

Rate Payer Funds for Performance Contracting: Three Approaches to Measurement and Verification and Market Outreach

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ABSTRACT

This paper surveys three performance contracting oriented programs, one each in Colorado, New York and Wisconsin, as representative of a range of resource acquisition and market transformation approaches to measurement and verification (M&V) and contractor participation. Comparisons are made of different program objectives, designs, and implementation approaches. Through the program descriptions, this paper also compares the advantages and disadvantages of different approaches to M&V and energy efficiency project sponsor development. Recommendations are discussed for different approaches, depending on the objectives of the program.

Introduction

Performance contracting is a business arrangement between a buyer and seller in which compensation paid to the seller is based, at least in some part, on the energy savings achieved by the customer. Since the early 1990s, performance contracting has been an important part of shareholder funded incentive programs (Schiller, 2000). Performance contracting has grown from experimental programs in the Northeast to a fundamental part of many states' portfolio of demand side management programs. In California and Colorado, for example, performance-contracting programs for the last several years have been the single largest program category, and in Texas, the deregulation legislation specifically calls for "standard offer programs" as the fundamental mechanism for ratepayer funded energy efficiency.

Two positive attributes of performance contracting programs, from a public funds administrator perspective, are:

- The "pay for performance" aspect, which provides built-in documentation that public funds are being paid for actual savings, and
- Movement of marketing responsibility from an administrator to a third-party – typically energy service companies.

With respect to these attributes there are various ways to administer a performance contracting program's measurement and verification (M&V) requirements and program outreach activities for soliciting participants. In this paper three different approaches to designing and running performance contracting programs are discussed with emphasis on the M&V and program outreach elements. The programs are:

- Wisconsin Energy Efficiency Performance (EEP) Program – a market transformation program where the emphasis was on encouraging performance contracting between contractors and customers. Outreach and customer recruitment are a key aspect of this program and M&V is primarily an issue between the end-use customer and contractor, not the program administrator.
- New York Performance Program – a standard performance contract program with goals of obtaining resources and increasing the size of the energy services sector in the state. Outreach is also an important aspect of this program with M&V being provided by either the contractor or the administrator.
- Colorado DSM Bidding Program – a resource acquisition program where the primary objective is obtaining cost-effective resources. Selection of participants was done through a solicitation where price was a selection criterion. M&V is conducted by a third-party, and not the contractor, for all of the projects.

Wisconsin Efficiency Performance (EEP) Program Pilot

In 1998, the State of Wisconsin's Department of Administration (DOA), the agency in Wisconsin responsible for undertaking public benefit funded energy efficiency programs, engaged Nexant, Inc. (formerly Schiller Associates) to design and administer the Energy Efficiency Performance (EEP) program. EEP was a pilot, non-residential program designed to promote performance-based energy efficiency products and services in a limited area of Northeastern Wisconsin that has a relatively small commercial market (Farinaccio, et al, 2000). These products and services would be provided by a variety of private sector entities. The EEP program started accepting project applications in 1999.

During two and a half years the Program supported 79 energy efficiency projects of various sizes totaling over 8,350 kW of load reduction, 46,600,000 kWh of annual guaranteed energy savings, and 530,000 therms in annual guaranteed gas savings. The projects involved 16 diverse project sponsors, a range of commercial and industrial customers, and various energy efficiency measures. In 2002, this pilot program ceased accepting project applications and DOA decided to not include performance contracting in any of its statewide initiatives. More information about the EEP Program can be found at <http://www.wifocusonenergy.com>.

Program Objective

The primary objective of the EEP program was to focus on market transformation rather than on resource acquisition, emphasizing the provision of performance-based energy efficiency products and services within the pilot territory. The goals of the program included the following:

- Stimulate performance-based energy efficiency business opportunities for local energy efficiency service providers and encourage entry of non-local energy efficiency service providers to the Wisconsin market,
- Contribute to the creation of a self-sustaining market for performance-based energy efficiency products and services,

- Encourage customers to obtain performance-based energy efficiency services directly from the private sector, and
- Increase customer demand for private sector performance-based energy efficiency products and services.

Program Design

The EEP program design supported the goals listed above by offering a performance incentive and sharing performance risk with service providers (called “project sponsors” or simply “sponsors”). To participate in the program, sponsors had to submit a business plan documenting how their projects would constitute a new business practice (e.g., a performance-based product or service that they did not offer previously).

