Community-Based Energy Programs in Washington: Rediscovering and Relearning the Lessons of Thirty Years of Residential Energy Efficiency Program Delivery

Vince Schueler, Washington State University Energy Program, Olympia, WA

ABSTRACT

Since 2009, the American Recovery and Reinvestment Act (ARRA) has spurred a resurgence of interest and investment in energy efficiency programs in the Northwest and throughout the nation. Much of the interest and investment have focused on creating "new" neighborhood and community-based delivery models that were intended to provide an alternative to "traditional" utility-delivered programs. In Washington state, 11 grantees tested and deployed 12 community-based models, nine of which were funded through the Washington Community Energy Efficiency Pilot (CEEP) project and three through the Better Buildings Neighborhood Program (BBNP). Many of the grantees and implementation partners had limited prior experience with energy efficiency services.

This paper highlights the use of just-in-time formative evaluation techniques to accelerate learning and integrating the lessons learned from 30+ years of developing and delivering energy efficiency programs and services in the Pacific Northwest and beyond. It includes a case study of using intensive just-in-time techniques in Seattle's Community Power Works for Home program.

Drawing on three years of formative evaluation and research, we compare delivery models and summarize lessons learned. Part of the learning for grantees involved rediscovering that the underlying fundamentals of designing energy efficiency programs documented over decades of research had not changed. Community-based programs also uncovered new ground and refined utility program delivery models. We describe how community-based programs complement and extend existing utility programs, have a role in addressing un-served and underserved markets, and can promote/integrate social and economic values as part of program delivery.

Introduction

Since 2009, 11 grantees tested 12 community-based pilot programs in Washington state.[1] Eight projects were deployed through Washington's Community Energy Efficiency Pilot (CEEP) project, which is administered by the Washington State University Energy Program (WSU EP). Washington state also hosts three other U.S. Department of Energy (DOE) Better Buildings Neighborhood Programs (BBNP). Total initial investment across all projects was almost $40 million.[2] Lead grantees included one investor-owned utility, three public utilities, three local governments, a Community Action Agency, an Economic Development Council and two non-profits. Six of the 11 grantees ran programs serving both residential and commercial market segments.

What Is A Community-Based Energy Program?

Washington does not have a specific definition of a community-based energy program. Although 10 of 11 grantees included targeted intensive outreach at the neighborhood level in their original design,

[1] One grantee – Snohomish Public Utility District – tested two very different models: direct install in multi-family buildings and a customer choice audit program for single-family homeowners.

[2] The CEEP project was initially funded with a $14 million U.S. Department of Energy State Energy Program (SEP) grant. In 2012, the Washington State Legislature authorized a one-year $15 million extension through June 2013, bringing the total investment to $55 million. Results from the 2012 extension are not included in this paper.

all but four moved to broader city, county or multi-county service areas by 2012. This was done to extend access to benefits and to meet participation goals. One of the early lessons learned was the difficulty achieving high penetration rates or quick conversions for more comprehensive upgrades, which require significant financial investments and involve complex decisions. Three of the four projects that still deploy neighborhood targeting are projects that directly install a prescribed package of measures.

The "community" in community-based programs has evolved to describe the nature of delivery partnerships rather than geographic targeting. Each of the 11 projects developed unique delivery partnerships that included or engaged local community-based organizations.[3]

Table 1. Washington's Community-Based Energy Efficiency Programs

Program Name (Grant Period)	**Lead Grantee (Organization Type)**	**Location**	**Grant ($M)**	**Fund Source**	**Model**
Community Power Works (6/10- 9/13)	Seattle (City)	Seattle	20.0	BBNP	Whole House
Repower Bainbridge (6/10 – 9/13)	Bainbridge Island (City) Conservation Services Group (Private)	Bainbridge Island Bremerton	4.9	BBNP	Customer Choice
Repower Kitsap (12/10 – 9/13)	WA Department of Commerce Washington State University	Kitsap County	1.7	BBNP	Customer Choice
Home Energy Round-up (6/09 – 3/12)	Sustainable Living Center (Non-profit)	Walla Walla	.8	CEEP	Fixed Package
Project Energy Savings (6/09 – 3/12)	Clark Public Utility District	Clark County	1.0	CEEP	Fixed Package
Energy Challenge (6/09 – 3/12)	Opportunity Council (Community Action Agency)	Whatcom County	2.9	CEEP	Whole House
Sustainable Works (6/09 – 3/12)	Sustainable Works (Non-profit)	Multiple	4.0	CEEP	Whole House
Community Power – Multi-family (6/09 – 3/12) SF Audit (6/10 – 3/12)	Snohomish PUD	Everett Snohomish County	2.2	CEEP	Direct Install Customer Choice
Manufactured Home Free Upgrade (6/09 – 3/12)	Puget Sound Energy (IOU) and U-CONS (LLC)	Multiple Western Washington	1.5	CEEP	Direct Install
Residential Gas Program (6/09 – 3/12)	Ellensburg Municipal Utility District	Ellensburg	.06	CEEP	Customer Choice
Thurston Energy (6/09 – 3/12)	Thurston County Economic Development Council	Thurston County	1.0	CEEP	Customer Choice

