

Benefits and complications of involving stakeholders and community in the design, implementation and communication of evaluations to create real-time program improvement and contextual change

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Abstract

How can involving stakeholders and community in the design, implementation and communication of program evaluations be used effectively to create program improvements as well as changes in the institutional and policy context in which the programs operate? If such goals are embedded in the evaluation process, can the evaluations still retain their objectivity?

Such questions are explored in this case study of a non-traditional energy efficiency program evaluation involving Energize Phoenix, a \$25M, three-year building energy efficiency program funded by the U.S. federal government that combined energy efficiency goals with economic stimulus funding. A very non-industry-standard, interdisciplinary, comprehensive evaluation was conducted to answer specific and broad questions, including “What works? How well? And what does not?” Evaluators contributed toward program design and implementation and engaged stakeholders throughout in order to provide continuous feedback. A hyper stakeholder-inclusive process was employed in finalizing the evaluation report over an extended period of time. This 1) ensured a comprehensive interpretation of results, 2) maximized the potential of the findings to drive near-term improvements to program design and implementation, and 3) effected socio-behavioral context change (specifically, working relationships and perceptions of institutional motivations) within and among program administrators and stakeholders.

This approach to evaluation had successes and also created challenges. Lessons learned were and are being applied to the design, implementation and evaluation of three other energy efficiency and community well-being programs. The implications on the independence and credibility of the evaluator as a third-party is also explored.

Introduction

Energize Phoenix was a three-year program designed to upgrade existing non-residential and residential buildings for energy efficiency – part of a federal effort to stimulate jobs while simultaneously reducing the country’s carbon footprint and promoting a shift to a green economy.

It was managed by the City of Phoenix in partnership with Arizona State University (ASU) and Arizona Public Service (APS), the state’s largest electricity provider. Energize Phoenix was funded through a 2010 award of \$25M to the City of Phoenix from the U.S. Department of Energy’s Better Buildings Neighborhood Program (BBNP) and the American Recovery and Reinvestment Act of 2009. It was one of 41 BBNP grantees nationwide.

The Energize Phoenix award proposal included several targeted outcomes:

- Upgrading 1,700 residential units for 30% energy savings
- Upgrading 30 million square feet of office and industrial space for 18% energy savings
- Cutting carbon emissions by as much as 50,000 metric tons per year
- Creating 1,000 direct and indirect jobs
- Leveraging federal resources 5:1 with other investment
- Creating a sustainable revolving loan fund to perpetuate the program beyond the grant period (Dalrymple et al. 2014)

Energize Phoenix addressed these goals through an array of grant, rebate and financing programs layered on top of or designed to complement existing APS rebate programs. The offerings

incentivized owners of non-residential and residential buildings, specifically within a 10.33 square mile section of the urban core, to complete energy efficiency upgrades. Meanwhile, APS' existing program offerings were available to its entire geographical customer base.

ASU's Global Institute of Sustainability primarily served as evaluator for the program, with a scope of work that included both specific analyses goals as well as a broader summative mandate to understand what works and what does not with urban scale, multi-partner energy efficiency programs. Additionally, ASU's scope included consulting to the City as a subject-matter expert, conducting a field experiment with energy feedback dashboards, and supervising program marketing and public relations. The latter was performed by a sub-contracted communications firm that was also a partner in the proposal.

ASU's multi-faceted relationships with the other institutional partners added more complexity, with ASU serving as 1) an institutional partner that substantially drove the grant proposal, 2) a "third-party" program evaluator, and 3) a contractual sub-awardee to the City of Phoenix on a federal grant. Further still, ASU's status as a public academic and research institution, with policies enforcing academic freedom, influenced interactions with the City of Phoenix and APS differently relative to the relationship of a traditional evaluation consulting firm to its client¹. ASU's evaluator role could be classified under either the Integrated Roles Model or the Separate Roles Model as described by Vine, depending upon which facet of the relationships is considered (Vine 2008). These led to both challenges from an evaluator standpoint, as well as unique opportunities to participate in and influence program characteristics and performance.

Trencher et al offer a framework to analyze universities' emerging role in serving as co-creators of sustainable urban transformations, a framework through which the complexity of ASU's multiple roles is apparent (Trencher, et al 2012). With ASU as driver of the grant proposal, Energize Phoenix falls within Trencher's framework since ASU is at least equal partner in instigating the sustainability project. With ASU also serving as sub-contractor to City of Phoenix, that equality is no longer clear. In terms of the framework's categorization of roles, the university served as *Scientific advisor/communicator*, *Facilitator/empowerer* and *Revitaliser/retrofitter*, though it is now taking on a stronger *Director/linker* role in subsequent projects. ASU's motivations included five of the six motivations identified in the framework: *Missional*, *Funding*, *Scientific/scholarly*, *Social contribution/community relations*, and *Developmental/strategic*. These motivations sometimes included trade-offs, as will be discussed.

