

Industrial Energy Management: Lessons from Two Programs

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ABSTRACT

This paper describes two industrial energy management initiatives (BC Hydro Power Smart's Industrial Sustainable Energy Management Planning, and Energy Trust of Oregon's Industrial Energy Improvement), summarizes the experience of each program as well as the lessons learned. Both programs work with large industrial customers to apply the principals of continuous improvement to energy management with the intent of yielding (and sustaining) operations and maintenance as well as capital project energy savings.

This paper compares and contrasts the features of these two programs, the range of participation by industry type, programmatic successes and challenges, customer feedback, and lessons learned.

Introduction

BC Hydro and Energy Trust of Oregon have been leaders in developing energy management as a new approach to achieving more comprehensive energy savings in the industrial sector. Industrial energy efficiency programs have historically been designed and marketed from a technology perspective, such as variable speed drives, compressed air equipment, etc. While this approach has been cost-effective and captured significant energy savings it has not captured the full benefit of addressing the process around these systems (for example eliminating inappropriate uses of compressed air) and achieving savings from operations and maintenance changes. These two organizations have found that a management (as opposed to a technology) approach can yield significant energy savings and provide additional benefits across their industrial program offerings.

BC Hydro Power Smart

BC Hydro is a publicly owned crown corporation that reports to British Columbia's Ministry of Energy, Mines, and Petroleum Resources. BC Hydro is the third largest energy utility in Canada serving an area of over 900,000 square kilometers and 94% of British Columbia's 4.5 million residents and businesses. Table 1 outlines B.C. Hydro's energy sales and number of accounts by customer segment.

Table 1. BC Hydro Energy Sales and Accounts by Sector

Customer Segment	Energy Sales (GWh/yr)	Number of Customer Accounts
Residential	17,593	1,633,558
Commercial	13,051	161,184
Industrial Distribution	4,760	32,338
Industrial Transmission	13,020	163
Other	1,809	3,742
Total	50,233	1,830,985

Current estimates indicate that BC’s demand for power will grow by up to 40 percent in the next 20 years. Of the incremental load growth between now and then, 66 percent must come from conservation. To date, BC Hydro Power Smart conservation programs have achieved cumulative annual energy savings of 4,057 GWh/year in Fiscal 2010. The Fiscal 2012 target cumulative run rate of energy savings will grow modestly to approximately 4500 GWh per year. Industrial customers have contributed approximately 40 percent of this total and are expected to contribute an incremental 100 GWh per year of new energy savings to the cumulative total.

Power Smart Industrial programs are designed to support the fact that saving energy is smart business that: Drives productivity by helping customers build high-performance, energy efficient systems that result in better products; Improves profitability through energy savings and project support; and Builds reputation by helping customers become energy and conservation leaders.

The initiatives in the program are organized around a flexible, four-stage cycle designed to support continuous energy improvement:

Plan. Funding is provided to make energy an everyday part of how customers do business through:

- Industrial Energy Manager
- Energy Manager for Associations
- Energy Management Assessment
- New Plant Design

Discover. Find and study opportunities to save through:

- Customer Site Investigation
- Plant-Wide Audit
- End-Use Assessment
- Energy Efficiency Feasibility Study
- Mechanical Pulping Optimization
- End-Use Bundles

Upgrade. Build efficiency into existing facilities with funding options for:

- Project Incentives
- Tiered Conservation Rates (to reward energy efficiency)

Support. These initiatives give customers the power to grow savings with smart monitoring, employee awareness, training and recognition designed to maintain the momentum of continuous energy improvement.

- Employee Energy Awareness
- Monitoring, Targeting & Reporting
- Metering & Instrumentation Lending Library
- Power Smart Partner Recognition

While all BC Hydro customers have access to energy conservation programs, industrial customers who spend \$50,000 or more on electricity qualify for participation in initiatives from each of the four program steps: Plan, Discover, Upgrade, Support. BC Hydro customers who spend \$200,000 or more on electricity will have access to a Key Account Manager (KAM).

The Industrial Energy Management component of Power Smart Industrial began in 2002. At that time the existing suite of Power Smart offers was limited to energy efficiency study and project incentives. Also, industrial customers at that time did not have the benefit of conservation rates to encourage energy efficiency behaviours. It was understood that embedding the principles of continuous energy improvement was a critical factor in driving energy efficiency within an organization. Providing external support and resources alone did not drive enough internal commitment to follow through on energy efficiency projects. Using consultants as energy managers resulted in many energy studies being completed, with little or no follow-through from the customers.

