

From before to BECAR: how comprehensive reviews improve a portfolio

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ABSTRACT

This paper discusses the methodology and results of a comprehensive process to independently review electric energy savings reported by a large investor-owned utility. This process, known as the Biennial Electric Conservation Achievement Review (BECAR), has brought together the utility, the regulating commission, the advisory stakeholder group, and independent evaluation consultants in a flexible, cooperative process to review (1) the soundness of reported portfolio savings, and proper application of unit energy (or deemed) savings values, (2) evaluation, measurement, and verification practices, (3) cost-effectiveness calculations, and (4) future improvements in savings estimation.

Each review occurring over the three biennial periods has been unique because of the evolutionary nature of the process--the scope of each succeeding review was influenced by the results of the previous one and the adaptive changes made by the utility in response to the findings. The BECAR process augments, rather than supplants, the traditional impact and process evaluation framework. It has led to many program improvements.

This paper shows how adopting a collaborative and evolving review process, consistent with the regional proclivity for forward-looking recommendations, has led to positive outcomes, including increased stakeholder confidence that savings are being achieved and that best practices are being followed, as well as recommendations for improvements in program savings estimation, verification, and evaluation practices.

Background

Puget Sound Energy (PSE), which serves much of western Washington State, implemented the Biennial Electric Conservation Achievement Review (BECAR) process in response to conditions ordered by the Washington Utilities and Transportation Commission (WUTC) to ensure compliance with the energy efficiency portfolio standard requirements of the Washington Energy Independence Act (RCW 19.285). The Energy Independence Act requires the large electric utilities in the state to determine their “achievable and cost-effective potential” for electricity conservation over ten years, and then set a two-year target based on that potential. It also imposes monetary penalties for failure to achieve the target. The first two-year period covered by the Act was the 2010-2011 biennium.

The conditions approved by the WUTC were developed jointly by PSE, WUTC Staff, and the Conservation Resource Advisory Group (CRAG), an external stakeholder group. These stakeholders review the conditions each biennium. The condition to implement BECAR calls for:

“An independent third-party evaluation [2010-11 and 2012-13 language] / review [2014-15] of portfolio-level electric energy savings reported by Puget Sound Energy....”

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Each BECAR is conducted by an independent consulting firm, which is managed jointly by PSE and WUTC staff, with CRAG input at all project stages. A final report must be included with PSE's compliance filing by June 1 after each biennial period. The BECAR consultant was selected through a competitive process, except in the 2012-2013 biennium where there was unanimous CRAG approval to renew the consultant selected for the previous BECAR. SBW Consulting, Inc. was selected as the lead consultant reviewer through a competitive bid process for 2010-2011, unanimously renewed by the CRAG in 2012-2013, and selected again through a competitive process for 2014-2015.

This review process takes into account the scope and complexity of PSE's energy efficiency program offerings, and has accomplished the following:

- Examined PSE's reported savings estimates from a comprehensive portfolio of programs serving all customer sectors
- Determined whether the portfolio targets and program designs were based on the best market, technology, and economic information available at the time
- Assessed the effectiveness of PSE's in-house verification team, which checks measure installation and quality for most programs
- Reviewed the third-party evaluation studies that PSE conducts on all of its programs on a multi-year schedule.

In March of 2015, the WUTC adopted new Energy Independence Act rules that require BECARs on an ongoing basis.

Scope of Reviews

Comprehensive portfolio reviews occur in numerous jurisdictions, but the BECAR process was notable in that the review was, and continues to be, a collaborative, evolving process. The fundamental, original purpose of the BECAR was to assess the extent to which the electric energy savings that PSE reported for their electric conservation portfolio in the biennium were achieved. So far, there have been three such cycles, and the stakeholders have tailored the scope of each BECAR to adapt to changes in the program portfolio, new technical information, lessons learned from program evaluations and the previous BECAR, and stakeholder input. Each new BECAR cycle starts by engaging the CRAG in a discussion of desired objectives. Major elements of this cyclical process are illustrated in Figure 1. For the 2012-2013 BECAR, the CRAG engaged a consultant team led by Schiller Consulting to make scoping recommendations. The CRAG discussed these recommendations, and many were incorporated into the final project scope.

