Testing the TRC: Marketing Strategies and O&M Programs That Can Grow Cost-Effective Savings in Hard DSM Times

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ABSTRACT

The Total Resource Cost (TRC) test has come under scrutiny due to challenging regulatory requirements for efficiency: Utilities are directed to pursue aggressive goals, but some promising program concepts fail cost-benefit analysis under the TRC. Understandably, some utilities are experiencing frustration over how to achieve deeper energy savings in this context. Although the TRC may be an obstacle to some types of demand-side management (DSM) programs and pushing for needed modifications to the test (such as the inclusion of non-energy benefits) is important work, this paper contends that a great deal of cost-effective efficiency is still available under the current cost-benefit paradigm.

There are many underutilized strategies and programs that can increase cost-effective efficiency savings and build a robust DSM portfolio that is economically justifiable under the TRC. Through more-effective marketing and communications, utilities can dramatically enhance participation and consequently generate more savings from existing cost-effective offerings. In other words, utilities can better advertise their wares. Furthermore, utilities can adopt or strengthen their support for proven options that go beyond "widget-based DSM"—options such as energy manager programs and Building Operator Certification. While still working toward increasing the flexibility of the TRC regime, utilities can also increase their own flexibility by adopting more sophisticated communications and innovative DSM programs to achieve their towering efficiency goals.

Is the TRC Really Preventing Utilities from Meeting DSM Goals?

The TRC has come under fire recently as the bane of DSM growth and a threat to achievement of "all cost-effective efficiency."[1] But is the TRC really keeping utilities from meeting their goals? Utilities find themselves caught between commissions that are bent on protecting ratepayers, ambitious state efficiency targets, and rising federal appliance standards and codes that are retiring some of the "easy" energy-savings opportunities. In this context, with so many apparent obstacles to acquiring cost-effective short-term savings, the deficiencies of the TRC may seem like the last straw.

For example, Neme and Kushler (2010) criticize the TRC from a policy perspective, noting the difficulties utilities will face as DSM portfolios grow and greater demands are put on them to deliver all cost-effective savings. For example, more-comprehensive residential programs like deep retrofits can't pass the TRC due to high customer costs and long payback periods. Additionally, because measurement of non-energy benefits is more challenging and controversial than identifying energy-related benefits (and costs), in practice the TRC only

[1] The E Source DSM Executive Council, held twice annually, consistently bears witness to the topic of how cost-effectiveness testing under the TRC poses obstacles to some program types that have higher costs, including low-income programs, home performance and deep retrofits, and some emerging tech programs (for example, efficient windows.) Building performance advocates have similar critiques (LeBaron 2011).

compares partial program benefits to all of the costs. Consequently, except in very few cases in the utility industry, vast non-energy benefits associated with comprehensive retrofits and other programs remain unaccounted for.[2] Neme and Kushler argue that working with regulators to adopt the Program Administrator's Cost Test (PACT), which focuses solely on the utility costs, is a superior solution because it makes evaluation easier and less expensive, and puts decisions to adopt efficiency programs on equal footing with supply-side resource acquisition.[3] However, Neme and Kushler also admit that moving regulators away from the TRC, which has long been established as the primary "gatekeeper" test validating the economic integrity of proposed DSM programs in many jurisdictions, will be a tough row to hoe.

This paper advances the argument that utilities, efficiency advocates, and regulators should continue the important dialogue about modifying TRC protocols to incorporate both the energy and non-energy benefits of efficiency (among other possible tweaks) and even consider alternative tests. At the same time, utilities also have plentiful options for increasing their DSM savings by working within the existing TRC framework. In fact, focusing on the lost (for now) opportunities of comprehensive programs that can't satisfy the TRC due to high incremental costs deflects attention away from opportunities for savings that are not as TRC-challenged.