This paper does not focus on the evaluation results, themselves, which can be found at energize.asu.edu.

Evaluation Team Structure and Scope

Team Structure

ASU initially structured its evaluation team along the lines of the original scope of work, with sub-teams from various academic disciplines taking the lead role on various tasks and playing secondary roles on others (see **Figure 1**).

¹ APS elected to not receive any of the federal grant funds nor their associated obligations, serving solely as an in-kind institutional program partner.

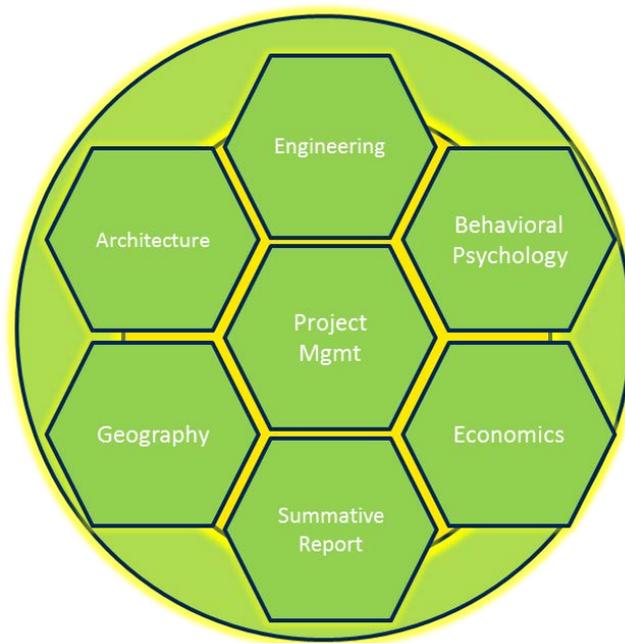


Figure 1. Original evaluation team structure (Fraser, et al. 2011).

The Executive Dean of the Global Institute of Sustainability served as principal investigator and faculty members from various disciplines led each sub-team as co-principal investigators. Post-doctoral fellows and graduate students served on the various teams. Undergraduate students from the School of Sustainability and across the university assisted on both sub-team projects and integrated team projects.

Scope of Work

The tasks identified in the original ASU scope of work were as follows, illustrating the mixed nature of evaluation, consultation and implementation roles (City of Phoenix 2010):

Task 1: Energy Analysis (2 Economics faculty and 1 staff) Conduct an independent evaluation of property-level and corridor-level energy savings using a series of statistical comparisons. Build, populate and maintain program databases.

Task 2: Energy Efficiency Modeling (2 Mechanical Engineering faculty, 1 Geographical Sciences faculty, 3 graduate students) 1) Assist in the development of the work plan and timeline for the commercial building programs, including pre-screening and classifying buildings anticipated to participate. 2) Monitor participating Energy Service Companies (ESCOs) to ensure that they use the latest industry standards set out in the International Performance Measurement and Verification Protocol (IPMVP). Approve contractor M&V plans and inspect monitoring equipment. 3) Verify savings by comparison of baseline, predicted and post-installation energy consumption (normalizing for other variables) at the property-level.

Task 3: Behavioral Change (1 Behavioral Science faculty, 2 graduate students that became post-docs) Infuse scientifically-tested behavioral science principles into marketing messages and strategies as well as into the user training protocol of the energy feedback dashboard experiment. Conduct statistical analyses of behavioral survey results, changes in participant energy use and message influence.

Task 4: Dashboard Demo (1 Design faculty, 1 Adjunct Design faculty, 2 graduate students) Design and conduct a home energy dashboard experiment on up to 200 households, including homeowner training, to test impact of real-time energy use feedback on household energy consumption.

Task 5: Marketing Program (sub-contracted to strategic communications firm) Educate, engage and effect lasting behavioral change among residents, community groups and businesses through development and implementation of a replicable communications model that includes brand strategy/graphic identity/message platform; collateral materials and direct marketing; website; public relations; social media; special events; and advertising.

Task 6: Summative Impact Report (1 Sustainability faculty, ASU project manager, 1 graduate student) Compile monitored and observed data to formulate annual reports and a final report that will answer the questions: “What worked, what did not, and why?” Quantitatively and qualitatively document returns on Department of Energy investments and use these findings to improve the program and enhance the transferability of program elements to other markets.