Unique among public benefit-funded performance contracting programs, the EEP program required that sponsors and their customers enter into a performance contract that included an energy savings guarantee. The performance contract had to include at least a three-year term, a penalty mechanism if the performance was not achieved, and a sponsor-customer negotiated M&V plan. The M&V of energy savings was to be negotiated and conducted by the parties to the performance contract (i.e. the contractor and the customer). The administrator of the program reviewed the supporting data and claims to ensure the information met minimum standards.

Eligibility criteria. Sponsors could include contractors (e.g., lighting, HVAC, general), engineering and architecture firms, equipment manufacturers and distributors, and energy service providers. End use customers were not eligible as sponsors and could not submit a project application to the program. Projects and measures had to be non-residential retrofits with measures at least meeting ASHRAE 90.1 standards.

Performance incentive and risk payments. Performance incentive or risk payments were offered to compensate the sponsor for the additional risk assumed in providing a savings guarantee to the host customer, and to offset some of the cost of developing a new performance-based product and service offering. If the sponsor of a project documented that the project realized energy savings above the savings guarantee, the sponsor received a performance incentive payment. If the sponsor documented that the project did not realize energy savings above the savings guarantee, the sponsor received a risk payment. To inhibit the use of the performance incentive or risk payment as a form of rebate to customers to “buy down” the first costs of a project, and to support longer term business relations between sponsors and customers, the performance incentive and risk payments were paid one year after installation of projects. It is not clear how successful this design element was in having sponsors not share the incentives with their customers.

There was a large difference in “payout “ between the performance incentive and risk payment, with the performance incentive being much higher. This was intended to discourage sponsors from overestimating projected savings and to promote conservative savings guarantees (thus, increasing the probability of successful performance).

Measurement and Verification

A unique element of the program was placing responsibility for designing and conducting M&V on the sponsor and host customer. The premise of the program was that sponsors and host customers could best represent their own interests in negotiating the appropriate level of M&V for their project and associated measures. The customer was required to agree to the M&V plan and to sign off on the sponsor-prepared performance report that documented the M&V of energy savings. The resulting level of M&V was to be considered the appropriate level “set by the market”.

Although the design of the program was to rely on the host customer acceptance of the M&V plan, the program administrator conducted reviews of the M&V plans and the sponsor’s reports for their compliance with the M&V plans and the adequacy of the supporting data. Generally the M&V reviews found that the level of M&V selected by customers and sponsors was less than what is typically required of public goods charge performance contracting programs and relied to a large extent on billing analysis and stipulated performance values while utilizing modest amounts of end-use metering

Program Participation and Promotion

The EEP program reserved a portion of funding for local project sponsors due to an initial concern that large national energy service companies might dominate the program. In fact, local sponsors were the dominant participants. Various large energy service companies stated that the pilot territory did not contain enough of the type of customers that they traditionally pursue (e.g., large commercial buildings, large school districts) and their ability to focus on the pilot territory was inhibited by previously established target markets and sales cycles.

The EEP Program was promoted via marketing and outreach activities through association with the entire Wisconsin Focus on Energy initiative (e.g., branding, mass media, website, energy conferences) and through targeted activities focused on sponsors and their associations (e.g., workshops, “cold calling”, targeted mailings). Early in the program, the program administrator undertook several rounds of “one-on-one” meetings with potential sponsors.

Modest response of potential sponsors during the first year of the program prompted the addition of technical assistance to the scope of work of the program. M&V workshops, case studies, a market assessment, and a project economic/financial evaluation tool were developed. As the participation in the Program increased, additional interest in the program was also generated through “word of mouth.”

Program Results

The EEP program experienced growing participation over time of (mostly local) sponsors. The EEP program received 118 applications submitted by 29 different sponsors. Projects that remained in the program and were installed numbered 79 involving 16 different sponsors. Project sponsors included six engineering firms, five contractors (electrical/lighting), and five equipment manufacturers (including two large national companies with energy service divisions). See Table 1 for a summary of savings.

