

QUALITY ASSURANCE FOR DSM: ENHANCING THE MAGIC OF MARKETING, WHILE DISCARDING THE SMOKE AND MIRRORS

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Why Have a Quality Assurance Function?

Quality assurance is well established within major manufacturing industries and to a lesser extent in some service industries. The quality assurance function is an important one for both companies and customers concerned with the quality and excellence of goods and services. Imagine a world without it. Planes, trains and automobiles... Who would purchase an automobile from a company without a quality assurance program? Ketchup and mac 'n cheese... Who would buy watery ketchup or bland mac 'n cheese? From ketchup to cars, the quality assurance function is an invaluable one.

As utility customers, we are purchasing demand-side management (DSM). Shouldn't we have the reassurance of a quality assurance program for something as important as DSM? DSM has always had its sceptics – and given that some DSM programs were not that serious about ensuring that reported savings were real, some scepticism was not unfounded.

At BC Hydro, we have always been proud of the integrity of our Power Smart programs, but that doesn't mean we don't have quality assurance issues. Although these issues impact a small fraction of our claimed savings, they can still impact our credibility.

The purpose of Power Smart Quality Assurance (PSQA) is to assist all Power Smart groups in building and protecting Power Smart's reputation with both internal and external stakeholders. We have found that the PSQA function is invaluable in enhancing the magic of marketing, while discarding the smoke and mirrors...

Enhancing the Magic of Marketing

PSQA improves the marketing programs by:

- Assisting the program managers in resisting pressure to launch a program before it is ready.
- Reducing costs through finding efficiencies in processes.
- Preserving previous learnings so that new program managers have access to advisors to provide guidance.
- Providing standards, templates and examples to save time and ensure consistency.
- Building, in the other areas of BC Hydro, an understanding of Power Smart and the rigors it goes through.

Discarding the Smoke and Mirrors

PSQA ensures the integrity of the reported results by:

- Ensuring that electricity savings being claimed are reasonable, well-documented, and defensible.

- Ensuring there are no unpleasant surprises when evaluations are completed.
- Ensuring that the results of audits are generally favourable and that issues raised in audits are dealt with in a timely manner.
- Ensuring policies and decisions are properly documented, and communicated, and followed.

Background

BC Hydro is an electric utility serving a large area including about 94 per cent of the population of province of British Columbia, Canada. We serve about 1.6 million customers, and generate between 43,000 and 54,000 GWh of electricity annually. Approximately 90 per cent of our generation is hydroelectric. Our revenues last year were \$C3,424 million. We have the third lowest electricity rates in North America.

Our low rates are the result of our large low cost hydroelectric generation system. At present, we are a net importer of electricity on an annual basis, but we do generate considerable revenue in the export market. Our large storage capability allows us to buy electricity during off-peak periods and sell at a higher price on-peak.

The cost of new generation is considerably higher than that of our existing system and this will put upward pressure on our rates. In order to minimise the costs of new generation we are operating an ambitious DSM program, which we call Power Smart. We are currently spending about \$C100 million per year on DSM. The PSQA function has now been in operation for about two and a half years.

Power Smart Quality Assurance Objectives

PSQA objectives include the following:

- To build credibility within BC Hydro and with its regulator and its customers.
- Provide transparency in our energy savings calculations and ensure appropriate measurement and verification (M&V) is completed.
- Embed previous DSM learnings within the organisation.
- Improve the efficiency of DSM programs.
- Ensure future audit results are favourable.

What Does PSQA Do?

- Acts as an advisor regarding program design and implementation. Much like a legal department, we will provide advice, but leave the decision-making with the appropriate organisational unit. Only if a decision violates a corporate or business unit policy would we strongly recommend a change.
- Participate on the program design teams for new programs. Develop and maintain a business case template. Ensure required data will be collected to enable savings to be evaluated.
- Review (and sometimes develop) the policies, processes, procedures and standards that are used in the Power Smart business unit to ensure that the results are consistent, reliable, and credible.
- Ensure that all areas of Power Smart observe the established policies, processes, procedures, and standards by communicating them, and following up with file reviews, process reviews, and reporting reviews.