Over time, the scope of each successive BECAR has become more focused and has built on previous BECAR findings. Scope has shifted from broad, detailed examination of savings and cost-effectiveness for each individual program to a portfolio review with focus on programs that have significantly changed or lack recent verification or evaluation information, as well as review of actions taken in response to recommendations from program evaluations and the previous BECAR. Table 1 summarizes the scope of each BECAR.

During each review cycle, stakeholders recommended minimizing duplication of existing impact and process evaluations, which tend to focus on a particular program or measure. Rather than in-depth of programs or measure investigations, the reviewers looked holistically at the "veracity" of the complete electric portfolio, and to focus attention on areas of uncertainty that emerged. The reviewer was given an uncommon amount of latitude to suggest areas of detailed inquiry, consistent with the overall objectives.

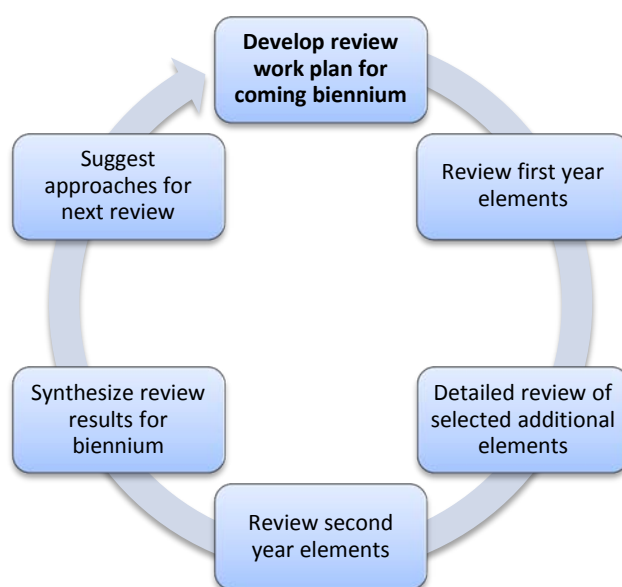


Figure 1: Figure 1: Recurring Biennial Review Process

Table 1: BECAR Scope

Objective	2010-2011	2012-2013	2014-2015
Portfolio Savings Review	<ul style="list-style-type: none"> • Determine veracity of total gross savings through tracking system data, comprehensive examination of individual project files, and on-site inspections or surveys. • Assess proper use of unit energy (deemed) savings values. • Additional “deep-dive” research on select programs and measures where needed. 	Same as 2010-2011	<ul style="list-style-type: none"> • Audit of tracking system data to check accuracy of gross reported savings and identify major changes from 2012-13. • Continued assessment of unit energy (deemed) savings values. • Optional additional “deep-dive” research on select programs and measures where needed.
Future Improvements in Savings Estimation	N/A	Suggest improvements to program savings for the next biennium based on recently completed evaluations, BECAR research, or other sources.	Same as 2012-2013
Evaluation Measurement & Verification (EM&V) Practices Review	Assess the processes and practices used to perform program tracking and reporting, measure installation verification, and evaluation planning and application.	Review of in-house verification practices	N/A
Recommendation Response Review	N/A	Review of (1) quality and applicability of program evaluation studies, (2) follow-up actions taken in response to recommendations from program evaluation studies.	Review of follow-up actions taken in response to recommendations from program evaluation studies and 2012-13 BECAR.
Cost Effectiveness Calculation Review	Audit of methodology, inputs, calculations, and results, including detailed review of avoided costs	Same as 2010-2011	N/A

The current 2014-15 BECAR will pay particular attention to critical topics that stakeholders are identifying. Future detailed reviews identified through this effort may focus on (1) programs or measures with evaluations completed in 2013 or later, and not included in the previous BECAR, (2) new programs or measures with claimed savings that have not been previously reviewed and/or evaluated, or (3) existing programs that have changed substantially, such that previous reviews or evaluation results no longer apply.

Methodology

For each biennium, the reviewer developed and presented a work plan that encompassed key objectives and scope elements, including the following reviews, which are described in more detail later in this section:

1. **Portfolio savings** (including database checks, unit energy savings value reviews, on-site verification, and future improvements in saving estimation)
2. **EM&V practices** (tracking and reporting, measure installation verification, evaluation planning and feedback, and recommendation response review)
3. **Cost-effectiveness** (including avoided costs)

That said, all parties had input into developing the work plan, and moreover, the CRAG provided policy input and overall direction throughout the entire BECAR process, as well as reviewing results. The CRAG also served as an arbiter for issues that arose during the BECAR if/when the overall team could not reach agreement. This multi-party, collaborative approach provides critical buy-in to suggested approaches and recommendations.