Evolution of Scope and Team Structure

Tasks and composition of the evaluation team evolved considerably over the course of the program. Notable changes relative to evaluation and impact were:

Task 2: Energy Efficiency Modeling

- 1) The engineering team had minimal opportunity for input into the commercial building work plan and timeline, and could not conduct a pre-screening of buildings due to confidentiality of property-level energy usage data and due to regulatory and business constraints on APS programs. For instance, APS has multiple reasons to treat like ratepayers equally, so it was not in a position to modify participation eligibility criteria in its territory-wide programs for a geographical subset of customers.
- 2) The tasks of the geographical sciences team members became much more defined and aligned with behavioral and marketing analyses and less aligned with engineering analyses. An additional faculty member was added and GIS team analyses addressed the questions of which businesses participated and how participation related to contractor marketing methods.
- 3) Cost savings allowed for the addition of an engineering faculty member to analyze residential energy savings at the property level, filling a hole in the original scope of work.

Task 3: Behavioral Change

- 4) With the aggressive timelines of the federal stimulus rollout, the program’s brand identity and other marketing decisions were made before the behavioral team was fully operational and in a position to provide input.
- 5) When the City of Phoenix determined that Energize Phoenix would not be continued past the initial grant period, ASU and the City of Phoenix Neighborhood Services Department partnered to create seven homeowner educational videos in English and in Spanish in order to generate additional lasting community impact.

Task 6: Summative Impact Report

- 6) In response to a perception of need within the State of Arizona, the summative team added an energy efficiency policy guide to its deliverables.

- 7) A mid-program revision to ASU's scope of work codified aspects of the evolution of the program and evaluation while also explicitly granting City of Phoenix approval rights over the final summative report.

Other Task and Scope Changes

- 8) Project management took on a much larger role in inter-disciplinary efforts, such as hiring and managing a large team of undergraduate community surveyors to gather primary data.
- 9) The City of Phoenix asked ASU to additionally analyze the Finance programs to understand why they did not generate adequate participation to become self-sustaining. An adjunct real estate finance faculty member was added to the team to address this topic.
- 10) The City of Phoenix asked ASU to additionally conduct an economic impact study to understand the number of jobs created by the program.

The implications of several of these modifications, as well as ASU's multiple roles on program design, implementation, results and evaluation are discussed below.

Engaging Stakeholders and Community to Inform Evaluation and Create Change

With an organizational mission to advance sustainability, the evaluation team leveraged the complexity of its multiple roles, sometimes consciously and sometimes unconsciously, to maximize the effectiveness of the program while also evaluating its success. The second year summative report posits a model that successful modern energy efficiency programs must address a set of interrelated technical, economic, and socio-behavioral challenges that hinder generating more energy savings in the built environment (Dalrymple et al. 2012). As the program progressed, evaluation team leadership became increasingly convinced of the following corollaries:

- 1) Technology will continue to improve but the fundamental technologies and strategies for energy efficient and zero net energy buildings already exist.
- 2) The economics of energy efficiency can always benefit from cost improvements, but the economics are already generally favorable (particularly from a utility integrated resource planning perspective). Primary barriers to further improvement in the economics are behaviors (individual and institutional) and legal and policy constructs that cause issues such as split incentives, coupled utility profits, and the failure to capture externalized costs in the price of energy.
- 3) When socio-behavioral challenges are broadly defined beyond personal behavior to include policy, business and contracting norms, and inter- and intra-institutional culture, the socio-behavioral realm appears to be home to the greatest challenges and opportunities for energy efficiency gains.

As such, the evaluation team management increased its already extensive focus on activities that have the potential to impact this broader socio-behavioral realm, both with stakeholders and with the evaluation team, itself.

Refining the evaluation to address stakeholders' needs

Traditional faculty advancement systems favor research that pushes theoretical boundaries within a discipline while placing less value on applied and inter-disciplinary research. This creates a motivational trade-off in university faculty attempting to serve as evaluators which is further complicated when those evaluators attempt to also create real time impact. Energize Phoenix was not immune to this motivational issue and the institutional barriers it creates, as also explored by Trencher

in the 2000 Watt Society case study (Trencher et al. 2013). Meanwhile, applied and inter-disciplinary research can provide high value to student researchers intent on a practitioner career and to stakeholders such as energy efficiency contractors, program administrators, policymakers and energy efficiency customers. The applied nature of the research/evaluation agenda for Energize Phoenix created a misalignment of incentives with some faculty team members. The agenda was also necessarily developed quickly with little stakeholder input outside of the institutional partners and USDOE.