- Support the evaluations (process, market, and impact), by ensuring information needs are met.
- Carry out studies in support of Power Smart. These include the Conservation Potential Review (CPR), and the Power Smart Employment Impacts Study.
- Facilitate compliance audits, both financial and environmental, and follow up to ensure audit issues are addressed.
- Help to ensure that future audits (financial or environmental) go smoothly with any major issues being identified and addressed as they are found.
- Deal with Power Smart issues/information requirements from other areas of BC Hydro. This includes information on the legacy (previously completed) Power Smart programs and GHG credits, integrated electricity plan (IEP) requirements, potential environmental impacts, and issues with the load forecast.

What PSQA Doesn't Do

- Make (or break) program rules. Program design is the responsibility of Marketing. PSQA aims to ensure rules are followed and, when necessary, facilitate rule changes.
- Assign blame. When areas are discovered where improvements are needed, we help develop solutions that work for everyone.
- Audit. We review rather than audit. Groups outside of the Power Smart business unit carry out audits, with results reported to senior management. Quality assurance reviews are done explicitly for Power Smart with the aim of dealing with issues as they are found. Our quality assurance reviews are provided to Internal Audit when requested.

Results

The nature of the quality assurance function in a large and complex initiative is that it is never completed – rather you end up with a process for continuous quality improvement.

At BC Hydro Power Smart, we have focused our quality assurance activities around the following areas:

- Program Development
- Business Case Preparation
- Reporting
- File & Process Reviews
- Standards
- Policy Development
- Audit Compliance
- Electronic Document Management
- Conservation Potential Review
- Environmental Management
- Integrated Electricity Planning

Our specific function and our interaction with the remainder of the company varies in these different areas, and each is described briefly.

Program Development

PSQA participates on program development teams led by Marketing to provide guidance and advice aimed at improving program effectiveness. We also ensure that program logic is well developed and documented and that baseline data is developed. In addition, we ensure that M&V and evaluation plans are in place before launch so that the program can be evaluated. We also assist program managers in understanding our Conservation Potential Review studies and in incorporating results into their program plans.

An area in which PSQA is looking for cost reductions is in M&V. Power Smart started out doing M&V for nearly all projects. As we gain more data from the M&V that has been completed, we are investigating moving to a sampling method such that only a fraction of projects of a particular type would have M&V completed. The saving in resources is expected to be quite substantial.

Business Case Preparation

Issues around how business cases were developed, their format, and approval mechanisms have been standardised in a business case template. Approvers are now assured that every business case they receive for approval is in the same format and any omissions will be obvious. This template and process was developed with Corporate Finance and assures that business cases work from a common set of assumptions.

Reporting

PSQA worked with Power Smart senior management to develop improved reporting. The many different reports being produced were inventoried and reviewed for redundancy, effectiveness, and consistency. As a result new monthly reports were developed to better present Power Smart information. This has meant that fewer reports are produced as the new reports are designed to meet multiple needs.

Reported savings have also been impacted by the results of a study requested by PSQA. This involved measuring the power draw of lighting equipment that is to be removed and replaced by new more efficient equipment, e.g. T12 lighting fixtures and replacement T8 units. Prior to this study, like most utilities, we relied on manufacturers' data for the power consumption of the older T12 equipment. However, our study indicated that the older T12 equipment used significantly less power and delivered significantly less light than the manufacturers' data indicated. The numbers used in some of our calculations are being revised to reflect this new data. Inquiries made to other jurisdictions have led us to conclude that few others are aware of this discrepancy.

File & Process Reviews

PSQA conducts periodic file reviews of energy savings from Power Smart projects. Generally, the purpose of these reviews is to determine whether or not projects have been documented adequately, to compare energy savings reported in BC Hydro's tracking system with the documented savings, and to determine whether incentives issued undergo proper procedures and verification processes.

Process reviews of Power Smart programs are also performed. Generally, the purpose of these reviews is to establish and monitor the accuracy of the Power Smart program information. Key program processes are identified, documented and assessed. Based on the review findings, recommendations are made to address any deficiencies, and responses are obtained from the program managers. Depending on the

response, it may be necessary to follow-up with the program manager to ensure any necessary changes or actions have been carried out.