Utilities, including lead grantees, reported that community-based programs were challenging to implement. While utilities valued the flexibility and opportunity to experiment with new models offered by community-based programs, they also reported that it was often difficult to communicate and align the differing goals, objectives, constituencies and constraints of utility-based and community-based energy efficiency programs (Table 2).

Evaluation Strategy Drivers and Methods

The central evaluation question for Washington's community-based programs was not whether installed measures would save energy, but how new delivery models would affect the rate, costs and comprehensiveness of installations. A long history of energy efficiency programs in Washington and the

[3] See Washington State Energy Efficiency Summit: An Integrated Look at Program Delivery (Washington State Energy Program 2012b) for detailed profiles of partnership structures, delivery and funding models.

Northwest has resulted in fairly robust methods for estimating energy savings from installed residential efficiency measures moderated by the Northwest Power Planning Council Regional Technical Forum.

As summarized in Table 2, a common feature of community-based grantees was lack of prior operational experience with delivering energy efficiency programs and services. The four utility grantees that did have some energy efficiency experience tested new delivery models and partnerships. While there is a wealth of historical information and institutional knowledge in the region and the country on how to best deliver energy efficiency programs and services, it is very hard to turn abstract lessons from another program, region or industry into concrete program design and implementation. Comprehensive reviews of energy program evaluations (Peters and McRae 2009; Bensch and Pigg 2002) suggest there is a great deal of content redundancy across evaluation studies, indicating that common best practices and findings are frequently relearned. One might speculate that while the "industry and experts" are learning lessons, many of the individuals who design, implement and manage these programs leave those positions. New entrants may believe their markets, customers and processes are "different" unless they are shown evidence otherwise. While relearning may be inevitable, it can be accelerated by fostering a learning culture and embedding evaluation and information sharing in program design and delivery.

Table 2. Evaluation Context for Community-Based and Utility-Based Programs

	Community-Based Programs	**Public/Private Utility Programs**
Authorizing Environment	Political (federal, state, local), Funding source (legislature, DOE) Community	Regulatory, shareholders, political and community
Primary Goals	Diverse: social justice, economic, environmental	Utility focused: load reduction, cost-effectiveness and ratepayer equity
Secondary Goals	Energy cost effectiveness	Social and economic
Energy Efficiency Experience	Limited or no experience (non-utility grantees)	Extensive
Trade Allies	Partially established	Established
Program Stage	Mostly experimental and pilot	Mostly mature
Support Infrastructure	Little or none in place	Existing and extensive
Risk Tolerance	Higher	Lower
Design Constraints	Moderate – political constraints affect goals and targets	Extensive – regulatory constraints on funding, expenditures and measures
Evaluation	Evaluation optional	Energy program evaluation and energy savings verification expected

The need to address the effectiveness of delivery models and process and to accelerate the learning (and relearning) process led WSU EP to develop a formative or internal evaluation strategy (Love 1991) for evaluation work with Washington's community-based programs. The execution of this strategy differed across grantees based on funding and other factors.

Community Energy Efficiency Program. CEEP staff and the evaluation team met in May 2010 to develop the evaluation and reporting framework. Evaluation efforts focused on:

- Capturing basic process data and documenting marketing, outreach and delivery strategies through monthly reporting of upgrade and assessment totals and quarterly reporting summary data on expenditures, marketing and installations;
- Providing technical assistance and support to program staff; and
- Regularly feeding process data to program staff and grantees.

Over the life of the program, WSU EP provided ongoing technical assistance and monthly status check-ins with grantees. This was supplemented with a day-long networking and planning session in fall 2010 to share outcome data and brainstorm successful strategies. Evaluation staff frequently participated in calls and provided summary data for planning sessions. These data were abstracted to provide a report to the Washington State Legislature (Washington State University Energy Program 2010). In fall 2011, the evaluation team conducted half-day site visits and exit interviews with all CEEP grantees to document design, results, lessons and outcomes. This information was used to develop project profiles for a statewide summit and information-sharing session in May 2012.