Additionally, the specific research questions needed to be further refined in order to operationalize them. Through an iterative process, specific research questions were defined with an orientation toward stakeholder needs, such as contractors (e.g., “Which contractor marketing methods were most effective?”), City program administrators (e.g., “How much aggregate energy is being saved by EP project participants? How much money? How much CO₂?”), utility program administrators (e.g., “How accurate are the energy saving predictions made by contractors to building owners? What are the factors that affect the accuracy?”), and DOE and taxpayers (e.g., “What is the ROI on DOE direct investment in this project?”). Despite pockets of resistance, refinement of research questions provided a qualitatively positive impact on the research culture of evaluation team members. For instance, researchers learned new statistical analysis tools and the methodological reasoning behind them from each other’s disciplines. As an example outcome, a behavioral psychology post-doc presented inter-disciplinary findings at the Association of American Geographers conference.

Orienting the evaluation questions toward stakeholder needs also impacted institutional relationships in positive ways. At the start of the program, due to a number of factors, utility personnel expressed little interest in the program evaluation other than in understanding what data needed to be provided in order for the evaluation team to complete its assignment. The utility additionally put up a firewall between its program evaluators and the ASU evaluation team, either for financial and/or corporate privacy reasons. Through a consistent focus on providing research of value to the utility program managers and understanding their eco-system, the relationship evolved over three years to the point of undertaking a joint utility/evaluation contractor/evaluation team data audit at the end of the program.

Engaging the contractors in the evaluation process

Collecting sufficient data points was of particular concern with the residential and commercial behavioral survey instruments. The most stakeholder-useful research questions at least partially relied on data from these surveys. During the program design process, city program managers became concerned with the length of the program application forms and, therefore, decided that the behavioral surveys were to be optional.

In order to maximize contractor assistance in encouraging participants to fill out and return surveys, the evaluation team participated in program design feedback sessions with contractors as well as contractor training programs. The evaluation team also committed to providing evaluation results to contractors as they became available in exchange for contractor assistance. The contractors did collect surveys from a high percentage of commercial participants (226 of 413 participating organizations and another 92 from non-participants collected by community surveyors as a control), either as a result of this bargain strategy or because it was easier to have the customer fill out all application-affiliated paperwork instead of separating what was required from what was optional (Dalrymple et al. 2014). The evaluation team followed through on its end of the bargain, providing contractor-relevant analyses results to contractors during multiple meetings and events over the third year of the program.

Engaging non-profit organizations

In its role as an institutional program partner having contractual responsibility for marketing, and as a public educational and research institution, the evaluation team participated in and helped organize meetings with a wide array of non-profit community stakeholder groups. The goals were to generate awareness, explain the program, receive feedback and, later, to communicate interim and final results. Local groups ranged from neighborhood associations to those with a focus on historic preservation, environmental issues, business, and energy. In total, evaluation team members presented on Energize Phoenix at 50 meetings, events or conferences to over 1800 individuals. Of that total, 25 meetings were local engagements tied to the program target audience. The other presentations served broader knowledge transfer purposes.

With city personnel presenting the program's structure, offerings, and participation process, the evaluation team was able to focus on discussing research goals and, particularly with residential audiences, educating on building science issues and energy savings opportunities common to the local building stock. During a program presentation early in the program, an engaged response from a historic preservation audience regarding energy measures and savings in two non-program home retrofits (including one of a historic home in the area) convinced city program managers to incorporate project profiles into future presentations as soon as completed projects became available. Use of showcases of upgrades was cited by Peters, et al. as a preliminary marketing success factor in Better Buildings Programs, more generally (Peters et al. 2013). Such examples fulfill the behavioral trigger of tangible and proximate examples. By participating in community presentations, the evaluation team was also able to gain feedback on research topics, insight into program design characteristics, and knowledge of local history and relationships that might help explain program results.

One significant example involved the program's geographical boundaries. Due to budget limitations, boundaries were moved during USDOE grant negotiations to reduce the size of the target audience. In the process, several historic neighborhoods were cut in half. By attending neighborhood meetings, evaluation personnel were able to understand the intra-neighborhood discontent this created and the negative impact on neighborhood associations' enthusiasm for promoting the program to their residents. A later re-unification of those neighborhoods and support from the program through the purchase of advertising in neighborhood newsletters could be explanatory factors in why participation in the residential programs started very late and then accelerated substantially. In other instances, the evaluation team was able to facilitate connections between city program managers and non-profit groups with whom evaluation team members had previous relationships. Some of these groups (such as the Sierra Club Energy Committee, Rogue Green, Downtown Voices Coalition, and the Phoenix Green Chamber) became important marketing evangelists for the program.

