A Revolutionary Approach to Evaluation: NYSERDA's Portfolio Model

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ABSTRACT

The New York State Energy Research and Development Authority (NYSERDA) administers a broad portfolio of energy efficiency programs, which covers the full range of market segments and program approaches. Beginning in 2001, NYSERDA's evaluation budget increased from 0.5% of the overall program budget to 2%. The budget increase was provided to support more rigorous and thorough evaluations than had previously been desired and possible with limited funding. With this increase in funding, and with greater expectations on evaluation from key State policy makers and constituent groups, NYSERDA saw an opportunity to develop a new approach to evaluation. The traditional approach has been to conduct program-by-program evaluation studies, applying process, market, impact and other evaluation techniques as appropriate to the individual program. NYSERDA's revolutionary approach is to select four specialty evaluation teams – (1) program theory and logic, (2) market characterization and assessment, (3) measurement and verification, and (4) process evaluation – and to have them each address the entire portfolio. There is also a general evaluation contractor who coordinates the specialty contractors and conducts overarching evaluation studies, such as "gap/opportunity" and cost-effectiveness (benefit/cost) analyses. This paper reports on the first year's results of implementing this novel approach, including the administrative model, coordination of work plans and data collection, the relationships between and among contractors, and evaluation integration (from a portfolio perspective). The paper discusses the challenges that this new approach has presented and describes actions taken to ensure that the approach succeeds in meeting expectations.

Overview of the New York Energy $mart[SM] Portfolio

The New York State Energy Research and Development Authority (NYSERDA) administers the **New York Energy $mart[SM]** portfolio of efficiency programs. These are funded through a systems benefit charge authorized by New York's Public Service Commission (PSC). NYSERDA's portfolio of programs is designed to work synergistically to achieve the PSC's stated public policy goals. NYSERDA's goal is to position the **New York Energy $mart[SM]** portfolio for success by designing and delivering programs with specific short-, intermediate-, and long-term goals.

NYSERDA's ongoing program evaluation activities look closely at individual and portfolio-level **New York Energy $mart[SM]** Program activities and seek to make the programs' underlying logics and theories explicit so that program implementation staff and delivery

contractors, NYSERDA management, evaluation staff, advisory group[1] members, and public policy stakeholders can more readily assess how NYSERDA is positioned to achieve key goals. The following types of activities characterize NYSERDA's program offerings:

- Assess viability of energy technologies, products, equipment, and services.
- Develop and demonstrate cost-effective and promising energy efficiency, renewable energy, and environmental technologies.
- Provide technical and financial assistance and incentive to energy services companies, decision makers, policy makers, underserved populations, and other end-users.
- Promote green power and the efficient use of energy.

Key indicators being tracked to assess the Program's progress toward achieving its public policy goals include:

- Sales of energy-efficient equipment and products.
- Energy and cost savings and peak electricity demand reductions.
- Renewable energy generation.
- Non-energy benefits, including environmental benefits, sustainable changes in consumer and business energy decision-making and practices.
- Job creation and economic development.

Activities that are critical for achievement of key goals are being identified and tracked to help confirm program effectiveness and reveal potential flaws in the underlying theories and logic flows. If results from field tracking of key indicators show that activities are not yielding anticipated results in certain areas, NYSERDA is positioned to make necessary program-level and portfolio-wide modifications to align its activities for goal achievement. The key to making these adjustments intelligently is good evaluation data. It is the authors' contention, that the portfolio evaluation approach provides a clearer perspective than the traditional evaluation approach in providing timely and relevant information for active program management and program modification.

NYSERDA's Evaluation Approach

As an important part of its responsibilities to design and administer programs, NYSERDA is also obligated to conduct rigorous evaluations of the programs to measure their success in meeting the policy objectives established by the PSC. The evaluation is overseen by the System Benefits Charge Advisory Group (Advisory Group), the Independent Program Evaluator. The evaluation work is managed by the NYSERDA evaluation staff and is carried out by a team of evaluation contractors.