Portfolio Savings

In the initial 2010-11 biennium, the review team developed an understanding of the programs and data by reviewing key documentation and interviewing key managers and selected staff. The review team then performed a high-level portfolio review by reconciling the figures in the annual reports with supporting data from tracking databases, and looking for significant discrepancies between planned and claimed savings. In conjunction with this, the team performed a systematic and comprehensive examination of samples of individual project files spanning the 2010-11 program years. The team also reviewed the project files for discrepancies and cost and savings values with inadequate documentation. From this, several more elements were added to the portfolio savings review, namely, (1) targeted on-site verification of a subset of projects which received file review, and in-depth examinations of the procedures and savings estimates for the (2) Resource Conservation Manager and (3) Single-Family New Construction programs.

The 2012-13 BECAR built upon the understanding of the programs during the first biennium, and focused project-level reviews on new programs, as well as those where a higher degree of uncertainty in the savings existed. To allocate budgeted file reviews and on-site visits, the review team developed a rating system for determining sample sizes by program element and program delivery method. This system considered four prioritization factors: (1) the expected percentage of portfolio savings the program represented, (2) the level of savings uncertainty, (3) whether or not the particular program had recently been evaluated, and (4) the quality and applicability of recent evaluation results to the program. Table 2 shows how the results of this prioritization process.

Another key objective during this timeframe was assessing the performance of the internal verification team (the V-team), which PSE had established during this biennium. This review provided suggestions for improvement and ultimately verified that PSE practices were thorough and effective,

thereby giving stakeholders confidence in the process, helping shorten the feedback loop between program operations and EM&V, and allowing subsequent BECARs to focus on other parts of PSE's portfolio.

For the 2010-11 and 2012-13 BECARs, inspections were used to assess whether PSE reported projects and measures accurately, whether they were program-eligible and operational, and whether any issues found pointed towards more systemic concerns that should lead to additional investigation. The data collection options included phone surveys, site visits to confirm measure implementation, site visits to confirm past inspections by others, and meet-ups to accompany program inspectors in real time. Ultimately, the review team completed 514 on-site visits over the two biennial periods, split fairly evenly between residential and non-residential facilities. Because this extensive effort did not uncover any significant issues, the stakeholders decided that additional inspections were unnecessary for the 2014-15 BECAR.

A critical element of the portfolio review is determining that appropriate unit energy savings (UES)² values are applied correctly. UES values with prescriptive³ measures were developed from two sources: the Regional Technical Forum⁴ and PSE. For prescriptive measures with UES values based on approved Regional Technical Forum values, the review team accepted the approved RTF values without further review, and simply verified that PSE applied appropriate values to develop their savings claim (PSE is generally required to use RTF values where applicable). For prescriptive measures with UES values developed by PSE, reviewers examined relevant supporting documentation in PSE's database for measures whose savings collectively accounted for 90% of the non-RTF savings for such measures. They also compared the PSE supporting documentation to relevant documentation from prior studies and efficiency program development throughout the country with special emphasis on studies that were relevant to conditions in the PSE service area. These reviews, in some instances, pointed out opportunities to improve the PSE UES calculation methodology.

The upstream lighting program is an example where BECAR findings may lead to potentially significant future adjustments to savings claims. Originally, PSE assumed that CFLs and LEDs purchased at retail stores participating in the upstream lighting program exclusively ended up installed in homes. Through a telephone survey of the 50 largest participating lighting retailers, coupled with savings calculations, the review team was able to estimate that up to 20% of lamps were purchased and installed by non-residential customers, and determine an associated savings adjustment.

EM&V Practices

Tracking and reporting processes. The review team obtained relevant project tracking database extracts and reports, as well as internal studies of the data systems. The team conducted an overall assessment of database fields, their use, and accuracy of the data. This went beyond the portfolio savings review, which focused on verifying the overall portfolio savings numbers using the tracking data, to a more broad-based assessment of the various ways the tracking information is used. The review team had numerous conversations, meetings, and e-mail exchanges with PSE staff to develop an understanding of their tracking databases. The review team examined the data and documentation to the extent that database structure permitted.