Such benefits of engagement with the community come at a price in terms of evaluation team time and resource investment.

Leveraging Community Surveyors to Build Awareness

Program managers, the evaluation team and the marketing firm saw great potential to leverage the evaluation team's community surveying workforce to build awareness for the program. So, the trained and paid undergraduate student community surveyors also served as program ambassadors when they canvassed the 10.33 square mile program geography twice to collect behavioral survey data. Surveyors approached their subjects with an IRB-approved script designed to minimize potential for biasing of results. Upon completion of the survey or if the subject declined to participate in the survey, the surveyors offered Energize Phoenix marketing brochures, a CFL bulb donated by the utility, and a locally (in-corridor) baked organic cookie.

Not only did this activity build awareness of the program and goodwill among the target audiences, it provided additional insight that could help explain evaluation results. In addition to the survey data itself, surveyors gathered specific survey tracking notes and anecdotal data ranging from inaccuracies in county assessor property data to residents' and businesses' attitudes regarding a wide variety of topics. Some of this information was fed back into improving the data collection process and/or the program.

For instance, surveyors encountered vacant residences with higher-than-expected frequency as well as wariness among some Hispanic residents. (The program took place concurrent with the height of the SB1070 issue, a law passed by the Arizona State Legislature requiring local law enforcement agencies to enforce federal immigration laws.) This observation led to a very early decision to switch surveyor attire from program t-shirts to ASU polo shirts in order to minimize any perceptions that surveyors might be affiliated with government or law enforcement. Providing field feedback in a timely manner to program managers contributed to decisions to place more emphasis on engaging local Spanish media as trusted sources and market the program in Spanish through both advertising and public relations activities such as Spanish-language radio and television talk shows.

Additionally, surveyors noted that some business owners expressed skepticism toward any City-sponsored program because of previous experience with negative business impacts resulting from construction delays in completing the light rail. Surveyors also encountered single family residence tenants that wished to participate but could not because rental properties were not eligible. This feedback and other feedback by residents directly to the City led to a change in program eligibility that permitted landlords to participate with up to one single family rental property in addition to their own owner-occupied property.

Dashboard Challenges Lead to Community Lessons

Perhaps the most challenging, complex and community-engaged part of the program, the energy feedback device experiments, led to the most lessons for evaluators. Combining roles, the ASU team designed a study-oriented program that ASU and the City jointly implemented and for which ASU evaluated the results. The goal was to install approximately 200 real-time energy feedback devices in residences to validate their potential for increasing energy savings.

In order to not conflate the impacts of upgrades being performed through other Energize Phoenix programs on single family owner-occupied homes, the ASU team designed a dashboard program for single-family rental properties. This also filled a gap in the research literature. However, identifying and recruiting participants proved a daunting task between multiple issues including logistically securing both tenant and landlord interest and signed waivers, and the technical issues involving the electrical panels in older homes found within the light rail corridor. The recruitment process also shined a bright light on the entrenchment of the split incentives issue as some landlords refused to participate for fear that it would lead to demands from their tenants for improvements which would financially benefit the tenant. The recruitment process also reiterated the economic and housing market challenges of the time, as some tenants were not sure if their personal economic situation would allow them to remain in the house for the full year duration of the experiment or, in some cases, whether the landlord would be foreclosed upon during that timeframe. This community feedback also provided a cautionary tale to temper evaluator and program manager expectations for the level of success of the other residential programs.

The City engaged several electrical contractors to install the dashboards, one of whom correctly foretold that the meter department of the utility might have an issue with the installation configuration. The first three dashboards had been installed by the time the meter shop was contacted and responded that the configuration did not satisfy their panel safety regulations. Although this initial study was canceled for expediency, one of the participants proved an ideal, enthusiastic field tester of a plug load monitoring and feedback device that the dashboard team wished to evaluate.

A second dashboard study in a City-owned low-income housing complex provided additional valuable insight for the implementer-evaluators. During the recruitment process, prospective participants filled out a pre-experiment survey. It quickly became apparent that many residents were illiterate, resulting in a re-design of the education program to be very pictorially-focused. Additionally, residents were generally not aware of how their monthly utility allowance was calculated and some expressed interest in learning. So, the dashboard team was able to direct them to housing management. Engagement with housing management revealed that the complex had been upgraded from evaporative cooling to sealed air conditioning within the last two years, which helped shed light on possible reasons why some participants left their doors and/or windows ajar with the air conditioning turned on.