Beginning in 2001, NYSERDA's budget for program evaluation was substantially increased from 0.5% to 2% of the program budget. As a result, the 2003-2004 evaluation

[1] NYSERDA and the PSC have created a System Benefits Charge (SBC) Advisory Group comprised of 24 individuals representing varied stakeholder interests, including utilities, business and environmental groups, energy service companies, community organizations, professional trade associations, and national energy efficiency and energy research and development organizations, to serve as the Independent Program Evaluator and provide general program and policy guidance as desired by NYSERDA.

activities constitute the most comprehensive assessment to date of the **New York Energy $mart[SM]** Program. The Advisory Group helped determine the evaluation budget, select the specific tasks to be completed as part of evaluation, and identify the programs to be included in the evaluation reports for 2004 and later years. The Advisory Group was actively involved in developing the scope of work and selecting the evaluation contractors who were retained through NYSERDA's competitive solicitation process. An Advisory Group member and staff of the Department of Public Service[2] were represented on all Technical Evaluation Panels (TEPs) that were convened to review proposals.[3]

The contracts were awarded to nationally recognized evaluators with expertise in all areas of evaluation. Areas of expertise included:

- *Program Analysis* – documenting market barriers, interventions, the program logic, and measurable outcomes.
- *Process Evaluation (Process)* – assessing how well a program is addressing the target market and business practices.
- *Measurement and Verification (M&V)* – verification of the installation and energy savings of efficiency measures.
- *Market Characterization, Assessment, and Causality (MCAC)* – characterizing markets addressed by the programs, assessing how the programs are influencing those characteristics, and attributing market changes to program activities.
- *Other* – specialized skills for addressing particular evaluation questions about programs or the overall portfolio, such as gap analysis, benefit/cost analysis, synergy analysis, macroeconomic impacts, case studies or contracting cycle times.

The Traditional Approach

One of the most significant developments in NYSERDA's expanded evaluation efforts has been the use of an innovative approach to organizing the program evaluations. Traditionally, energy efficiency programs are evaluated a single program at a time. For example, in the utility model of evaluation, each program was evaluated in terms of its resource acquisition impact. The evaluation needs for the program might include any or all of the primary types of evaluation. Under this approach, the evaluation team would become intimately familiar with all of the aspects of the assigned program, its data, processes, target markets, customer characteristics, *etc*. The team would interact with the program staff to expand its understanding of what the program was trying to accomplish and how well it was working. The team would calculate the program's costs and benefits, report on its overall success, and make recommendations on ways to improve the program.

This traditional approach has worked well when a single program was being evaluated at a time and each program essentially stood on its own. The traditional approach is less useful, however, when there are a large number of programs that need to be evaluated simultaneously, as was the case with the **New York Energy $mart[SM]** portfolio. In addition, the traditional

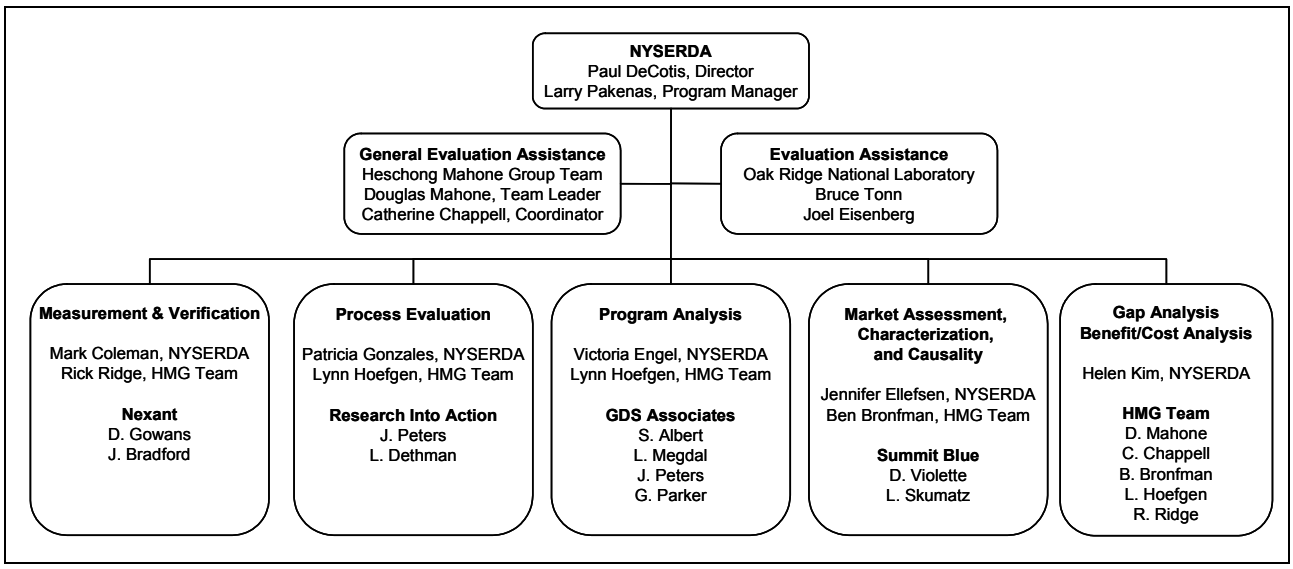
[2] The New York State Department of Public Service is the operating agency under the Public Service Commission.
[3] All evaluation contract awards were made through NYSERDA's competitive solicitation process whereby proposals were submitted in response to a Request for Proposals (RFP) that was developed and reviewed by the TEP.

approach, does not account for the interactions among programs or the market effects from multiple programs.