² Synonymous with the term *deemed* savings.

³ i.e., standardized, rather than customized.

⁴ An advisory committee and a part of the Northwest Power and Conservation Council. The RTF establishes regional conservation measure by measure unit energy savings and develops standardized protocols for verifying and evaluating conservation in the Pacific Northwest region.

Table 2. Program areas of focus for 2012-13 BECAR

Program elements / sub-elements		BECAR review level	RTF deemed savings review	PSE deemed savings review	Surveys and on-site inspections (sample sizes shown)	Review impact evaluation result	Direct assessment (a)
Residential	Low Income Weatherization	Low	•	•	2		
	Single-family existing - Residential Lighting	High		•			•
	- Space Heat	Medium	•	•	22		
	- Water Heat	Low	•		11		
	- HomePrint	Low	•		9		
	- Appliances	Low	•	•	16	•	
	- Showerheads	Low	•			•	
	- Weatherization	Medium	•		23		
	Mobile home duct sealing	Low	•		2		
	Single-family existing - Home Energy Reports	Low				•	
	Single-family New Construction	Low	•	•	7		
	Single-family Fuel Conversion	Low		•	9		
	Multi-family Existing	Medium	•	•	22	•	
	MF New Construction	Low	•	•	6		
Business	Commercial/Industrial Retrofit (b)	Low-Medium			18	•	
	Commercial/Industrial New Construction	Low			1	•	
	Resource Conservation Manager Services	Medium				•	
	Small Business Lighting Rebate	Medium		•	15	•	
	Large power user, self-directed	Medium			4	•	
	Commercial Rebate (c)	Low-High	•	•	78	•	
	General, transmission, distribution	Low			1		

(a) Refers to retailer surveys performed to establish fraction of CFL/LED sales installed in non-residential applications.

(b) Included samples of 1-4 each standard, controls-based, EnergySmart Grocer, Comprehensive Building Tune-up, Energy Smart, Data Center Efficiency, Industrial Systems Optimization, and Simplified Building Tune-up projects.

(c) Included samples of 1-11 each Cooking Equipment, Laundry, , Variable Speed Drives, ECM Motors, Heat Pump & Air Conditioner, Hospitality, PC Power Management, LED Traffic Lights, Interior Lighting, Premium HVAC Service, MCFL, Green Motor Rewinds, Pre-rinse Spray Valves Direct Install, Cooler Miser Direct Install, and Small Business Direct Install projects.

Measure installation verification. For the initial 2010-11 BECAR, the review team used interviews with program staff, as well as reviews of relevant procedural documents and example project files, to develop a sense of how programs are verifying that measures were implemented properly and are yielding energy savings. They collected and reviewed the quality of the verification documentation,

and assessed whether it was adequate. This was of particular interest because PSE was in the process of implementing its in-house V-team. A more detailed review was subsequently conducted in early 2012 to examine verification procedures related to third-party program implementers and the commercial rebate program. These areas were prioritized because relevant program information had been lacking for the 2010 interim review.

Evaluation planning and application. For the initial 2010-11 BECAR, the review team examined both past evaluation work that informs those programs, as well as evaluation plans and activities for the next program cycle. First, the team obtained relevant M&V documentation from PSE, as well as overarching planning and procedural documents. The team systematically reviewed these, and developed a portfolio-wide context matrix. After examining the summaries and matrix, the team met with key evaluation group staff to better understand PSE's historical M&V practices, how it sets evaluation priorities, how it uses evaluation results to improve programs, and other efforts that it has employed to establish evaluation policies and frameworks.

Because the initial review confirmed that the new policies and frameworks were in place and leading to substantial improvements, the 2012-13 BECAR focused more narrowly on the quality and applicability of impact evaluation results. After reviewing evaluation reports generated during this biennium, the review team conducted interviews with relevant PSE program and evaluation staff to ensure that they had a full understanding of the basis for the evaluation, as well as to assess changes that have occurred to the programs since the evaluations were completed. They compared the methodology used in each evaluation to industry best practices.