Using the Evaluation Report Review and Distribution Process to Help Improve Programs

A common challenge in generating program improvements from evaluation results is the lag time in the delivery of evaluation reports relative to evolving programs in which the conditions that generated those results may no longer exist (Vine 2008). Energize Phoenix faced an extreme example of this in which the programs, themselves, were not planned to continue past the initial three year grant period. Thus, the value of the findings would be diminished unless the evaluation focused heavily on transferability to the underlying, continuing utility programs and to other regions. This focus was planned from the start. The evaluation team faced an additional challenge in that the evaluation and the program were operating on the same time schedule and both would end when the grant period ended. The evaluation team attempted to resolve the parallel operating issue by creating a data cut-off date six months in advance of the end of the grant.

One strategy used to increase the transferability, value and completeness of the evaluation results was to involve stakeholders in the review process. A small audience of contractors was presented with research findings and then asked for reactions to and potential explanations of findings. Of particular interest to evaluators was a finding of an average over-estimation of energy savings by contractors of approximately 100%. Contractor responses provided key insight into potential explanations. Results were also disseminated at community meetings, though most of the audience feedback revolved around confusion as to whether the program still had unused incentive funding and why the program was not continuing in some form.

The evaluation team requested outside expert review of an early draft of the final report in order to bridge transferability of knowledge to the traditional energy efficiency program evaluation community. It received very productive insight into the framing of results. Energy efficiency regulatory advocates were also consulted to seek independent reactions to the findings, understand the political landscape that awaited release of the report and enlist them to encourage potential program and policy improvements suggested by the findings. They did.

Drafts of the report were also shared with utility program managers. This proved extremely productive as they, skeptical of some results, uncovered a flaw in the data capture chain. The utility's program managers and evaluators, as well as Energize Phoenix evaluation team members, conducted a thorough data audit to rectify the flaw and re-calculate the results, which produced similar findings. Acting on high contractor over-estimation of savings in one program, utility program managers made a decision to modify and improve the program. As of May, 2014, the utility's evaluator was collecting field data upon which to create baselines for the program change.

While the audience of evaluation reports is typically the program administrators or the public utilities commission, ASU intended from the beginning to distribute its final report widely. Audience categories included DOE Better Buildings staff, local community organizations, local sustainability leaders, state and local government policymakers in Arizona, municipal managers in Arizona, local media, other Better Buildings program managers, other energy efficiency program managers and evaluators, national building organizations, national green building leaders, appropriate federal government agency staffers, and ASU energy-related faculty. This same distribution strategy was used

for the first and second year reports, and partner awareness of the strategy increased the engagement of all institutional partners in the review process.

Creating Additional Value-Added Products to Enable More Savings

With its role as an educational institution, the ASU evaluation team was in a position to use lessons learned during the program to create educational tools to fill gaps in the marketplace. Through experience, literature reviews, knowledge gained through attendance to various conferences held by the Better Buildings Neighborhood Program and the American Council for an Energy Efficient Economy, and observation of local market barriers, the evaluation team conceived of the potential for a high level guide to educate Arizona policymakers on a wide array of policy options that encourage energy efficiency actions. The guide and policy briefs that delve further into details were created, with a focus as much as possible on opportunities that could be initiated by local governments. Communication design of the guide was a focus as much as the content. The guide has been disseminated widely to local government leaders and staff in Arizona and the lead author was invited to present it at one city council meeting where city staff are now evaluating variations on five of the included options to determine viability and implementation strategy.

As city program managers communicated the final decision to not continue the Energize Phoenix program beyond the first three-year phase, city Neighborhood Services staff and ASU team leaders independently contemplated producing educational videos for homeowners on energy efficiency topics as a means to extend education into the future. Joining efforts, they engaged experts from the local Home Performance with Energy Star affiliate and ASU to develop scripts in English and Spanish and hired a local production crew. The videos were intentionally created with minimal brand identification so that they could be used by jurisdictions statewide. The short videos are currently running as filler on the Phoenix 11 government cable television channel and are posted online with links from various jurisdictions.²

Applying Lessons Learned Toward Designing New Community-Based Programs

The successes, challenges and behavioral change lessons of the Energize Phoenix experience led the evaluation team manager to a concept for a Phoenix neighborhood-based energy efficiency and renewable energy program conducted under the auspices of a homeowner's association. The program, which took place outside of the light rail corridor, combined bulk purchasing power with behavioral concepts of trusted sources, rewards, teamwork, urgency, tangibility and proximity. The larger goal was to create a prototype program at a smaller scale than Energize Phoenix that could be easily replicated and personalized to individual neighborhood situations. As of May, 2014, an evaluation was underway. Preliminary results indicate a neighborhood participation rate between 10-15%, including independent add-on solar sales by a non-participating solar vendor that took advantage of the increased awareness generated by the program.