Community Power Works. The City of Seattle, Office of Sustainability and Environment (OSE) contracted with WSU EP to provide comprehensive evaluation and reporting services. The original evaluation scope had a heavy emphasis on monitoring and energy savings verification. After an initial evaluation needs assessment identified many of the conditions summarized in Table 1, the evaluation shifted to an internal or embedded evaluation model similar to what was developed for CEEP, but with more robust funding. This effort is described in more detail later in this paper.

Repower Kitsap/Repower Bainbridge. Evaluation and reporting roles in Kitsap Repower were more complex, as this project was part of a four-state National Association of State Energy Offices (NASEO) grant involving programs in Virginia, Massachusetts and Alabama. Overall evaluation was handled through a collaborative led by NASEO; WSU EP provided technical assistance, quality assurance and data collection and reporting services for the program.

Apples, Oranges, Tomatoes and Squash – Four Models for Service Delivery

Washington State's community-based programs employed diverse marketing and outreach strategies, delivery models, incentives structures and financing models. As other evaluations of community-based programs have found, process definitions, data quality, reporting systems, cost accounting and basic outcome definitions (e.g. project completion) vary widely and confound comparisons (Roy and Afflerbaugh 2013). Evaluating Washington state's community-based programs poses the same challenge. Many of these projects were start-ups operating in organizations with little pre-existing delivery infrastructure, which made it difficult to isolate start-up infrastructure investments from ongoing operational costs. Program strategy and delivery models were complex, often testing bundles of services that changed rapidly over the life of the projects.

As a result, costs, savings and conversion rates could not be consistently calculated across programs or meaningfully compared in many cases. However, we grouped and categorized these programs to draw general conclusions and illustrate trade-offs among often-divergent goals. Four general delivery models emerged from the 12 models tested. There is no "best" model. As summarized in Table 3, each model involves trade-offs among costs, energy savings, leverage and penetration. Focused package and direct installation models were more likely to serve moderate income and working poor households, and required less administrative support. Projects that addressed broader social goals, including workforce development and training, had higher delivery costs.

- **Whole house**. Projects are managed start to finish using a structured process with the goal of achieving comprehensive upgrades. The lead delivery partner acts as a general contractor or exerts significant control over the contractor pool. Incentives are designed to encourage whole-house upgrades.
- **Customer choice**. Projects focus on intensive outreach and marketing to drive demand for deeply subsidized audits. Utility incentives are supplemented to encourage participation in existing utility efficiency programs. Installing multiple measures is encouraged but not required. Homeowners are referred to existing auditors and utility contractors, and they select and manage their audit option, measure package and bid process with limited support from the program.

- **Focused package**. Incentives are targeted to a limited number of high-value measures (e.g., insulation or heating systems). Projects are brought in with a two-step audit process: an initial assessment to select likely households (conversion rate ~30%) and a more comprehensive audit or job order (conversion rate 75-100%).
- **Direct install.** Direct installation of a prescriptive set of low-cost measures in a targeted neighborhood using one or two contractors selected by competitive bid. Audits are not conducted, though an assessment may be done to generate a statement of work.

Table 3. Profile of Four Washington State Community-Based Models for Upgrading Energy Efficiency

Model Type	# Projects	# Upgrades 6/2009–2/2113	Project Cost Range (avg $)	Customer Cost Share	% Loans	Site Energy Saved Unit[4] (avg mmBTU)	Assessment /Audit Conversion
Whole House	3	1,800	$6-12,000	60-70%	20-35%	22.5 – 30.1	35-65%
Customer Choice	5	1,200	$3-8,000	70-90%	0-5%	13.4 – 17.7	20-40%
Focused Package	2	600	$2-4,000	0-40%	0%	16.1 – 27.4	75-100%
Direct Install	2	14,000	<$1,000	0%	0%	2.3 - 2.9	NA

Lessons Relearned and Learned

The *Recovery Through Retrofit* report (2009) provided much of the impetus for ARRA funding for energy efficiency improvements. The report identified three primary barriers to a stronger residential retrofit market: access to financing, access to information and access to a skilled workforce. Washington's community-based programs developed new models to address these barriers and integrate social and community values into this work by re-learning three broader lessons:

- Addressing barriers related to financing, information and training, while necessary, was not sufficient to drive upgrades or create markets.
- Simplify and focus delivery models.
- Make long-term investments to build capacity to serve these markets.