As a result of the recommendations and improvements from these previous BECARs, the current 2014-15 BECAR does not address evaluations per se. Instead, the focus is on the appropriateness and effectiveness of the adaptive changes that PSE has made in response to evaluation and earlier BECAR findings. This will assess the reasonableness of the response relative to the magnitude of the issue, through reviews of written materials as well as interviews with PSE staff and contractors. The review team will then compare PSE responses to industry best practices. The 2014-15 BECAR will also offer recommendations for how to continually improve the BECAR process and reporting for future biennia.

Cost-effectiveness calculations

The team reviewed PSE's cost-effectiveness calculations reported in its 2010 and 2011 Annual Conservation Reports to determine if the correct methodology was used, and whether it was consistent with National Action Plan for Energy Efficiency, industry practices and the settlement agreement. This effort also involved a due diligence review, an assessment of the appropriateness of applied avoided costs, and an examination of results from the Washington State Conservation Work Group study, which compared utility methodologies for calculating the Total Resource Cost (TRC) test to those of the Council. The review team repeated much of this process for the 2012-13 biennium. Because of the paucity of significant findings from these past efforts, no review is slated for 2014-15.

Findings

Collective findings across the two completed BECARs in the areas of portfolio savings, EM&V practices, and cost-effectiveness calculations are summarized below (SBW 2012; SBW 2014).

Portfolio savings

BECAR comparisons of reported savings to program tracking database savings for 2010-11 and 2012-13 found that program-specific values matched across the board, with very minor, negligible exceptions—showing essentially that PSE “got the math right.”

For both biennia, the review team also conducted extensive random sampling of selected projects. For 2010-11, this included an examination of files and supporting information for 469 projects, and on-site inspections of a subset of 268 of these projects that targeted residential and business programs of particular interest. This initial review led to an agreement with stakeholders to undertake detailed reviews of 20 sampled Resource Conservation Manager projects with follow-up onsite interviews of five customers, and a detailed review of the records and practices associated with the largest participant in the Single-Family New Construction program. Overall, the review team was generally satisfied with the documentation and explanations they were given regarding the claimed savings for the sampled projects. Discrepancies that turned up in the file reviews and on-site visits tended to be infrequent and minor, and did not materially affect the overall savings claim. Regarding the RCM program, the review team did develop some concerns about the documentation and savings calculation methodology, which were addressed in a subsequent impact evaluation.

For 2012-13, the review team reviewed and inspected 129 residential and 117 non-residential sites, and did not find any significant issues that warranted a correction to claimed savings. On-site inspections did not uncover any significant issues with measures not installed as documented, or with the inspection practices of PSE staff or third-party implementers. An important finding of this effort was that, based on the sample of examined projects, the PSE in-house inspections are thorough and effective at ensuring project quality.

Another important element of the 2012-13 BECAR was reviews of unit energy savings (UES) values. For all prescriptive measures with UES values based on RTF values, without exception, PSE selected the correct RTF UES value and entered it properly into the tracking database. For PSE UES savings values, PSE selected the correct PSE UES value for each measure, and entered it properly into the tracking database. The review team did find reasons to recommend adjustments to several PSE UES values concerning lighting, HVAC, and appliances, applicable in subsequent program years. Most of these recommended adjustments are based on the premise that PSE UES savings values should track as closely as possible to new RTF UES values for similar measures.

The review team found several UES measures where corrections to the 2013 claimed savings were warranted. The measures were residential LED lighting fixtures and heat pump sizing and lockout controls, which combined to result in a correction of less than one percent of the total portfolio.

A major issue that BECAR reviewers and stakeholder grappled with during this round concerned the baseline assumptions for LED lamps. The reviewer found that the information available at the time of the review was substantially different from that available at the time the baseline assumptions were originally formulated. After much discussion, all stakeholders ultimately concluded that future savings adjustments, rather than retroactive corrections to past savings values, were appropriate because the CRAG determined that the original assumptions were reasonable based on the information available at the time the program was planned and approved.

The 2012-13 BECAR also included a top-level assessment of the savings associated with the upstream residential lighting program. This was a large program, accounting for 27% of PSE’s total portfolio savings, which includes two upstream components: retailer mark-downs and giveaways of CFL and LED lamps and fixtures. A key objective was determining the proportion of lamps that were purchased and installed by non-residential customers. The review team’s surveys of the 50 mark-down retailers in the residential lighting program with the greatest sales in 2012 provided basis for estimating the percent of total program sales that was non-residential. After analyzing the results for

reasonableness, and extrapolating results to the entire program, the review team determined that reasonable estimates for the program were 17 percent non-residential for CFLs and 20 percent non-residential for LEDs—findings that had the potential for significantly increasing future program savings.