A separate, larger active adult living community on the edge of the Phoenix metro-area is studying the program structure for possible implementation in 2015.

Two additional community-based programs are currently in development in Tempe, AZ and in Guatemala that build upon the Energize Phoenix experience by infusing evaluation team and community input throughout the design and implementation process in order to maximize success and to enable continuous improvement. The programs incorporate energy efficiency programs into a broader array of community programs aimed at improving social well-being and happiness.

² See <http://energize.asu.edu/energize-az/resources/videos/>

Discussion

The Inherent Trade-Offs in Serving as Evaluator and Implementer

As stated earlier, ASU's multiple roles on the Energize Phoenix program as evaluator, institutional partner, consultant, public university, sub-contractor and contractually responsible party for marketing, created both opportunities and challenges. These include:

Role Versatility: ASU could fill a variety of roles in different situations, based upon what was needed. When City procurement procedures made cost-efficient installation of the dashboards in multi-family buildings a challenge, the City was able to delegate that responsibility to ASU, bringing costs into line and stretching resources for a third study.

Timely Feedback: The ability to provide timely feedback to program managers was enhanced, increasing its value. When the City considered expanding the program's geography in year two, the GIS team was able to easily provide maps that calculated the changes in target audience numbers according to a variety of descriptors, based upon analysis established for the first year report.

Input versus Authority: As institutional partner, ASU had significant opportunities to provide input and feedback into program design and modification based upon experience, research and evaluation results. At the same time, as sub-awardee, ASU did not have any decision-making authority in these areas.

Clarity of Role: Clarity in any particular situation could be lost as to what role ASU was playing and what role it should be playing. Three particular examples come to the forefront:

- Marketing decisions were ultimately made by the City as implementer and primary award recipient, though they were sub-contracted through the evaluator, which was also charged with advising on behavioral change messaging. This created frequent role and approval challenges for both the marketing firm and ASU.
- City program management and evaluation team management could not come to agreement on portions of the final report. Who should have final say? Contractually, ASU was writing the report for the City. As a public academic and research institution, however, ASU had research disclosure and academic freedom obligations.
- In evaluating the Energize Phoenix program, it was clear to all partners, though not discussed, that ASU was inherently evaluating aspects of the utility programs upon which Energize Phoenix was based. Coming from ASU's Global Institute of Sustainability, it was also perceived that, on balance, the evaluation team was supportive of energy efficiency programs. A general perception existed that two members of the five-member Arizona Corporation Commission, which regulates utility energy efficiency programs, held skeptical views of the appropriateness of ratepayer-funded energy efficiency programs. The other three commissioners could fall on either side of the issue. Which role(s) should the evaluation team prioritize in disseminating results broadly that could be misinterpreted or mischaracterized and lead to utility program budget cuts or significant restructuring?

Evaluator objectivity: There are inherent conflicts of interest when any organization evaluates a program in which it has a financial or reputational interest. Should ASU be held accountable for the successes or failures of program marketing? Of meeting the program's overall goals? Should ASU be evaluating marketing efforts? Who is evaluating the evaluator?

Some of these issues and questions are universal to any evaluation, certification or quality assurance program. Others arose because of the experimental nature of the Better Buildings program and the unique structure of the Energize Phoenix partnership and market conditions.

The evaluator objectivity question is particularly challenging and there is no clear-cut answer. On one hand, participatory research methods can be extremely powerful and are often seen as a prerequisite for solving complex sustainability challenges. At the same time, evaluator involvement in

program design and implementation conveys an amount of ownership responsibility in results. And though that ownership should be proportionate to the degree of involvement and decision-making authority, the potential for misunderstanding or mischaracterization by the media or others creates pressure to focus on successes. Two potent forces for retaining objectivity are the peer-review process and creating a third-party financial relationship where the public utility commission or other program funding source contracts the evaluator directly.