Table 1. EEP Program Savings (for Three Funding Cycles)

	EEP I	EEP II	EEP 2001 II	Total
Active Projects	24	40	15	79
Projected kW Savings	2,731	3,340	2,294	8,365
Annual kWh Guaranteed Savings	14,095,976	17,129,244	15,370,162	46,595,382
Annual Therms Guaranteed Savings	150,206	302,249	74,013	526,468
Annual Guaranteed Energy Cost Savings	\$576,484	\$787,041	\$567,447	\$1,930,972

Almost all sponsors had no experience with performance contracting prior to participation in the program. The sectors of host customers included paper, consumer products, equipment manufacturing, warehouses, commercial office, restaurants, grocery, retail, schools, local governments, and hospitals. Measures were dominated by indoor lighting (50% of energy savings), followed by HVAC, compressed air, LED traffic lights, building envelope, motors, and controls.

One sponsor was responsible for 57 projects. Many of these projects involved lighting and small commercial customers, with several large projects involving HVAC and compressed air measures new to the sponsor. Because of the program, the sponsor developed performance contracting and M&V capabilities and changed its name to include the word “energy” in the title. As part of project development, this sponsor also used “temporary installations” and “demonstration M&V” of energy savings to sell projects.

Some sponsors participated only once in the program, and some potential sponsors dropped out due to unclear signals about the continuation of the program and the availability of incentive funds. Evaluation findings indicated that some sponsors shared performance incentives with host customers, using the incentive funds as a “rebate” and not surprisingly, that customers preferred rebates to savings guarantees. The sharing of incentives with customers raises questions of the role and motivation of customers in negotiating with sponsors appropriate levels of M&V and scrutinizing sufficiently Performance Reports and supporting data documenting energy savings – a key design element of the program. Independent evaluation findings, however, did not find significant variance between the audited energy savings and the reported energy savings.

With respect to the M&V, the M&V options generally selected by the sponsors (and supposedly in conjunction with the customer) were mostly International Performance Measurement and Verification Protocol (IPMVP) Option A (partially measured retrofit isolation) and Option C (whole facility billing analysis). In a few projects Option B (retrofit isolation) and Option D (calibrated simulation) were selected. Thus, the sponsors and to some degree the customers, tended to select the less detailed and less expensive M&V approaches. This indicates either that the less intensive M&V options were adequate for the perceived risk and types of measures and projects of the program, that customers and contractors felt that savings were accurately estimated prior to project installation, or that there was lower interest in documenting savings than, for example, assurances that the projects were properly installed.

In 2001 the State of Wisconsin initiated a series of statewide energy efficiency and renewable energy programs. The DOA decided to not include any performance contracting programs in the portfolio of energy efficiency programs and in 2002 decided to shut down the EEP program. While differences of opinion exist, with the program administrator

believing the program was successful and an effective tool for Wisconsin, DOA staff felt that the results of the pilot program were not conclusive enough to support expanding the program statewide. In addition, the evaluators of the program were uncomfortable with the program design (e.g., placing responsibility for M&V on the sponsor and customer and concluded that performance contracting was not effective for either market transformation or resource acquisition objectives.

NYSERDA's Commercial and Industrial Performance Program

The **New York Energy Smartsm** C/I Performance Program was developed by NYSERDA to encourage both suppliers and consumers of energy services to invest in the energy efficiency equipment for their facilities. This performance-based program offers incentive payments to energy service companies (ESCOs) that develop projects delivering verifiable annual electric energy savings. The average annual electric energy savings are verified for up to a two-year period following project installation.

The program was launched in early 1999, with the hope of leveraging up to \$400 million in capital construction for approximately 300 customers. Over the past three and half years, NYSERDA's C/I Performance Program has committed over \$65 million for performance-based incentives to 344 projects being implemented by 80 different ESCOs. These projects involve efficiency measures valued at over \$260 million in more than 1,800 buildings across the state. When complete, these projects are expected to deliver annual energy savings of 412 million kilowatt hours and summer peak demand reduction of 90 megawatts. As of the first quarter of 2002, more than 140 of these projects are now complete resulting in a summer peak demand reduction of over 40 megawatts.

Program Objective

As the electric industry in New York State moves through deregulation towards retail competition, NYSERDA has seen a need for programs that would encourage ESCOs to offer energy efficiency as a value-added service along with electric commodity sales. These programs would create a market for demand-side, as well as supply-side, resources. Therefore, NYSERDA created the performance contracting program to address several common barriers, including the lack of information, customer's aversion to risk, and limited financial resources to implement energy efficiency. The C/I Performance Program has two primary objectives: facilitate development of a strong energy services industry and obtain cost-effective energy resources.