EM&V practices

Tracking and reporting processes. For the 2010-11 BECAR, the review team investigated PSE's systems for tracking payment requests and savings, including an internal PSE study that identified shortcomings and recommended improvements in database design, standardization, naming conventions, documentation, and training. After assessing PSE's internal review and comparing it with the data products and practices encountered during their efforts, the review team affirmed PSE's own findings at all levels. Many of the challenges that the review team encountered obtaining tracking system data and documentation could be viewed in the context of the tremendous growth of the PSE efficiency portfolio in recent years. The addition of new programs and third-party-administered offerings required PSE to expand their tracking systems dramatically and rapidly to accommodate the increased complexity and transaction volumes in the 2010 portfolio. PSE provided evidence that its management had foreseen this need, and was upgrading their systems. Given that structural changes were occurring, and that other review aspects would likely spot irregularities or problems, no subsequent BECAR examinations of tracking and reporting processes took place.

Measure installation verification. The review team's initial 2010-11 check of PSE's verification practices and comparison with industry best practices led the review team to conclude that PSE's efforts were generally satisfactory. One area, however, that the review team suggested, and stakeholders agreed, needed more exploration, was verification practices for third-party-implemented programs, and commercial rebate programs. This more in-depth, targeted review found that methods for those programs are generally consistent with best practices. Nonetheless, the review team observed potential areas of improvement in the verification tracking systems and procedural documentation. For the most part, PSE was already considering some of these improvements. A key improvement underway was a measurement and verification framework PSE developed that defined policies, guidelines, protocols, and processes, mostly from the perspective of program implementation, rather than evaluation. This framework helped define subsequent inspection and verification processes, consistent with best practices, such as the V-team inspection regimen, which the 2012-13 BECAR subsequently reviewed and confirmed.

Evaluation planning and application. For the 2010-11 BECAR, the review team investigated PSE's past, current, and future evaluation efforts and plans, engaged in in-depth discussions with PSE evaluation staff, and compared PSE evaluation activities with industry best practices. The team found that past evaluations only covered a small portion of the overall electric portfolio. Process and market evaluations in particular were rare. Other issues included lack of research plans, limited documentation, and narrowly-defined scope. Importantly, the review also found that PSE was in the process of ramping up the breadth and rigor of their evaluation efforts substantially. Evidence of this included developing action plans and frameworks, establishing an evaluation response report system to help complete the evaluation loop, and commissioning more comprehensive evaluations of major program areas, and expanding the scope of the process and impact evaluations.

The 2012-13 BECAR generally confirmed that PSE had made progress on evaluation practices since the last biennial review. The review team did uncover issues with the sufficiency of information and level of reporting in some evaluations, as well as concerns about the basis for accepting evaluation results. This led to a recommendation that PSE work closely with their evaluation contractors to define appropriate evaluation methodologies, and ensure consistent, high quality documentation.

Cost-effectiveness calculations

For the initial 2010-11 BECAR, the review team performed a thorough investigation, which determined that PSE met the four required criteria⁵, meaning that the portfolio passed the TRC test that is consistent with the Northwest Power and Conservation Council methodology and definitions, and demonstrated that their programs were cost-effective at the program and portfolio levels. The review found that PSE used reasonable assumptions and credible sources, and provided sufficient documentation details. It did also turn up minor deviations from the Council methodology around application of annual avoided costs, inclusion of non-energy benefits and O&M costs, and measure-level calculations. None of these findings materially affected portfolio or program cost-effectiveness.

As part of the extensive initial look, the review team examined how avoided costs were developed and applied, and found that PSE used a robust approach, similar to the Council's, to develop their resource plans. Both approaches used similar, well-documented industry standard software to develop price forecasts as inputs to model portfolio uncertainty and to incorporate market price risk. The review found minor differences in the assumptions that form the foundations for the forecasts, not unexpected given that each entity is modeling a slightly different region. Overall, the review team found consistencies between approaches, reasonable assumptions, credible sources, and sufficient documentation details.