Recommendations for Evaluators

Evaluators do not always control the full context in which they perform their work. Understanding the impacts of various contextual factors, however, can assist an evaluator in seeking out and/or shaping the best situation to perform evaluations that create impact. Accordingly, recommendations include:

- 1) Make sure roles of all partners are clear. If the evaluator is playing multiple roles, understand where those roles represent synergies, conflicts and trade-offs. Create a protocol in advance for maximizing the benefits of synergies, minimizing conflicts and prioritizing roles in the event of trade-offs.
- 2) Seek a reporting arrangement in which the evaluator financially and hierarchically reports to a third party separate from the program administrator.
- 3) Because a third party reporting structure inherently creates tension with the program administrator, make it consistently clear in communication and in actions that your intentions are to serve the improvement of the program for its intended beneficiaries, first, as well as the program administrator, second.
- 4) Understand stakeholder motivations, perspectives and needs. Provide program design advice where practical and evaluate pilot programs.
- 5) Involve stakeholders in the evaluation design to maximize utility of results.
- 6) Create and communicate meaningful evaluation results in a timely manner so that they can be used to improve programs. Provide interim results and draft reports to get feedback and insight.
- 7) Understand the stakeholder influencers on the program administrator and enlist them accordingly in the review process of evaluation results.
- 8) Add additional value wherever possible. If market transformation strategy gaps or policy challenges exist and conditions prevent the program administrator from addressing them, seek out other community stakeholders that can spearhead efforts or partner to fill those gaps.
- 9) Listen and communicate. Repeat.

Conclusion

Energize Phoenix was born of a unique time and set of events in the history of energy efficiency programs. The partner relationship structures that resulted permitted the program evaluation team to play a role of influence (though not authority) in program design and implementation, as well as the ability to quickly feed interim evaluation results back into program management. Additionally, the evaluation team was able to create impacts and evaluation insights through community and stakeholder engagement, including improvements to ongoing utility programs and lasting leave-behind educational tools. These impacts and insights did not come without investment and challenges. However, evaluators are encouraged to make feasible stakeholder engagement investments to derive more value from their evaluations. At the same time, it is important to have coherent relationship structures to minimize confusion regarding roles and responsibilities. Finally, communication with program administrators and stakeholders is key to understanding results and creating impact from them, as the

socio-behavioral realm represents opportunity not just with energy users, but with the organizations and people striving to help users save energy.

References

City of Phoenix 2010. Inter-Governmental Agreement between the City of Phoenix and the Arizona Board of Regents for and on behalf of Arizona State University, City of Phoenix Contract No. 129640, August 1.

Dalrymple, M., D. Bryck, R. Melnick, R. Heffernon, A. Berlin, H. Bryan, A. Castelazo, K. Grijalva, T. James, M. Kuby, S. Ledlow, M. Myers, S. Neufeld, G. Oliver, P. Phelan, T. Reddy, S. Rungta, K. Thalappully, A. Webster, M. McGinty 2012. *Energize Phoenix Energy Efficiency on an Urban Scale Year Two Report: Preliminary Findings*. Tempe, Ariz.: Arizona State University Global Institute of Sustainability.

Dalrymple, M., R. Melnick, M. Schwartz, A. Berlin, H. Bryan, A. Castelazo, A. Conlin, M. DeFilippis, A. Evans, K. Grijalva, W. Heasley, T. James, S. Kelley, M. Kuby, H. Kumar, E. Mack, M. Myers, S. Neufeld, T. Reddy, B. Ruddell, S. Rungta, M. Shiota, O. Solache-Nishizaki, K. Thalappully, A. Webster, M. McGinty, J. Wontor 2014. *Energize Phoenix Energy Efficiency on an Urban Scale Year Three Report: Results*. Tempe, Ariz.: Arizona State University Global Institute of Sustainability.

Fraser, M., C. Bristo, D. Laloudakis, M. Dalrymple 2011. City-University Collaborations for Urban Sustainability. Presented at the White House Office of Science, Technology and Policy – Federal Agency Sustainability Summit, Washington, DC. March 11.

Peters, J., M. MacRae, R. Bliss, E. Vine 2013. “How is the Neighborhood?: Preliminary Results from the Better Buildings Neighborhood Program.” *International Energy Program Evaluation Conference*, Chicago, Ill., August 13-15, 2013.

Trencher, G. P., M. Yarime, A. Kharrazi 2013. “Co-creating sustainability: cross-sector university collaborations for driving sustainable urban transformations.” *Journal of Cleaner Production*, 50:40-55.

Vine, E. 2008. “Strategies and policies for improving energy efficiency programs: Closing the loop between evaluation and implementation.” *Energy Policy*, October: 3872–3881.