Financing Supports – but Does Not Drive – Demand

Recent national analyses have highlighted the limits of financing in driving demand (Borgeson et al. 2012; Fuller et al. 2010). Results of the six Washington programs offering financing options were consistent with national studies: in short, financing works best for those who need it the least (those with access to capital and good credit), overall demand for financing was modest, and financing tools did have an important supporting role to play, especially in whole house programs.

- With aggressive marketing, rate buy-downs, utility rebates and matching community rebates, two whole-house programs achieved loan participation rates between 25 and 35%. In the absence of these enhancements, loan take-up rates were under 5%.
- Loans were associated with larger projects. The average loan for 294 loans in Community Power Works was $14,623. Loan amounts data were not as readily available for other projects but anecdotal reports pegged typical loan amounts at over $10,000.
- Few loans went to moderate-income households. Of loans provided through Community Power Works, 64 (22%) were provided to homes below the area median income ($72,500 for a family of three), who qualified for a lower rate (3.49%). This was the result of a very intensive effort by

[4] Average annual estimated energy savings were calculated for CEEP projects using engineering estimates using deemed values from the Regional Technical Forum applied to reported measures, square footage and heating fuel source. DOE projects (two customer choice and one whole house) relied on savings estimates derived from the Energy Performance Score. Savings estimates and measure profiles were evaluated for consistency across these methods.

Craft 3, a lending organization with a social equity mission. Other programs offering financing reported anecdotally that loans were not reaching targeted working poor households.

During site visit interviews, loans were mentioned as a useful option to include in whole-house programs, but not a tool that would substantially move the market. Anecdotal evidence and general lack of participation of Washington's financial institutions in federally supported loan loss reserve funds, rate buy down and other efforts to lower the cost and risk of developing financing products for these projects suggests that federal reporting requirements and other limitations offset much of the value of using federal funds for developing specialized lending products for energy efficiency projects.

Community-based programs reported that it was easier to work with existing home improvement loan products offered through credit unions or community banks. Puget Sound Cooperative Credit Union, a regional credit union in Western Washington, currently has an energy efficiency loan portfolio of 2,250 projects and $24 million. Of these, 423 loans totaling $5.3 million were supported by federal or state grant funds, which were used to simplify the loan application process by using history of home mortgage payments instead of requiring credit scores. Grant-supported loans were an average of $3,000 greater than other efficiency loans (Ellis-Brock 2013).

Driving Demand Requires Carefully Targeted Outreach and Marketing

Ten of the 11 community-based programs started outreach efforts with broadly targeted efforts including energy fairs, tabling and traditional media buys. Although most community-based programs maintained some general outreach to maintain visibility, the overall evolution of marketing was toward more targeted channels (direct mail, e-mail blasts and contractor referrals).

Nine of the 11 projects had a dedicated website and eight experimented with Internet and social media. Of the nine dedicated websites, five included some form of online application. Most of these were fairly simple online forms. Only Community Power Works made the large investment required to automate the application and include on-line screening. By 2013, three community-based programs still maintained a social media presence beyond a basic web presence and only Community Power Works had defined and budgeted for a social media strategy.

Eight projects included some form of door-to-door canvassing in the original project delivery model. Four utility-led programs reported that variants of door-to-door sweeps were effective for projects where most measures were directly installed and/or full costs were paid. Door-to-door canvassing was not an efficient marketing approach for audits and comprehensive upgrades requiring significant customer investments. Only one of the four audit and upgrade-based projects that tested canvassing models, SustainableWorks, retained a canvassing model after initial trials. While SustainableWorks is still using and optimizing this delivery model, they are also testing other models.

Driving Comprehensive Action Requires Comprehensive and Targeted Energy Assessments

Homeowners need good information to make decisions about energy upgrades but, as other evaluators have found, very low- or no-cost audits were less effective: conversion rates are lower and they frustrate contractors because they generate unproductive leads. Assessments do need to be subsidized because few homeowners are willing to pay the full price ($400-$750). The three community-based programs offering or requiring whole-house installations settled on a subsidized audit cost between $95 and $195.

Pre-screening was also used to increase conversion efficiency. Southeast Washington Energy Round-up, a focused package model, used on-site pre-screening visits to focus audits on priority projects. All applicants received low- or no-cost measures and a walk-through assessment to determine whether focused package measures were feasible and the home was eligible for an audit. Nearly one-third of those assessed qualified for a full audit. Close to 100% of the full audits resulted in completed upgrades.

