free-riders would be the 'pure' free-riders who clearly would have implemented the measure on their own. A program's overall free-ridership would be based on the percentage of participants who were found to be free-riders. The concept of 'partial free-riders' would be abandoned.

Of course, the debate about free-ridership is much more involved than this very brief discussion may suggest. For a current summary of the issues, the reader is referred to (NMR &RiA 2010), as well as to (Friedman 2007), (Peters& McRae 2008), and others cited in that summary.

When to Kill Programs

None of this should be construed to say that programs, or the efficiency measures they promote, should never be killed. As markets transform, as products become mainstream, as customer behavior permanently changes, it becomes important to discontinue pushing for the old measures, and to refocus program efforts on advancing energy efficiency to the next level[2]. Every efficiency measure and program goes through a lifecycle, from initial rollout, through capacity building, through mainstreaming, to market transformation. As that process runs its course, free-ridership levels will change.

In the early stages, there may be high levels of free-ridership, because the only customers willing to adopt the measure may be the early adopters, many of whom would have installed the measures anyway. But by doing so, they are helping to build the market, to encourage suppliers to stock more efficient products, and to help installers become more familiar with the measures. This is part of the capacity building process.

In the mainstream stages, the programs can focus more on bringing in customers who could use the measures, but who are not using them for a variety of reasons that the program can help to overcome. Some free-ridership will still be present, inevitably, but if the program is bringing in too many free-riders it would indicate a need for targeting efforts to the other customers. This would probably be a bad time to kill the program outright, as it would throw away the investment made to get the market to this point.

Eventually, however, as the measures achieve widespread adoption, the levels of free-ridership are likely to increase again, unless program efforts can identify and target only the laggards who are slow to adopt efficiency measures. At some point it is time to pull the plug on the program and let the market continue without program dollars. Identifying the right time to pull the plug is not easy, but

[2] Of course, programs should also be killed for gross mismanagement or ineffectiveness. We're talking here about decently managed programs that are achieving savings and advancing the efficiency market.

good free-ridership measurements can provide important insights into customer behavior that will inform that judgment. If the plug is pulled too late, then program dollars are being misapplied. If the plug is pulled prematurely, use of the measure may stall or roll back, indicating that the market was not actually transformed and needed continuing support. After a premature program stop, going back into the market to re-start adoptions of the measures can be expensive, and in the meantime savings will be lost.

As this discussion illustrates, free-ridership can provide useful information on how and when to adjust programs and how they are delivered. It is not the only figure of merit for programs.

This all presumes a clear policy agreement about how to determine the right time to kill programs. Lacking such clarity, programs may die prematurely, for the wrong reasons. As the examples above illustrate, a program may be given poor grades for performance or cost effectiveness if the free-ridership measurement is based on overly-conservative criteria. The point is not that programs should never be discontinued, but rather that the criteria for doing so should be based on clearly articulated and applied measures of performance that do not inadvertently conflict with broader policy goals, such as market transformation or deep energy savings. Setting the rules for free-ridership measurement, and avoiding these kinds of problemsis a critical part of setting those performance measures and policies.

Conclusion

Clearly, there needs to be a lot of informed judgment to make good decisions about when to discontinue or to re-focus program efforts. Free-ridership measurements can help to inform those judgments. The caution we urge is in making the policy choices about how to make and use those measurements. If made too conservatively, good programs will be killed prematurely and savings will be lost. If too many programs meet this fate, then ambitious savings targets and market transformation goals will not be achieved. Evaluators have a role in helping policymakers to understand the implications of free-ridership measurement rules, because a simplistic understanding of free-ridership can lead to these unintended consequences.

To summarize the recommendations discussed in this report:

- Take care when drawing program boundaries for purposes of evaluation that,you account for overlapping program influences. Consider expanding the boundary to encompass all important program influences.
- When measuring non-participant efficiency levels, be sure to account for spillover from participants and program activities so as not to over-estimate the non-participants' or baseline efficiencies.
- When measuring free-ridership in upstream programs, be sure to assess the multiple program influences on customers (direct and indirect), and don't rely just on their direct perceptions.
- When assessing efficiency actions by corporations or organizations which have adopted energy efficiency policies, do not discount the role of the utilities and their incentives in the creation of those policies in prior years.
- When evaluating efficiency actions that were influenced by governmental policies and programs, do not ignore the role of utilities and their incentives in helping to create the value derived from these complementary policies.

- Do not ignore or unduly discount the influences on customers of program efforts that span different program cycles. Today's apparent free-rider may represent spillover from prior years.
- Do not ignore or unduly discount the effects of program leveraging strategies that produce increased program participation.
- Do not overly penalize programs for free-ridership that is a normal part of progress toward market transformation.
- Be aware of the problems of assigning 'partial free-ridership', remembering that program influences will never be the only ones that enable savings. Focus instead on determining when program influences were the trigger that produced savings.
- Make sure that policy rules for measurement of free-ridership are consistent with overall savings objectives, and that they do not unreasonably discount real savings.
- Have clear policy direction for when to kill programs, based on program lifecycles not just free-ridership.

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