Innovative Marketing and O&M Programs Work Under the TRC

Utilities can find as-yet-untapped energy savings while adhering to the dominant TRC framework. Some options for coping with challenging energy-savings requirements have been highlighted in other research (Nowak et al. 2011). For example, employing innovative marketing and engagement practices can help utilities gain more traction with existing programs that pass the TRC. Additionally, some programs that deliver proven cost-effective savings under the TRC, such as energy manager programs and Building Operator Certification (BOC) training, are not yet in the utility mainstream.

What We've Got Here Is a Failure to Communicate

Marketing matters, but many utilities take a "if you build it, they will come" attitude toward DSM programs. Building a basic website and printing bill inserts are not sufficient to maximize awareness and traction with customers. However, a well-conceived and well-timed strategy that involves market research, multiple channels and creative partnerships, and even coordinated incentive increases can create a seismic shift in customer awareness and uptake. Any utility can benefit from enhancing its marketing and communications, but these efforts may be even more important for utilities in states that have well-established DSM portfolios because these utilities have likely garnered savings from the customer segment that is already aware of and interested in energy efficiency (Nowak et al. 2011). Creative communications, greater

[2] The non-energy benefits of comprehensive residential retrofits can be larger than the energy benefits; see Knight et al. 2006. Though there are some examples of states incorporating non-energy benefits (such as water savings) and even moving toward acknowledging a variety of non-energy benefits by encompassing them in percentage-based "adders," a recent national survey of evaluation policies and practices found very little evidence of states adopting comprehensive frameworks for including non-energy benefits in the TRC (Kushler et al. 2012).

[3] Eckman (2011) argues that, from a power-planning perspective, treating energy efficiency as a resource requires a fundamentally different approach from the TRC: Utilities should undertake investing up to 100% of the cost as necessary for all measures in their supply curve that are less expensive than new generation supplying the same load-service function.

incentives, and convenient participation options can catch the interest of a broader audience and increase participation in existing cost-effective programs. Avista Utilities and Baltimore Gas and Electric (BGE) are two examples of this strategy.

Avista's "Every Little Bit" Campaign

The dramatic results from Avista's "Every Little Bit" marketing campaign have been covered extensively as both a communications and behavioral victory in the utility industry. Starting in 2008, the utility undertook an incremental campaign involving both mass media and creative competitions to initially raise overall awareness of the utility's energy-efficiency programs among customers and to counter the widespread perception that "customers are doing all they can" by providing clear guidance—and incentives—for doing more.

Evaluation of the campaign demonstrates that it drove a major increase in customer participation. Incentives were strategically enhanced after the campaign started to help accelerate conversions. Even in a down economy, the "Every Little Bit" campaign succeeded in increasing rebate payouts by 40% in 2010 (primarily residential), and the campaign has seemingly increased the perceived value of efficiency investments (Summit Blue Consulting 2010). In other words, for a mere $700,000 per year, Avista almost doubled its residential sector uptake in efficiency programs. This sea change in customer awareness and in the "care factor" about energy efficiency is replicable and works with programs utilities already have.

BGE's PeakRewards Program Campaign

When BGE moved from old load control switch technology to programmable communicating thermostats (PCTs) in 2008, the utility not only wanted to get its switch program participants to convert to thermostats, but also to grow its overall load management resources. By September 2010, only three years into the program, the utility had doubled its enrollment each year, met 67% of the total enrollment goal, and had engaged nearly one-third of the eligible population (Abrams 2010).

To elicit this remarkable uptake, BGE started out with significant monthly incentives that attracted the attention of customer segments beyond the "green" or "energy-interested." The utility also used advanced analytics to develop messages and advertising that were in synch with customers' financial interests. It also used the important technique of social proof, using testimonials to explain direct load control in simple terms, which provided reassurance that ordinary people could participate in the program. This campaign successfully appealed to many customer groups, increasing enrollments to 125,000 in 2009, up more than 100% from 63,000 in the inaugural year.