Standards

In order to ensure adequacy of Power Smart processes and consistency of results, we have produced standards on the following subjects: project technical reviews, performing site inspections, measurement and verification, evaluations, persistence of savings, and reporting of savings.

These standards are used only within Power Smart, but when necessary, are developed in co-ordination with other parts of the organisation.

Policy Development

PSQA activities sometimes uncover situations for which a policy needs to be developed. An example is in the calculation of the Total Resource Cost (TRC) for Power Smart projects and programs. The issue involved how to incorporate non-electricity benefits into the TRC calculation for situations in which the electricity efficiency component costs cannot be broken out of the total project costs. PSQA investigated how Power Smart and other utilities were doing this and discovered a systematic error in what was being done. We recommended a new method. Although not perfect, it eliminated a systematic error. This particular policy was also co-ordinated with the Power Planning and Portfolio Management Department to ensure it aligned with their treatment of supply-side options.

Audit Compliance

BC Hydro Power Smart has received two recent internal audits and expects a third one next year. Once an audit is completed, PSQA takes the lead role in ensuring a management response is provided for all issues. We then follow up to ensure that the actions agreed to are actually completed. This involves keeping an action list updated with current results and co-ordinating with the individuals responsible to ensure commitments are being met.

Electronic Document Management

PSQA has implemented an electronic document management system (EDMS) on the BC Hydro internal website to manage quality assurance and evaluation documents, as well as some marketing documents such as business cases. The traditional method of storing documents on a local area network (LAN) did not provide the structure to assist with effective management of these documents. EDMS provides quick and easy searching capabilities, and eliminates inconsistencies in file and folder naming, which can lead to searching difficulties. EDMS allows us to control access to the documents by limiting sensitive material to the department staff only, or by providing general access to specific documents for internal website users such as the rest of the Power Smart business unit. This general access is an important tool that has greatly improved the access to resources for program managers.

While EDMS allows us to share current documents with others, it also provides us with a system to ensure that historical data is preserved. Many valuable resources have been produced in the past, however, with organisational and staff changes over the years, it is often difficult to locate electronic or hard copies of these items. EDMS has eliminated these difficulties by providing a way to manage valuable historical information that otherwise may only reside with individual members of the organisation.

Conservation Potential Review

PSQA takes the lead in managing studies to determine the potential for conservation and capacity management within our service territory. This involves bringing all the stakeholders together to

determine the scope of proposed studies, and leading a team charged with ensuring the quality of the studies and ensuring the studies meet the needs of the ultimate users. PSQA is also involved in assisting other groups, such as Marketing, in making use of the study results.

Environmental Management

BC Hydro is committed to sustainability and minimising our environmental impacts. Each organisational unit has responsibility for its own operation and periodically receives an environmental audit. Power Smart has not yet had such an audit, but PSQA is charged with leading the development of an environmental management system for Power Smart. The environmental issues within Power Smart tend to revolve around the supply of new products (e.g. mercury in CFLs) and the disposal of removed equipment (e.g. CFCs in refrigerators, PCBs in lighting ballasts). A system of monitoring and reporting on how we deal with these issues is being developed, as well as a process to ensure that environmental impacts are assessed and taken into account when new initiatives are developed.

Integrated Electricity Planning

PSQA is currently charged with supplying Power Smart information to our Power Planning and Portfolio Management groups and ensuring that Power Smart attains its appropriate place in our Integrated Electricity Plan. In order to do this, the information typically needs to be organised in various ways to meet the needs of the Load Forecast and for analysis of Power Smart as a resource. We also oversee studies related to Power Smart and resource planning. Recent examples are our Conservation Potential Review and Employment Impact studies.

Summary

PSQA adds value to the DSM programs in a number of ways. It standardizes information and processes, and documents them, which saves program management valuable time. This standardization also ensures consistency and smooths out the potentially rough road to getting major spending approvals.

In addition, PSQA builds confidence in Power Smart throughout BC Hydro and with our regulator and customers. This confidence comes from knowing that standards and processes are in place, and reviews are carried out to monitor compliance. This has proved to be valuable especially in dealing with Internal Audit and during regulatory hearings.