Similarly, Clark PUD Project Energy Savings provided walk-through assessments to electrically heated homes in low- to moderate-income neighborhoods to establish eligibility for a no-cost energy upgrade. Promising candidates were referred to a contractor for a detailed audit and work order, and 75% of these audits resulted in upgrades.

Washington's three whole-house programs established that a package of enhanced incentives, financing packages and intensive customer support significantly increases application and assessment conversion rates. Existing utility assessment/incentive programs will convert around 25% of assessments or audits to whole- or partial-home upgrades in two years (see Dethman and Associates 2010). Measured and estimated conversion rates at one year for the three whole-house programs ranged from 35% to 65%. While high conversion rates were achieved, these programs were expensive. Excluding incentive and financing costs, ongoing costs for marketing, customer support and program management were estimated to range from 25% to 50% of total upgrade costs.[5]

Workforce Development Needs Are Diverse

Washington's community-based programs initially focused workforce development on auditing, weatherization skills and building performance by encouraging – or sometimes requiring – certification for auditors or contractors. When technical training was required by programs, contractors reported that classroom training and certifications did not prepare workers for the reality of weatherization work, but hands-on experience, on-site in-progress quality assurance and direct mentorship did. While contractors and program managers reported needing workers with good technical skills, many reported their greatest need was for what some referred to as "unicorns" – auditors, crew chiefs and program managers with a rare mix of technical and sales skills. WSU EP and the other community-based programs invested in providing supplemental training in marketing and communications to help develop this mix of skills.

Flexible Compliance Standards for Prevailing Wage Requirements Work Better

Most of the grantees struggled with meeting, reporting and administering prevailing wage requirements. In addition to Federal prevailing wage requirements, most projects were subject to an additional layer of prevailing wage requirements established by the Washington State Department of Labor and Industries. Grantees found these requirements complex and confusing. The WSU EP invested as much as a third of its technical assistance resources to explain requirements and assist with reporting.

Partly in response to these challenges, the City of Seattle established and tested the High Road Agreement – a flexible set of standards covering service quality and the provision of family wages and benefits, training and career pathways for new hires and returning workers. *The Community High-Road Agreement for Seattle's Residential Retrofit Programs* (2010) was developed by a partnership involving the city, contractors, workforce training organizations, and labor and community groups.

All Community Power Works for Home certified contractors were required to adhere to the High Road Standards. A streamlined online system for reporting hours, wages, worker classifications and demographics was established. Reporting was required as a condition of paying rebates to contractors. The system has resulted in 99% reporting and greater than 95% verification of wage compliance (City of Seattle 2013). As reported in the *Community Power Works Fall 2012 Progress Report* (Washington State University Energy Program 2012a), Home program contractors considered the High Road Agreement a significant improvement over prevailing wage reporting and were willing to provide detailed workforce reports as long as the reporting system was easy to use, transparent, fair and enforced.

[5] Estimated indirectly by comparing the sum of household contributions, utility and federally funded rebates to grant amounts less federally funded rebates. This estimate includes significant start-up investments.

Building Operational Capacity Takes Time

Most programs had high and, in many cases, unreasonable expectations of how easy it would be to establish contracts; build program infrastructure; train and develop staff; and market the services of home assessments, upgrades and investments, especially for whole-house models. A review of the literature of whole-house upgrade programs found that two to three years are required to establish these programs and five or more years are needed to reach cost-effectiveness (SBW Consulting 2012). Three factors were associated with more rapid and effective implementation:

- Prior experience,
- Less complexity as measured by fewer levels of contracting, and
- A focus on process management and improvement and evaluation.

Tracking systems used by CEEP and Community Power Works showed that it takes at least six months to move a program from planning and design to drafting and signing the initial implementation contract between federal and state funders and the local implementation partner. Each additional level of contracting (for example, between a local community organization and delivery partners like financial institutions, auditors and contractors) added six to nine months to the start-up phase before upgrades could start.

The most aggressive programs spent a year in start-up mode before any upgrades were completed (Figure 1). More complex delivery models involving multi-level contracts can take several years to move out of start-up. Utility programs such Puget Sound Energy's partnership with UCONS, which expanded on an existing delivery model and contractual arrangements and installed prescriptive measures, scaled up more quickly.