The Industrial Energy Manager program is considered an enabling activity within Power Smart, which means there are no energy savings directly attributed to the program. Rather, energy identification and savings are tracked through the completion of energy studies and audits, through tracking of both customer-funded and Power Smart incentive projects, and by analysis of customer response to the tiered rate structure. The goals for the program are to grow the base of Industrial Energy Managers by 25% per year, and to build a program that supports the development of new energy management professionals. Focus will remain on growing energy management in the forest products industries and the emerging markets of Oil and Gas and Mining.

The target market for Industrial Energy Management is the primary resource and large manufacturing industries. The pulp and paper and wood processing industries offer significant energy savings potential despite the challenges they face in world markets. The oil and gas and mining industries are experiencing rapid growth and will be given special consideration in the coming years.

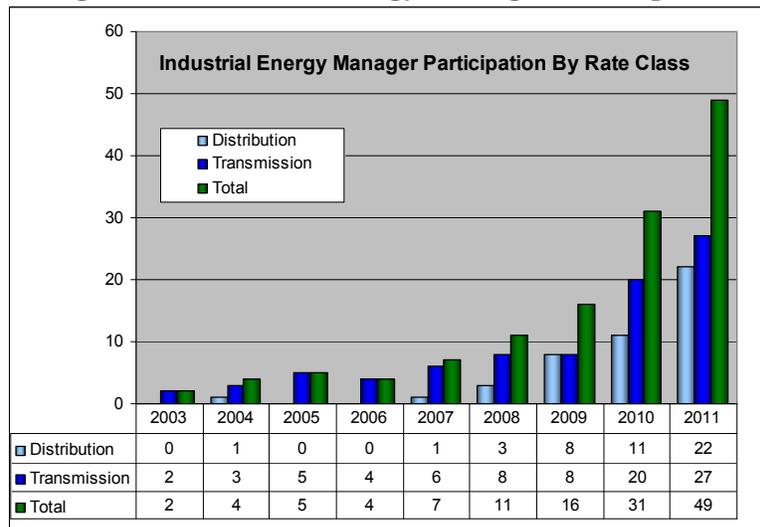
The following services are offered to companies participating in BC Hydro's Industrial Energy Manager program:

- **Scope of work.** Is a negotiated agreement between BC Hydro and the customer.
- **Power smart orientation.** Is a one day orientation on Power Smart industrial programs.

- **Energy management assessment.** Is a half-day assessment with senior management.
- **Sustainable energy management planning workshop.** This full-day workshop teaches the basics of energy management and is targeted to the company's energy team.
- **Sustainable Energy Management Plan (SEMP).** Six months after the agreement the IEM submits the SEMPlan which defines plan to move the company towards a more energy-efficient future.
- **Quarterly progress reports.** Each quarter following the acceptance of the SEMPlan, the IEM is required to submit a report that compares actual activities and achievements against the plan.
- **Training and support.** Power Smart offers Industrial Energy Managers ongoing training and support to help with their development including the Certified Energy Manager (CEM), Certified Measurement and Verification Professional (CMVP), Employee Awareness, Change Management, and technical workshops.

Figure 1 depicts the number of active Industrial Energy Managers by program year. The customer base is divided into Distribution and Transmission customers. Distribution customers are those that are connected to BC Hydro distribution lines, and Transmission customers are those connected to the transmission line network. Generally smaller, distribution customers have a different rate structure.

Figure 1. Industrial Energy Manager Participation



Because of the wide range of companies enrolled in the Industrial Energy Manager program, there is a correspondingly wide range of energy savings that have been implemented. Referring to the previous chart, we can see that the majority of Industrial Energy Managers have been in place for less than one year and many have not yet even developed targets. The pulp and paper industry has the longest participation in the program, with large operations, and large energy savings potential.