Program Design

The New York program offers fixed-price incentives for documented energy savings achieved by installing energy efficiency measures as specified in a standard agreement. Only ESCOs can be project sponsors and receive incentive payments. Incentive payments are performance-based and vary by technology and actual savings achieved. Savings are documented according to a set of M&V guidelines.

Energy efficiency incentive rates are shown in Table 2. A project's total incentive is calculated by multiplying these rates by the average annual energy savings (one full year of energy savings) achieved by a project over the M&V period.

Table 2. NYSERDA Energy Efficiency Incentive Rates

Measures/Technologies	Incentive Rates
Lighting	10.5¢ per kWh
Motors & other pre-approved measures	12.8¢ per kWh
Cooling	28.8¢ per kWh
Custom Measures	Determined on project basis

Smaller sites receive an additional 20% over these incentive levels. A bonus incentive of \$300/kW is also added for summer peak demand reductions associated with installing higher efficiency electric chillers and unitary A/C units. Documented Nitrogen Oxide (NOx) emission reductions achieved by energy efficiency projects receiving incentive funds are also eligible to receive additional incentives equal to \$4,000 per ton of NOx emissions reductions. The NOx emission reductions are aggregated by NYSERDA from the eligible projects.

Measurement and Verification

An ESCO may handle the M&V documentation itself or elect to have NYSERDA, and its retained contractor, take responsibility for M&V. If NYSERDA is responsible for M&V, the total incentive will be reduced by 25%. Only a limited number of projects have NYSERDA being responsible for M&V.

The standard M&V period is up to two years. However, for measures where the reliability and persistence of savings is high, a single year of M&V may be appropriate. NYSERDA has established an accelerated M&V approach with emphasis on equipment commissioning. This includes the development of sample M&V plans for various types of measures and commissioning protocols. For more complex measures, and those with significant interaction or dependence on customer interaction, the persistence of savings is less certain. These projects require M&V to extend for up to two years.

Program Participation and Promotion

A baseline survey of ESCOs conducting business in New York was performed in 1998 just before the program was launched to assess ESCO activity level prior to program inception. The survey revealed that 13 ESCOs were active in the State. Performance contracting in K-12 schools represented over 70% of the market, with other institutional and governmental customers accounting for an additional 20%. The commercial and industrial sectors shared the remaining 10% of market activity. Program promotion is handled primarily through NYSERDA's aggressive **New York Energy Smartsm** marketing and outreach activities. NYSERDA also assists ESCOs in marketing the program with materials, conferences, press events, etc. There is very broad program participation from the various

eligible sectors, with the commercial and industrial sectors being the largest at 39% and 27%, respectively. Other active sectors are government (16%), healthcare (7%), schools (6%) and colleges/universities (4%). Further, the number of active ESCOs in the state has increased significantly from 13 to now over 80 and these new ESCOs are now working in all market sectors.

Program Results

After experiencing a slow start-up, the program sustained steady and impressive growth in the number of projects and ESCOs participating in the program (NYSERDA, 2002). Several program changes were adopted to initiate and sustain this growth e.g., the measurement and verification requirements were simplified. Other changes include an accelerated payout of the incentives, particularly for projects with reliable and predictable energy savings; elimination of the \$250 non-refundable application fee; and the refundable two and one-half percent deposit was eliminated. These last two changes are expected to make it easier for ESCOs to bring smaller projects into the program.

Most importantly, the program has taken a broad view of the energy efficiency services industry and the goal of building a robust market where energy efficiency projects are financed from the resulting cost savings. While the performance contracting method of financing efficiency projects is a distinctive characteristic of the ESCO industry, it is not the exclusive means for project implementation at the customer level.