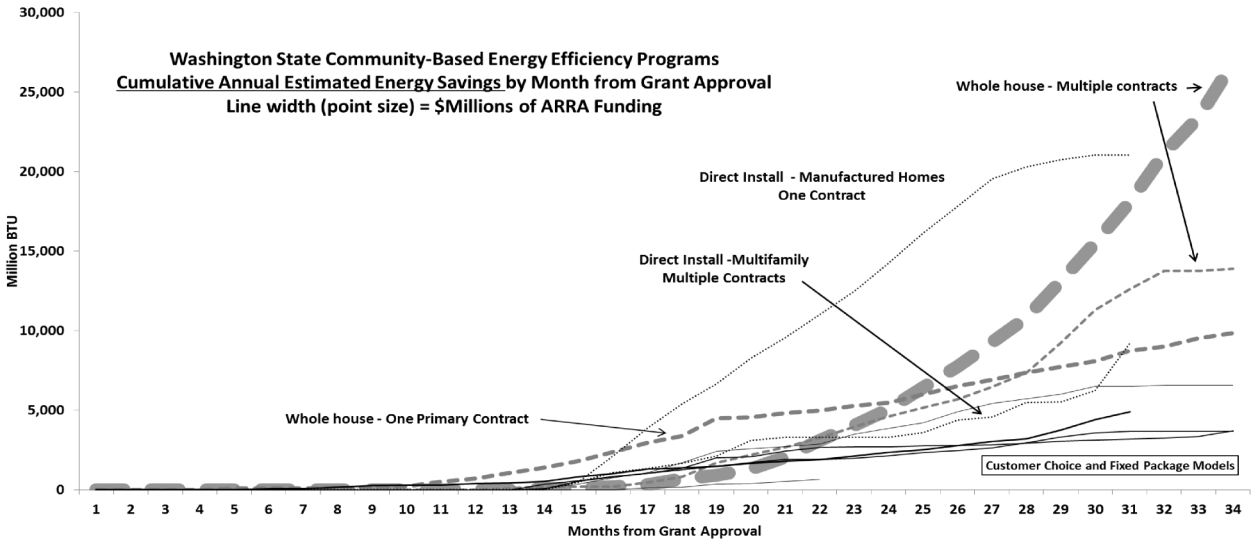

Figure 1. Implementation Curves for Washington State Community-Based Programs

Keep it focused, keep it simple. Community-based programs have fewer regulatory constraints than utility programs and offer more flexibility to test new approaches and delivery models. Most of Washington's community-based programs started out with complicated services, incentive structures and intensive customer contact. Over time, most gravitated back to the simpler program designs common in most utility programs. Strategies included:

- Whatcom Community Energy Challenge and SustainableWorks found that multiple customer contacts between assessments and bids were too costly or intrusive, so they redesigned their

delivery models to reduce the number of contacts. In contrast, the Thurston Energy Challenge began with no follow-up process after audits were completed and found that some follow-up was needed.

- The Sustainable Living Center and Clark PUD simplified its approach by focusing on a limited list of high-value measures.
- Community Power Works for Home found that an incentive design based on dollars per estimated carbon saved over the life of the measures was hard for contractors or the program to communicate. After nine months, Community Power Works shifted to a simpler three-tier incentive design based on estimated energy savings. This change contributed to a significant increase in uptake.
- A preliminary analysis of integrated (audit/contractor) delivery models in Community Power Works found that integrated models reduced hand-offs, miscommunications and process time (Schueler 2012).

Seven projects tested if energy efficiency services could be delivered comprehensively across multiple sectors within a geographic area. The most ambitious expression of this model was Seattle's Community Power Works program, which launched initiatives in six sectors. Snohomish PUD launched community-based initiatives in three sectors and five other projects served residential, small business and commercial customers. Seattle and Snohomish PUD reported they could launch only one major new initiative at a time and adopted a phased implementation strategy. Among residential programs, whole-house and focused package models more effectively coordinated and integrated audits and incentives than the customer choice model. Programs serving more than one sector coordinated branding and reporting but did not coordinate outreach, marketing and service delivery across sectors and within neighborhoods.

Find and fill gaps in existing energy efficiency services and programs. Washington's community-based programs were most successful when they found and filled un-served or underserved markets for energy efficiency services. The nature of the gaps that were found and filled differed in each community.