In 2010, BGE innovated again with referral-based marketing, contests, creative channels and social media, and even a promotional partnership with the National Football League's Baltimore Ravens. Segmentation was also important for driving customer participation in the utility's DSM programs: BGE successfully targeted a newly created "high user/high income" segment with online ads in the "Green Living" section of *The Baltimore Sun* (Behringer 2010). These combined practices again doubled both awareness of and participation in PeakRewards in its third year, with enrollment in the program at 250,000 in 2010.

The success of Avista and BGE's campaigns demonstrate that a lack of attention to serious marketing efforts should be considered more of an obstacle to meeting ambitious DSM goals than the TRC.

O&M Delivers Cost-Effective Savings—and Increased Efficiency Investment

Commercial building O&M programs such as energy manger programs and BOC trainings are making inroads in the DSM world, but they are not yet widely utilized. In some areas (the Pacific Northwest, for example), these complementary programs have a long and successful history, but the utility industry has not thrown itself behind these programs to normalize them as standard and fully supported offerings. One concern utilities have is how to measure the savings—some claim that it's more difficult to measure O&M savings than it is to calculate savings from "hard measures" like boilers. At the same time, installing a measure like a HVAC system doesn't guarantee that it will be maintained or used appropriately to deliver savings over the measure's life.

This aversion to exploring O&M programs is unfortunate because millions of commercial and industrial (C&I) square footage suffers from inefficient O&M techniques (even if efficient equipment is installed). Utilities are losing out on substantial energy efficiencies by not making the effort to support these options and to quantify and defend the O&M savings stemming from them. The time may be ripe for utilities to take a closer look at what these programs can offer in terms of rounding out DSM portfolios and delivering more cost-effective savings under the TRC paradigm.

Energy Manager Programs Deliver Big Savings Under the TRC—and Cover Much More Square Footage than Deep Retrofits

Energy manager programs focus on getting large commercial, industrial, and institutional accounts, representing a significant percentage of total energy use, under better management from an energy perspective. Because of the size of the buildings they oversee, interactions with a few energy managers can affect millions of square feet of energy-intensive building space. Additionally, customers with an energy manager on staff are more likely to identify and act on energy-saving opportunities, and create a conduit to management and employees about the importance and value of energy (Farnsworth 2008, Simpkins 2012).

Despite being well established and extremely successful in the Pacific Northwest, energy manager programs (also known as Resource Conservation Manager or RCM programs) are not yet widely employed. According to the E Source DSMdat, a database of over 3,000 efficiency programs, only four utilities have active RCM programs in 2012: BC Hydro, Manitoba Hydro, Puget Sound Energy (PSE), and Snohomish County Public Utility District (SnoPUD). Many utilities could benefit from embracing an energy manager program as a core C&I offering; however, our research uncovered concerns about the reliability of "softer" behavior-based savings that aren't derived from widget-based programs (Drexler 2011, Farnsworth 2010).

However, utilities can help themselves and the cause of DSM by recognizing that measures and proper O&M behavior are both critical to sustaining and growing energy savings in the C&I sector (Simpkins 2012). Looking to utilities that have developed evaluation methodologies to claim these softer savings that pass regulatory muster can help utilities looking for ways to innovate under the TRC. For example, PSE claimed 20 million kilowatt-hours (kWh)

and just over 1 million therms from its RCM program in 2010. SnoPUD has a much younger and smaller RCM program, but it was still able to claim 1.7 million kWh in savings (Drexler 2011).

PSE's RCM Program Passes the TRC with Flying Colors

PSE is Washington's largest combined utility and faces some of the most ambitious energy-efficiency targets in the United States. A significant portion of the utility's DSM portfolio savings comes from its RCM program.

PSE has been operating an RCM program since 2002, focusing on optimizing energy use in larger businesses with multiple facilities, such as schools, hospitals, public sector agencies, and any larger C&I customer (Puget Sound Energy 2011b). In return for commitments to achieve 3–5% of bill savings from operational and behavioral changes, PSE subsidizes a percentage of an energy manager's salary to achieve energy-efficiency improvements through both direct-measure upgrades and indirect O&M and behavioral changes. Energy managers also receive a cash stipend to attend trainings and an annual license to use a resource accounting software to track savings.