The following bullets highlight the broad reach of the NYSERDA program:

- Four supermarket chains across the State have implemented lighting retrofits in 115 stores reducing peak demand by more than 2.8 MW.
- 238 dairy farms across the State installed Variable-Speed Drives on milking equipment resulting in average annual energy savings of \$2,300 per farm. An additional 150 farms are expected to be served as the second project continues.
- 35 school districts are receiving \$2.2 million in incentives to help with the implementation of energy improvements with a capital investment of \$27 million.
- Marketing efforts have increased to smaller customers, with the hiring of marketing coordinators to serve the major regions of the State.
- When fully implemented, the 223 projects approved by June 2001 will reduce annual emissions by more than 138,000 tons of carbon dioxide, 475 tons of sulfur dioxide and 236 tons of nitrogen oxide. An initial portion of the NO_x reductions is being certified for EPA's voluntary Energy Efficiency Set-Aside program. These NO_x help to generate a market and competition for additional efficiency measures that can contribute to meeting New York's air quality goals.

The program is generating considerable local economic development activity, as to these renovation projects have leveraged over a quarter of a billion dollars in additional spending. There is a relatively even mix of spending between space cooling (33%), motors/VSD (30%) and lighting (29%).

Colorado DSM Bidding Programs

Xcel Energy, formerly Public Service Company of Colorado, is currently concluding its fourth DSM bidding program (Bid 2001) and has recently released their fifth bidding program (Custom Efficiency) targeting summer peak demand savings from the commercial and industrial (C&I) market sectors. Through these two programs, Xcel Energy expects to achieve nearly 40 MW in peak demand savings while distributing approximately \$18 million in program incentives by 2005 (Colorado PUC, 1999). More information about Xcel Energy's Custom Efficiency Program can be found at <http://www.xcelenergy.com>.

Unlike the Wisconsin, New York, California and Texas performance contracting programs, the Colorado program is not a first-come, first-serve program. In order to participate in the program contractors, or customers, must submit proposals. On the basis of the proposals, customers and contractors are selected to provide a set amount of summer peak demand savings. Failure by a customer or contractor to comply with performance milestones over the course of the program can result in a reallocation of incentive monies to other qualified bidders.

Program Objectives

The focus of the Colorado DSM bidding programs has been on resource acquisition – how to obtain the most savings in the most efficient and cost-effective manner possible. The objectives for Xcel Energy's current bidding programs are:

- Obtain verifiable and persistent summer on-peak electrical demand reductions that are cost-effective in comparison to supply-side alternatives
- Minimize “free-riders”
- Provide the primary DSM program offering for Xcel Energy's commercial and industrial market sectors
- Encourage broader program participation by end-use customers while maintaining significant third-party vendor participation

Program Design

Program participants provide a firm quantity of electric demand reduction through the installation of DSM measures in return for a fixed price per kW incentive. Participants in Xcel Energy's current bidding program are selected through a competitive process that considers bid price and other criteria for likelihood of savings realization, such as past DSM program performance. Both end-use customers and contractors can participate. Customers tend to define specific projects in their proposals while contractors tend to define target markets.

DSM measures may be installed in commercial or industrial facilities and must reduce electric demand during the summer peak demand period (weekday afternoons). Demand reductions may be obtained through an improvement in efficiency, a shift in load, or a substitution of another fuel for electricity. Measures may be installed as part of either a retrofit or new construction project.

Measurement and Verification

Demand savings realized from Xcel Energy's bidding programs must be accurately quantified to satisfy state regulatory requirements as well as Xcel Energy's own resource planning needs. Less emphasis is placed on quantifying annual energy savings, although these impacts are estimated so that overall program cost-effectiveness can be evaluated. M&V activities for Xcel Energy's bidding programs are performed by a third-party M&V contractor, under contract with the utility, at no direct cost to program participants. Benefits of this approach to M&V have included:

- Increased participation by project sponsors who are less accustomed to performing such activities as compared to traditional ESCOs and others that operate their businesses on a pay-for-performance basis.
- More cost-effective allocation of M&V resources by the program administrator due to the similarity in the types of projects submitted under the programs.
- Consistent application of M&V procedures, providing a reliable source of documented program impacts for both Xcel Energy and the state public utility commission.

To further streamline the M&V process, as well as reduce the percentage of "free-rider" projects, program participants are only paid for savings realized above and beyond a set of established minimum equipment efficiency levels. These requirements are typically based on current industry standards, code requirements, or local building practices in Colorado. Baselines have been established for a number of common measure types including: lighting equipment, motors, cooling equipment, and low-voltage dry-type transformers.