Alternative Approach: Evaluation Team Components

To implement the portfolio evaluation approach, NYSERDA retained the services of four specialty evaluation teams. Separate teams were selected for (1) program analysis, (2) process analysis, (3) measurement and verification market, and (4) characterization, assessment, and causality. In addition, HMG was retained to assist the NYSERDA evaluation staff in coordinating the work of the specialty contractors and to provide support for ad hoc analyses. HMG was also tasked with conducting a gap/opportunity analysis, the benefit-cost analysis, and providing assistance in drafting the evaluation report. Oak Ridge National Laboratory (ORNL) was retained to help identify data collection needs, assess synergies among programs, and conduct case studies of selected programs. The evaluation structure, and the lead organizations assigned to each of the major roles, are shown in Figure 1.

Figure 1. Evaluation Structure



The four specialty contractors, shown in Figure 1, are the prime contractors for each team. Both NYSERDA and HMG assigned a liaison to work closely with each of the specialty contractors. The role of the liaison was to ensure, to the extent possible, that activities being undertaken by the specialty contractor did not conflict with or duplicate activities being conducted by other specialty contractors. Another role of the HMG liaison was to share with the rest of the HMG team information on the activities of the specialty contractors. NYSERDA's liaison also served as the on-site evaluation team contact, helping coordinate evaluation activities with program implementation staff and contractors.

One key advantage of this evaluation approach is that each of the specialty evaluation contractors has crosscutting responsibilities for the entire **New York Energy $mart^{SM}** portfolio rather than concentrating on evaluating a single program. Since the contractors have multi-year contracts with NYSERDA, continuity is gained as contractors develop broad familiarity with program activities and experience directly how programs are being run.

To the best of our knowledge, this is the first time such a portfolio evaluation approach has been applied to energy programs. It promises several significant advantages for NYSERDA:

- Better integration of evaluation results across the portfolio of programs
- Greater consistency of evaluation approaches
- Fewer evaluation contracts to administer
- Better coordination among evaluators
- Provides program implementation staff with direct access to the knowledge and know-how of evaluation experts that can bear on future program concepts, designs, and implementation – integrating program evaluation with program administration

Coordinating the Results

When NYSERDA chose the portfolio evaluation approach, the coordination function was viewed as being critical to the success of the evaluation effort. The importance of the coordination function was borne out many times during the evaluation period.

Selection of Specialty Contractors

The first contractor to be selected was the general evaluation assistance contractor, HMG.[4] Once HMG was contracted, they were asked to review the specialty contractor RFPs. If the general evaluation assistance contractor had been selected in time, they could have assisted in the development of the specialty contractor RFPs. However, by the time HMG was selected, the specialty contractor RFPs had already been released. HMG's role at time was limited to reviewing the RFPs and identifying potential coordination issues.

Work Plan Coordination

Each specialty contractor was tasked with developing a work plan for the coming year's evaluation. The setting of evaluation priorities was critical in the development of the work plans. The specialty contractors asked for guidance in identifying which programs should be evaluated during the first year and which could wait until the following year or later. A survey was developed and administered to NYSERDA program staff to assess their beliefs on what evaluation activities were relevant to them. The data from the surveys were analyzed and shared with the specialty contractors. A matrix was developed that listed all of the programs in the portfolio, and mapped which programs would be addressed by which specialty contractor and the level of effort for the program. The initial matrix was shared with the SBC Advisory Group and the final matrix included preferences of the Advisory Group. The Advisory Group's major concern was that all programs should receive some degree of measurement and verification work in the first year.

[4] ORNL, which had been serving in a support role since 1998, helped develop the RFP and participated in the TEP that selected the general evaluation assistance contractor.