- In South Central Washington (Walla Walla and surrounding counties), there were no comprehensive weatherization services available (with the exception of low-income weatherization), an older housing stock and fragmented utility efficiency programs. The Sustainable Living Center focused on building demand for and contractors capable of performing complete, comprehensive single-family upgrades.
- In Seattle, oil-, propane- and wood-heated homes are un-served by utility rebate programs. Citywide, 17% of single-family homes were heated with oil. Community Power Works was particularly effective at using targeted direct mail and incentives to reach oil-heated homeowners. As of March 2013, 41% of completed projects were in homes initially heated with oil.
- Prior to CEEP, energy efficiency services in the City of Ellensburg were limited to electrically heated homes, so the City elected to use CEEP funds to develop audits and incentives for gas customers. Although the City of Ellensburg ultimately discontinued CEEP funding (because of program requirements related to reporting and prevailing wage), the City reported that they are still moving forward with City-funded services for gas customers.

Embedding Evaluation in Community Power Works for Home: A Case Study

In October 2011, the City of Seattle's Community Power Works program had the dubious distinction of drawing the attention of Fox News and *The Daily Show* with Jon Stewart, who threw jabs at the program for its perceived lack of progress toward energy efficiency upgrade goals. But by fall 2012, the driving challenge for the program was developing and maintaining sufficient contractor

capacity to meet the explosive demand for upgrades. In the space of 12 months, Community Power Works:

- Developed, deployed and tested multiple outreach strategies, incentives, services and delivery models.
- Increased monthly production from five whole-house upgrades to 75. By spring 2013, production exceeded 100 completed projects per month (Figure 2).
- Converted (or is converting) more than 45% of audits to whole-house upgrades within one year of the audit (Table 4). An audit is counted as converted when a bid is signed. The program is experiencing a drop-out rate after bid completion of less than 1%. A June 2012 partial participant survey found that 19% of those who received a test-in audit installed one or more weatherization measures on their own. This increases conversion rates by 11 points to 56%.
- Reduced estimated Energy Performance Scores (EPS) for homes by 30% on average. The EPS standardizes energy savings by fuel type to kWh equivalences. Reductions are estimated by comparing audit test-in scores to scores generated from a test-out assessment/visual inspection for all completed projects.
- Established a network of 25 certified contractors who are supported by 37 sub-contractors.

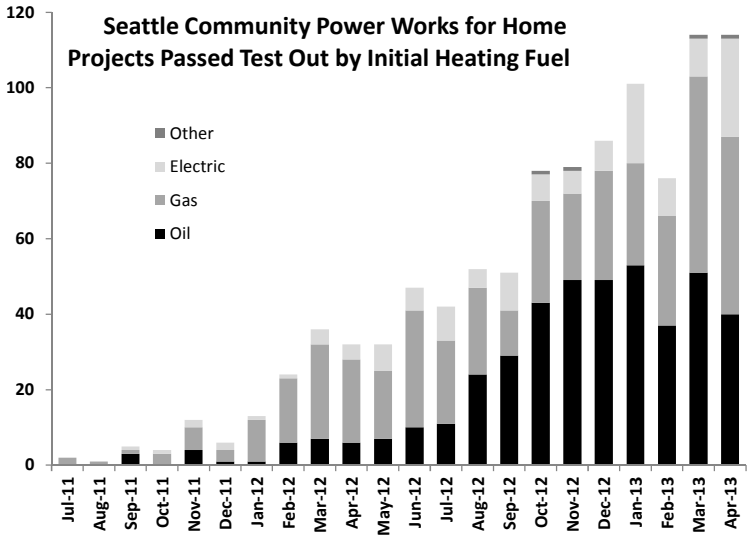

Figure 2: Monthly Production by Heating Fuel

Table 4: Summary Statistics for Community Power Works for Home by Quarter

Quarter	Audit Conversion Rate per Quarter	Avg Decrease EPS Score (kWhe)	Avg Total Upgrade Price
Total	45.6%	31.10%	$11,606
Apr – Jun 2011	37.9%	NA	NA
Jul – Sep 2011	40.0%	34.4%	$12,172
Oct – Dec 2011	39.5%	30.5%	$10,025
Jan – Mar 2012	49.8%	24.8%	$7,280
Apr – Jun 2012	44.7%	28.9%	$10,623
Jul – Sep 2012	48.6%	32.2%	$11,974
Oct – Dec 2012	NA	33.1%	$12,043
Jan – Mar 2013	NA	31.3%	$13,238

A key driver of this turn-around was an internal evaluation model focused on generating information used to refine program delivery in real-time. This model was successful because:

- The Seattle OSE budgeted for a robust evaluation and reporting system. Seattle is one of two BBNP projects to explicitly budget for and engage a local evaluation contractor. OSE collaborated with Clean Energy Works Oregon to invest in a comprehensive web-based project management tool (EnergySavvy Optix) and with Seattle City Light to support deployment of a single energy assessment tool (Cake Systems - EPS).
- OSE invited WSU EP to participate and comment on early planning and program design. One of WSU EP's first assignments was providing detailed data and reporting specifications to integrate and guide development of the Optix application. This was followed by a comprehensive start-up evaluation to clarify program and evaluation goals and objectives. WSU EP participated in monthly/bimonthly design implementation team meetings.
- The WSU EP Statement of Work identified evaluation and reporting services and specific deliverables. These were revisited and reprioritized at nine-month intervals as the program needs and models changed.