M&V guidelines are available to assist program participants in understanding how project savings will be verified, and subsequently how incentive monies will be distributed. The level of M&V rigor is assessed for each project based on the measure type and expected savings amount. Mature technologies such as lighting and smaller projects which present a smaller risk to the utility tend to rely more heavily on a stipulated saving approach, while more comprehensive and larger projects where savings are more uncertain typically involve the collection of short-term performance data and/or modeling activities.

Program Participation and Promotion

During the 1990's, Xcel Energy's bidding programs were targeted primarily at third-party vendors of energy efficiency products and services. However, program eligibility parameters, M&V requirements, and project reporting processes for the Bid 2001 Program, and to an even greater extent for the Custom Efficiency Program, have been modified to encourage a broader range of program participants. While many third-party vendors have continued to participate in Xcel Energy's bidding programs and have benefited from the resulting changes, facility owners participating directly in the program now comprise approximately 40% of the overall savings. Key changes that were implemented to achieve this included:

- Less stringent minimum bid qualification requirements.
- A streamlined RFP process and simplified project reporting requirements.
- The use of a third-party contractor to satisfy project M&V requirements at no direct cost to the participant.
- Eliminating the use of security deposits in lieu of performance milestones that reduce participant incentive payments if they are not satisfied.
- Utilizing multiple RFP cycles released at regular intervals (currently every four months) to assist customers during the project planning process in identifying whether incentive monies will be available.

Xcel Energy's promotional and outreach activities associated with their DSM bidding programs utilize a multi-tiered approach. Primary emphasis is placed on the electronic distribution of program information, primarily through Xcel Energy's web site and email distribution lists compiled from DSM program marketing efforts conducted over the last decade. Other avenues of program promotion include conducting presentations on current DSM program offerings to professional societies and other interested groups on a regular basis. Xcel Energy's product manager also provides in-house training for the utility's commercial and industrial accounts executives, who in turn pass along program informational material to their large C&I customers. These program outreach activities have contributed to RFP response rates of 200% to 300% of the targeted savings amount for the current bidding programs, allowing Xcel Energy to select the most cost-effective responses likely to result in realized demand savings.

Program Results

Through the first quarter of 2002, Xcel Energy's Bid 2001 and Custom Efficiency Programs have delivered approximately 27 MW of summer peak demand savings. These savings are allocated across lighting system retrofits (44%), high-efficiency mechanical system upgrades (22%), and load-shifting measures (34%). Due in part to the increase in natural gas fuel prices in 2000 and 2001, no fuel-substitution projects have yet been submitted under the programs. Of the 27 MW of total savings, 6.2 MW (23%) were realized from new-construction projects.

Table 3 summarizes the allocation of summer peak demand savings by participant and measure type for Xcel Energy's Bid 2001 and Custom Efficiency Programs through the first quarter of 2002.

Table 3. Summer Peak Demand Savings For Xcel Energy's Bid 2001 and Custom Efficiency Programs (through 1st quarter 2002)

	Customer/Owner Participants	3 rd Party Participants	Total
# Participants	10	24	34
Lighting (kW)	1,042	11,032	12,073
Mechanical (kW)	987	4,948	5,935
Load Shifting (kW)	8,261	882	9,143
Total (kW)	10,290	16,861	27,151

Discussion and Recommendations

The three programs presented represent a spectrum of performance contracting program approaches being offered in the United States. The lessons learned from these programs are valuable for the design of future programs. However, when designing new programs the lessons cannot be properly utilized unless the objectives of any new program are clearly defined.

Initially, performance programs were designed simply as resource acquisition vehicles and thus programs such as the New Jersey Standard Offer Program and the California DSM programs (a) allowed both end-use customers and contractors to participate and (b) established fairly rigorous M&V requirements. Subsequently in the mid- to late-1990s, market transformation became an important element of DSM program design. Thus, programs such as the California Standard Offer Programs introduced building of a private sector as a primary program goal. It appears now that the goals for programs move back and forth between these resource acquisition and market transformation objectives and thus recommendations are provided separately for each objective, as they can result in different program designs. Of course, many programs have multiple objectives, such as the New York program, and thus different design elements can be mixed and matched – assuming a clear prioritization of objectives is defined and utilized throughout program implementation and evaluation.