HMG was tasked with reviewing the work plans of each specialty contractor ensure that:

- The work plans followed the evaluation priorities that were determined at the beginning of the process
- Data collection activities did not overlap or duplicate one another (*e.g.*, customer sites would not be visited by multiple contractors)
- Data were collected in a form that all evaluators could use

The work plans were reviewed by the Advisory Group and several members offered some important refinements. The work plans took a substantial amount of time for both development and review, but provided a blueprint to all contractors. The work plans were posted on an electronic bulletin board located at HMG's corporate server.[5]

Coordination of Kick-Off Activities

When the specialty contractor teams started setting up interviews with program staff and implementation contractors, some effort was made to ensure that different specialty contractors did not ask the same questions of the same program staff. Each contractor needed information that was basic to the programs. Whenever appropriate, specialty contractors were asked to call in and at least listen to what was being discussed by and with other contractors. This was not always possible due to conflicting schedules. One contractor may not have had time to review all the written material before a meeting was scheduled by another contractor. These limitations were expected and the goal in coordination was to mitigate duplication, not completely avoid it.[6]

Weekly Coordination

Each of the specialty evaluation contractor teams had weekly scheduled conference calls, attended by their NYSERDA contract manager/liaison and their assigned HMG liaison. The HMG team held weekly calls to discuss the specialty contractor activities. These weekly conference calls were critical during the start of the evaluation activities as each team was figuring out how they fit into the overall picture, and as roles were defined and differentiated.

Schedules for data collection were reviewed so as to avoid conflicting data activities and to ensure that survey instruments and questions were coordinated for maximum utility. Plans for data analysis and reporting were reviewed to make sure that all the pieces would fit together. Any delays in one contractor's work that could affect other contractors were identified. As the specialty contractors were used to the traditional approach, boundary issues needed to be resolved. In addition, HMG needed to ensure that important data collection efforts were not being overlooked. For example, the M&V team was focused on obtaining kWh and kW savings, and not measure lives. Measure life would be needed to conduct the benefit-cost analysis. In

[5] The bulletin board was used for posting data collection schedules, meeting notes, interim documents, and other information. This bulletin board was available via the internet web browser and required a password to gain access.
[6] In addition, NYSERDA provided each evaluation contractor with an "initiation package" of materials that included all prior evaluation work conducted and studies completed, program descriptions, professional papers written, case studies, etc. to familiarize all contractors with the evolution of programs and evaluation work at NYSERDA, preceding their hiring.

short, there were routine procedures for keeping the entire suite of evaluation activities working smoothly toward a coordinated result.

Initially, the HMG team conference calls consisted of each liaison reviewing the activities of the specialty contractor. This turned out to be very time consuming, often exceeding two hours. It was then decided to have the liaisons write up a short description which could be shared before the call so the time on the phone could be spent discussing critical issues. As reports from the specialty contractors were being completed, the calls became less necessary.

An important activity for all evaluation contractors was obtaining program data (list of customer sites, measures installed, estimated savings, etc.) that was maintained for each of the programs. It was initially hoped that the various program databases could be obtained, documented, and made available in one central source, but this proved too difficult and time consuming to do under the limited time frames available, given the large number of program databases. Instead, individual specialty contractor teams requested the subsets of data they needed for their own evaluation needs. In a more ideal world, and hopefully in the near future at NYSERDA, these data difficulties will be resolved through a consistent data collection and tracking system.

Another key coordination activity was reviewing the analysis results of the specialty contractors, especially those of the M&V contractor who was preparing gross savings estimates for installed measures, and those of the MCAC contractor who was determining free riderhship and market effects. It was important that all contractors were using data for the same time period and the same customer base, and that they were all reporting in consistent units and data formats. HMG and the NYSERDA evaluation staff worked closely with the specialty contractors to ensure consistency of data.

Reporting Coordination

The bottom line for the evaluation function was the 2004 Annual Report on the **New York Energy $mart**[SM] program portfolio. Given the large number of professionals working on the various aspects of program evaluation, it was important to coordinate the organization of the information and the process of assembling that information into a coherent report to the Advisory Group, the PSC and other stakeholders. HMG and NYSERDA went through several iterations of the report outline, and the specialty contractors were given clear guidance in how to prepare their reports of findings. Each section of the Annual Report was assigned a primary editor, and the authors of each of the subsections were advised as to how their materials would be organized and formatted for consistency. An overall editor was responsible for maintaining consistent levels of detail and writing style among the authors. A standard document template and style sheet was developed and distributed to assist the many authors in preparing parts of the Annual Report in a way that could be efficiently merged with the other parts. Document automation features, such as automatic numbering of sections, figures and tables, and automatic generation of tables of contents, were standardized.