Credit for this success goes to:

- OSE, which encouraged, supported and rapidly authorized process improvements through an established change management plan;
- The Community Power for Home implementation team lead by Cascadia Consulting; and
- The auditors and contractors for suggesting changes and running with them.

Over the life of the contract, the original evaluation scope focusing on energy savings verification and reporting evolved to emphasize design assistance and real-time support for process improvement. Defining features included:

- **Rapid response and reporting**. Process outcomes and customer data for Community Power Works for Home were reported at three, six and eighteen months, and supplemented by a monthly compilation of production and pipeline indicators drawing from several data sets. To ensure that programs received timely feedback from the customer and trade allies, WSU EP released early results from participant, partial participant and contractor surveys to program staff, contractors and utility partners.
- **On-call reporting to inform program planning and implementation**. Some analyses were done at the request of the program implementation team, such as analyzing conversion rates to inform projections for completed upgrades. In other cases, WSU EP helped program staff anticipate bottlenecks by documenting the impact of rebate payment processing delays on contractors and mapping contractor and sub-contractor relationships to draw attention to capacity and bid assignment issues.
- **Tight integration of program operations with evaluation**. The line between program delivery and evaluation was blurred. For example, partial participant surveys were used to test whether program changes would appeal to early drop-outs and, if so, the drop-outs were given the option of being reconnected with the program. Participant surveys captured contractor- and auditor-specific ratings, which were reported back to the program and to contractors to build contractor capacity and skills.
- **Show use**. Specific instances of how data had been considered and addressed in program design were highlighted when sharing results with contractors and implementation partners.

This evaluation approach helped Community Power Works yield strong results and contributed to a climate of transparency, trust and receptiveness in which data was used to improve program design. This creates a virtuous cycle, where evidence that data will be used effectively to answer relevant questions creates ownership, which leads to better data and more demand for better data and reporting. But this embedded evaluation model would not meet standards for independent third-party evaluation required for many utility-funded energy efficiency programs. Ironically, this close relationship generated

a comprehensive and accurate set of process metrics that go beyond what is usually available for most energy efficiency programs.

Conclusions

Compared to utility-based programs, community-based programs have broader goals and constituencies and more flexible funding to support innovation in design, delivery and partnership models. Many of the non-utility grantees had limited prior operational experience or infrastructure in place to deliver programs. Early information and rapid feedback on the effectiveness of outreach, operations and delivery was critical. In response, real-time evaluation services were embedded and provided in a technical assistance model

In the space of three years, Washington's state community-based programs have established that these models can:

- Deliver energy efficiency upgrades,
- Complement and extend existing utility programs,
- Have a role in addressing un-served and underserved markets, and
- Successfully promote and integrate social and economic values as part of program delivery.

Washington's community-based programs relearned lessons from 30 years of utility experience delivering and evaluating energy efficiency programs:

- Financing and broadly targeted outreach are not enough to drive demand,
- It is essential to clearly define and target your audience,
- Keep program designs and incentive structures as simple as possible,
- Provide training in marketing in addition to technical training, and
- Invest to build long-term capacity.

One test of these programs' success is whether the efforts are sustained. This has already happened to some degree. In WSU EP exit interviews, utility partners described instances where lessons learned, program strategies or partnerships were incorporated into other efficiency programs. Non-utility lead agencies are making plans to continue. The Washington State Legislature extended CEEP funding for another year after the initial pilot, allowing many of the programs to take steps toward sustainability.

Acknowledgements

This paper would not be possible without the support, contributions and editing of Rick Kunkle, Anneka McDonald and Emily Salzberg at the WSU Energy Program; Adam Buick and Andrea Petzel at the City of Seattle Office of Sustainability and Environment; and Ruth Bell and Kelly Rula at Cascadia Consulting. Financial support for this project was provided by the Washington State Community Energy Efficiency Program, Seattle Community Power Works and U.S. Department of Energy Better Buildings Neighborhood Program.

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