Market Transformation Programs

If a program objective is market transformation, then programs should support versus define private sector preferences for implementing energy efficiency. This is particularly true for M&V requirements since many energy efficiency projects are implemented for their capital improvement (versus energy saving) benefits. Even with guaranteed savings contracts the documentation of savings is a secondary concern for many end-use customers. If a program results in energy efficiency projects, irrespective of the customer motivation, then there is benefit; it is if the program's goals include documented savings that M&V requirements should be strictly prescribed and enforced.

With respect to M&V for market transformation programs there are two approaches that were taken by the above programs:

- M&V is conducted by the program administrator. This removes the public benefits burden of proving cost effective and proper payments from the project sponsors who may or may not consider the M&V part of their business. This is particularly beneficial when end-use customers are allowed to participate as sponsors, when it is desired to have non-ESCO contractors participate in the program (for development of a larger pool of contractors), or when performance contracting is not required between the end-use customer and contractor. This approach can also: (a) be very cost efficient due to the economies of scale that one party can have when they conduct all of the M&V, (b) allow flexibility in M&V rules which tend to be the most contentious element of programs, and (c) result in common reporting for all projects to a regulatory body.

- M&V simply provided by contractor with end-use customer buy off versus a requirement for administrator approval. This is the ultimate goal of a market transformation program where the administrator is not at all involved in the transaction. This approach however is risky in that the administrator payments can be subject to criticism if the contractor and end-use customer do not follow strict M&V procedures and/or if the end-use customer is not seriously concerned about the value of the M&V or has a stake in the incentive payment.

With respect to program promotion it is recommended that market transformation programs include strong elements for outreach to expand the number and capabilities of contractors and other parties in the supply chain to implement programs. While some regulatory bodies have expressed concern about administrator roles in marketing, (particularly for utilities with ESCO subsidiaries) marketing is critical to program success. As part of the marketing, two elements that have been shown to be particularly useful are (a) training support on all aspects of energy efficiency business and (b) general, program-wide, marketing support to provide credibility to the contractor community with limited customer-specific marketing support.

Resource Acquisition Programs

If a program's goal is resource acquisition then an ideal program would procure savings in the most efficient and cost-effective manner possible. Unlike many of the standard offer or standard performance contracting programs now in place, most efficient and most cost-effective would involve implementing large projects with very experienced contractors that bid their savings projects on a low-bid basis. Bidding, versus setting prices, allows the market to bring the price paid for savings (\$/kWh, \$/kW) down to levels typically below set prices. Bidding does have disadvantages such as the time and effort required by administrators and bidders to put contracts in place prior to any project activity. Also, the disadvantage of a pure low-cost, resource acquisition approach in general is that some markets are ignored and once the incentives go away there is no implicit expectation that the contractors will continue to offer energy efficiency services and products.

With respect to M&V, resource acquisition program activities should be focused on ensuring that public/ratepayer funds have been spent effectively. Program evaluation should focus on estimating aggregate program impacts and project-specific M&V requirements should be simplified for certain high-efficiency technologies with little performance uncertainty. The use of third-party M&V contractor should also be considered, primarily for the advantages associated with economies of scale.

With respect to program promotion and contractor recruitment, resource acquisition approaches can be very cost-effective. As an example, DSM bidding can provide for selecting project sponsors based on price and qualifications. This results in a limited pool of contractors, and perhaps customers, that provide the lowest priced savings the market will provide. There is also the advantage of having a limited pool with documented qualifications versus the standard offer approach of taking all applicants. The time required to train a large pool of project sponsors on program requirements, when each sponsor may only implement one project, is substantial, versus a limited pool of sponsors that will provide many projects. The primary disadvantage of this approach is the potential for locking up a block of incentive

dollars that do not result in projects. This risk can be partially eliminated by use of proper screening of project sponsors, imposing deposit requirements, and/or rigorously enforcing performance milestones.

As another example, a Standard Offer approach can provide a simple and inexpensive program to administer, and will likely attract a larger group of participants. If incentive payment levels are properly structured, it too can be very cost-effective and deliver large amounts of savings. Many contractors and customers like the standard offer approach, because as with a rebate program, applicants can relatively quickly find out if their project is accepted and what the payment will be, assuming the savings are documented.

In summary, there is a wide range of experience with different forms of performance contracting which is partially represented by the three programs discussed above. From this experience it is possible to design effective performance contracting programs that utilize public benefits funds once the program objectives are defined.

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