Lessons Learned

Because NYSERDA's innovative approach to evaluation is new, and because it has only been operational at this large a scale for a little more than a year (as of the time this is writing), it

is still a bit early to make a final judgment on its success.[7] Nevertheless, we can report on how the process is currently working and what we've learned.

Aspects That Have Gone Well

Overall, the portfolio approach to evaluation has gone remarkably well. The NYSERDA evaluation staff and HMG had to work out the month-to-month and week-to-week mechanisms for keeping a large number of evaluators informed. Standardization and coordination were needed to ensure integration of results, without unduly burdening them with meetings, reports and administrative hurdles. The specialty contractors had a steep learning curve, because they were responsible for much more than individual programs; they all had to develop a fairly broad understanding of the entire portfolio and how the parts all fit together. In addition, the degree of coordination with the other contractors that was needed was new to most.

Once the learning curve was mastered, however, the work went as smoothly as could be expected. During the time period between completion of the work plans and the reporting of results, a great deal of data were collected, analyzed, and summarized. As the results of all this effort came together into the pieces of the Annual Report, there was a satisfying degree of coherence and consistency to the outcomes. Anxieties about the possibility of wildly divergent findings and incompatible results proved unfounded. The levels of cooperation and professionalism among all the many participants in the process have been as high as or higher than could have been expected.

The other stakeholders in this process have also made valuable contributions to its success. The NYSERDA program staff has been consistently cooperative and generous in their time and insights. While they have had some understandable anxiety about the new levels of scrutiny and critique of their programs, they have been willing to let the evaluators do their work and to consider their recommendations. Likewise, the Advisory Group, for whom all the evaluation work is being done, has been supportive and helpful in providing direction.

Aspects That Might Be Improved

Although all of the major outcomes of the NYSERDA evaluation approach have been generally positive, the process has not been without its problems. These have been offset, however, by NYSERDA's flexibility and prompt response. As problems have been identified, most have been addressed and solved. Those that require longer-term solutions are actively being addressed. In a slower moving organization, time delays for some of these problems would have been fatal to the evaluation effort.

The award of contracts and the initial work plan coordination took more time and effort than we had anticipated. This meant that much of the evaluation work got started later than would have been ideal, given the large amount of data that had to be collected and analyzed. A few of these problems were solved by adjusting the work plans to put off evaluation projects to the second year. Most, however, were solved by concerted and focused efforts on the part of the evaluation teams. Simply put, they did a great deal of work in a very short time period. It is

[7] NYSERDA has employed the portfolio-level evaluation approach since the Program's inception in 1998, however, with the added evaluation funding, the evaluation effort was significantly expanded and the challenges become much more apparent.

anticipated that these problems will diminish with time and experience. In the second year, the time for data collection and analysis will be less compressed.

Another problem, encountered most particularly by the M&V and MCAC contractors, was the number of different databases which housed the program data. Some were in Access databases created by program staff, and others were complex relational databases that were managed by implementation contractors. A lot of time was spent in identifying where the data were housed, the variables that were being tracked, and how to obtain the needed data. In a few programs, the databases had not been updated to reflect current information, resulting in inconsistencies that needed to be resolved. This was not surprising or unexpected, because the evaluators have all encountered similar problems with other program datasets at utilities and other program administrators. Most of these datasets were being used for evaluation purposes for the first time, and it was clear that they were developed for program management purposes, not for evaluation. Fixing database problems occupied a substantial part of the evaluation effort. Recommendations for improving the program databases have been made by the evaluators, and they are already in the process of being implemented by NYSERDA. Other, lesser problems of coordination among specialty evaluators and NYSERDA staff, are likewise being identified and solved in real time. Given our experiences with the first year, the evaluation leading up to the 2005 Annual Report on the **New York Energy $mart**[SM] portfolio is expected to go much smoother.

Conclusion

The authors are optimistic that the advantages of the new approach outweigh the disadvantages, at least for a program with a single administrator. We feel that the benefits offered by a portfolio-wide perspective, and by continuity and consistency among evaluation efforts, outweigh the difficulties of coordinating so many different efforts. The traditional approach of evaluating individual programs one-at-a-time would not have yielded the type of data or richness of information that NYSERDA needed – namely goal-oriented evaluation results.

This alternative approach might not work as well for other program evaluators, however. It requires consistent, known, and secure multi-year evaluation funding. It requires unfettered access to all program data sources and managers. It is best applied when an overall portfolio roll-up of results in a consistent manner is required. For many locales, these conditions do not apply and so the traditional approach may be more satisfactory.

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