Not only does PSE get reliable savings from RCM, but it also found that its RCM program is one of the biggest and cheapest conservation opportunities per C&I customer—even in a state with low avoided costs like Washington. The TRC results for PSE's business efficiency programs are featured in Table 1. Interestingly, the RCM program delivers the lowest program administrator cost per kWh saved at $0.037/kWh, and by targeting large facilities and campuses and optimizing energy efficiency over large square footages, the RCM program has the highest benefit-cost ratio under the TRC at 3.4.

The data from Table 1 show that PSE's RCM program is not a throwaway effort to indulge a DSM manager's interest in behavior change; it's the second largest source of energy savings on the C&I side, and the lowest-cost C&I efficiency resource. Utilities facing ambitious state-mandated efficiency goals should consider an energy manager program as a viable option to pursue under the TRC. An initial course of action would be to test-drive these programs by working closely with some obvious targets like schools and public facilities, which typically look for any and all opportunities to save money as their budgets are routinely slashed. Ignoring cost-effective energy manager programs is a self-generated obstacle to maximizing opportunities for cost-effective efficiency.

Table 1. TRC Results for 2011 Puget Sound Energy C&I Programs

Program Name	Measure Life (Years)	Savings (kWh)	Program Overhead Cost	Incremental Measure Cost	Total Resource Cost	Resource Cost per kWh	Total Benefits per kWh	TRC Benefit -Cost Ratio
Resource Conservation Manager	3	32,500,000	$1,147,897	$1,950,000	$3,097,897	0.037	$0.126	3.4
C&I New Construction	15	15,500,000	$499,734	$6,045,000	$6,544,734	0.05	$0.163	3.3
Small Business Energy Efficiency	12	23,000,000	$700,836	$7,828,000	$8,528,836	0.05	$0.156	3.1
C&I Incentive Program	10	14,319,000	$889,035	$4,868,460	$5,757,495	0.061	$0.128	2.1
LED Traffic Signals	7	500,000	$13,543	$160,000	$173,543	0.067	$0.143	2.1
C&I Retrofit	12	78,000,000	$3,046,487	$45,240,000	$48,286,487	0.083	$0.156	1.9
Large Power User—Self Directed	12	13,900,000	$313,725	$9,730,000	$10,043,725	0.097	$0.133	1.4
Commercial Information Services	–	–	$160,276	–	$160,276	–	–	–
Business Efficiency Programs Portfolio	**10**	**177,719,000**	**$6,771,533**	**$75,821,460**	**$82,592,993**	**0.07**	**$0.151**	**2.2**

Source: Puget Sound Energy, "Energy Efficiency Services, Exhibit 2—Electric and Gas Program Utility Cost and Total Resource Cost Estimates," 2011

Training for Cost-Effective Operational Savings (and Investments): Building Operator Certification

Yet another area where utilities could pursue cost-effective savings in the TRC paradigm is either starting or systematizing their support for BOC training. For many facilities that have building operators, but may not want to invest in a full-time energy manager, training building operators tills nearby ground by increasing O&M expertise. The BOC is a nationally accredited standardized training, focusing on the vital components of running a building efficiently. The training curriculum includes classes on all aspects of building function, including electrical HVAC systems, building controls, efficient lighting, maintenance and building codes compliance, and energy conservation through behavioral changes. BOC-trained operators view

the certification as an important, and increasingly expected, credential in their field that builds credibility with employers and staff at their companies and enables them to be more proactive in their jobs.

The BOC has been extensively evaluated in California, the Pacific Northwest, and the Northeast, revealing that enhanced understanding of facility systems consistently leads to more-frequent and extensive O&M behaviors compared to participant practices prior to training and compared to their untrained peers (McRae and Mayo 2006). All evaluations show robust savings, which vary by facility mix and other factors but often exceed an average of 40,000 kWh per participant per year. The Northeast Energy Efficiency Partnerships has developed estimates of the savings impact of BOC in trainees' facilities which have been adopted in the Midwest as well: 0.18 kWh/square foot for non-rebated actions, and 0.35 kWh/square foot including O&M and rebated measure savings (RLW Analytics 2005, Opinion Dynamics 2010).