The 2012-13 BECAR essentially repeated the cost-effectiveness assessment, and again found PSE's approach to be sound, with only minor differences from Council methodology regarding hourly annual avoided costs, inclusion of fewer load shapes, and exclusion of certain non-energy benefits and O&M costs. Because of these consistent and stable results, the stakeholders decided that additional cost-effectiveness review was unnecessary for 2014-15. Again, there was no material impact on cost-effectiveness results.

Conclusions and Lessons Learned

The BECAR process has been a success. Key to this success is the collaborative relationship between PSE, WUTC Staff, advisory group members, and the consultant team who have worked together to refine scope, develop work plans, review results, and work through issues and differences. This has resulted in an adaptive process in which objectives and scope evolved over time in response to past findings and new issues, and continues to do so as the portfolio and technologies shift.

BECAR findings and recommendations to date have resulted in increased confidence in the energy savings being reported, as well as the underlying processes and assumptions. The reviews have to date uncovered no significant problems with PSE's reporting or program operations. In turn, this increased confidence has made the process smoother for all parties in subsequent BECARs. Validation of PSE's verification practices has been a particularly notable outcome because it confirmed the value of a robust in-house verification function. Other BECAR results have led to additional forward-looking improvements, including:

- Suggesting tracking system enhancements, such as greater automation and improved documentation of assumptions.
- Assessing the previously unidentified unit savings impact of LED lamps purchased at retail stores and placed into commercial business applications.
- Raising awareness of potential changes to energy savings, or other technical information for select measures, such as baseline assumptions for LED lighting projects.

⁵ The four criteria are the Total Resource Cost (TRC) test, evaluated at the program and portfolio level, and the Utility Cost (UC), Ratepayer Impact Measure (RIM), and Participant Cost (PC) tests, evaluated at the portfolio level only.

- Adjusting evaluation priorities, such as accelerating the schedule to evaluate the Resource Conservation Manager program.
- Eliminating minor inconsistencies in the cost-effectiveness calculation model.
- Recommending ways to engage energy efficiency program staff in evaluation planning to improve transparency, and to increase the value of findings for program improvement.

It is important to view BECAR as a quality assurance (QA) tool to be used in conjunction with a utility's existing EM&V and other QA practices and regulatory requirements. It is not intended as a substitute for a robust programmatic EM&V or QA program and should avoid duplication of these efforts. However, some overlap, particularly in the first biennium, was seen as necessary until stakeholders built up their comfort levels with the company's performance in these areas.

Communication between all parties – early and often – is absolutely crucial and cannot be emphasized enough. In addition to general project direction and oversight, questions of interpretation often arise in the course of work. Such questions should be anticipated and addressed as early in the BECAR process as possible. Some issues, such as understanding programs or interpreting tracking data, can be resolved between the utility and consultant. Other issues should involve all stakeholders, such as whether a deeper investigation is warranted or whether a finding should result in a correction to current savings or become a forward-looking recommendation. PSE has worked with the consultant reviewers and stakeholders to identify communication issues and develop an improvement plan for each successive BECAR.

Finally, it should be noted that BECAR has required a significant commitment of time and resources by PSE, WUTC Staff, and the CRAG. Tasks such as responding to data requests, scheduling site visits, and reviewing reports should have clear expectations (about who will do what, by when), provide sufficient lead times, and allow for efficient coordination within and between parties.

In conclusion, a process like BECAR can be another tool to assure regulators, stakeholders, and utility managers about the performance and quality of a conservation program portfolio.

References

National Action Plan for Energy Efficiency. 2008. *Understanding Cost-Effectiveness of Energy Efficiency Programs: Best Practices, Technical Methods, and Emerging Issues for Policy-Makers*. Energy and Environmental Economics, Inc. and Regulatory Assistance Project.
<www.epa.gov/eeactionplan>.

SBW Consulting, Inc. 2012. *Final Report for Independent Third-Party Review of PSE'S 2010-2011 Electric Conservation Energy Savings*.
<<http://www.utc.wa.gov/docs/Pages/DocketLookup.aspx?FilingID=100177>>, Documents, Attachment 3>.

SBW Consulting, Inc. 2014. *Final Report for Independent Third-Party Review of PSE'S 2012-2013 Electric Conservation Energy Savings*.
<<http://www.utc.wa.gov/docs/Pages/DocketLookup.aspx?FilingID=111881>>, Documents, Attachment 5>.