Many utilities and regional organizations offer marketing and some support for training building operators through the BOC, such as providing partial or full tuition reimbursements. Utility support for the BOC often comes from marketing or training budgets that aren't directly subject to cost-effectiveness testing in the way that full DSM programs are. However, the BOC has been determined to be cost-effective from a total resource perspective: According to an evaluation for the Northwest Energy Efficiency Alliance (NEEA) the BOC was highly cost-effective with a TRC ranging between 2.9 and 4.8 under differing model assumptions (Summit Blue/Stratus 2003). Some utilities are even working to claim savings from the behavioral changes made by newly trained building operators, as well as the rebated measures that trained operators install (Farnsworth 2010). Additionally—and importantly for utilities—trained operators are also more aware of their retrofit options and show an increased likelihood to participate in DSM programs that are already cost-effective under the TRC (Opinion Dynamics 2008).

The utility's role in supporting the BOC is crucial for creating a fleet of well-operated commercial buildings as well as priming the operator audience to make more use of existing C&I retrofit programs offered by utilities. Utilities are often an important conduit for information about the training, and subsidies for the tuition reduce sometimes significant barriers for prospective participants. (Navigant 2011; RLW Analytics 2005). However, utilities and their regional efficiency allies could be more strategic about their support of the BOC and do even more to strengthen this important training option.

Although the marketing, outreach, and tuition support utilities have provided has helped make the training desirable and accessible, these efforts could evolve into a more rigorous plan of funding and marketing to achieve percentage training goals that significantly uplift training levels in various building sectors. For example, the Midwest Energy Efficiency Alliance held 13 trainings in Minnesota between 2005 and 2010, resulting in 230 operator certifications (Navigant 2011a). Similarly, the Northwest Energy Efficiency Alliance, through its support of BOC training in the Pacific Northwest, helped train 1,720 operators between 1997 and 2010, while 554 had their certification retired, for a total of 1,166 active BOC trainees (Navigant 2011b). While this is an excellent start, it only scratches the surface of the non-residential building sector: thousands of buildings in these states still have untrained operators, presiding over millions of building square footage being operated inefficiently. Setting robust goals—for example, 30% of building operators in the school, public, and hospital sectors certified within five years—and working toward them with regional organizations could help accelerate efficient building

operations more dramatically than funding some marketing or subsidizing a certain number of tuition requests per year in this program with tremendous proven benefits.

Conclusion: Don't Let the Shortcomings of the TRC Distract Us from Existing Cost-Effective Opportunities

The TRC test was created out of concern for the total cost of DSM to ratepayers: It helps us understand which saved kilowatt is the cheapest overall for society.[4] As utilities, efficiency advocates, and regulators work to overcome the TRC's shortcomings in determining DSM cost-effectiveness, there are other available options for coping with—and succeeding under—the existing cost-effectiveness paradigm.

The examples in this paper show that there are still plenty of savings left on the table under the TRC, both from gaining more traction with existing standard DSM offerings, and integrating programs that focus on efficient operations and maintenance. Dedicated and innovative marketing and communications efforts can help grow core DSM programs that are already established. Additionally, there are several proven yet underutilized offerings, such as energy manager programs, that are winners under the TRC. Related efforts to train more building operators can yield increased O&M savings as well as drive participation in utility C&I programs. To capture savings from these opportunities, utilities will need to move beyond the comfort zones of "if you build it, they will come" perspectives and widget-centric programs to make these strategies and programs central to their DSM efforts, as a few earlier adopters have done.

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[4] Thanks to Michael Reid, former Senior Advisor at E Source, for stressing this point of total costs, and catalyzing the creation of this paper.

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