Customer Average Target at start of IEM contract:

- Hard-Wired – 9.2 GWh/year
- Operational – 7.6 GWh/year

Customer Average Results to date:

- Identified Energy Savings – 29.6 GWh/year (range from 0 – 190 GWh/year)
- Implemented Energy Savings – 6.6 GWh/year (range from 0 – 84 GWh/year)

Feedback on the Industrial Energy Manager program is collected through energy management reports and biannual round-table sessions with Energy Managers. Feedback from the most recent IEM roundtable identified the following items as issues:

- BC Hydro Reporting requirements are too onerous
- Providing assistance setting up the program can help
- Many of these organizations have not historically valued conservation
- BC Hydro Red Tape – timeliness and understanding BC Hydro’s internal process
- A lack of energy data at the sub-meter (i.e. department or system) level
- Lack of Senior Management Support

While the Industrial Energy Manager program is under continuous improvement, the following major development actions are being planned or implemented:

- Online Community to access resources, tools and templates, and post reports
- More detailed tools to guide the energy manager in their first six months
- Streamlined reporting requirements
- Small customer program
- Creating contractual targets without penalizing exceeding those targets

The Industrial Energy Manager program at BC Hydro has had considerable success in the past several years that includes:

- Increased participation of Industrial Energy Managers and interest in continuous energy improvement.
- Cost effectiveness (savings per energy manager) that far exceeds BC Hydro tests
- Customer insight that enhances Power Smart understanding of market opportunities

Industrial Energy Management is still a relatively undeveloped field and the challenges are many:

- Making electrical energy relevant to customers when energy is generally a very small (less than 5%) component of the overall operating costs, even though it represents significant energy savings potential
- Finding and recruiting qualified Energy Manager candidates

- Finding a balance between having an Industrial Energy Manager that is an influential part of a company's decision-making structure and keeping that Energy Manager from being distracted away from energy management activities
- Balancing the growing demand for Industrial Energy Managers with the internal BC Hydro resources required to train energy managers, administer program components, and review and provide feedback on energy manager reports

The Industrial Energy Management Program is quickly earning a reputation of being the key enabler to deliver on Power Smart energy savings targets. Almost every program that Power Smart offers is handled by the Industrial Energy Manager. Audits and studies, and project execution is only a small part of the energy manager's duties. The IEM typically handles all employee energy awareness activities, implementation of Monitoring, Targeting and Reporting systems, and coordination of Measurement and Verification activities. The IEM will be involved in contract negotiations related to Energy Purchase Agreements, Load Displacement contracts, rate management issues, and plant expansions. Energy Managers also become a key component in BC Hydro marketing activities, providing success stories and case studies that help BC Hydro spread the news that saving energy is smart business.

Energy Trust of Oregon

Oregon has held a long-standing commitment to conservation to keep energy costs as low as possible and to build a sustainable energy future. Since March 2002, Energy Trust of Oregon has invested utility public purpose funds to help Oregonians benefit from energy efficiency improvements and renewable energy generation. Energy Trust has provided solutions including services and cash incentives for more than 300,000 residential, commercial, industrial, agricultural and public sector sites around the state. An independent non-profit, the Energy Trust is funded by and provide services to Oregon customers of Portland General Electric, Pacific Power, NW Natural and Cascade Natural Gas. Via contract with the Oregon Public Utility Commission, the Trust complies with reporting and other requirements the Commission establishes for the organization's operations, performance and achievements.

Oregon's economy is driven by diverse and robust industrial and agricultural businesses. From 2001 – 2007, manufacturing contributed 32.1% of Oregon's real GDP, making Oregon the nation's 3rd most industrial state as a % of GDP¹.

Review of Energy Trust's savings to date and the organization's new draft Energy Efficiency Resource Assessment for the Years 2010 – 2030 shows the large contribution of industrial efficiency and the growing importance of industrial Strategic Energy Management (SEM) in Energy Trust's portfolio of programs. Although we are ramping up SEM efforts in 2011, 2010's accomplishments included 2 years worth of IEI implementation, so the 2011 goals appear to be flat when in actuality SEM savings are expected to continue to grow in the future. Savings and potential are shown in average megawatts (aMW) in Table 2.

¹ <http://www.milkeninstitute.org/manufacturing/manufacturing.taf?page=state&state=OR>

Table 2. Energy Trust Savings, Resource Potential, and Goal (aMW)

	2002 – 2010	2010 – 2030		
	Savings (aMW)	Resource Potential	2010 Savings	2011 Goal
Energy Trust	266	717	46	44.3
ETO Industrial	81	178	15.5	14.0
Industrial SEM	2.7 (2010 only)	50	2.7	2.7

Production Efficiency began in 2003 as a Custom track offering, with large capital projects primarily at large manufacturing plants. Today, the Custom track includes both capital and O&M measures, including recently developed strategic energy management offerings. By performing custom analysis and verification of savings for each project, the program has the flexibility to work with large industrial retrofits, unique process improvement projects and emerging technologies and practices. The Custom track works with medium to large industries, which are provided energy efficiency services and incentives to drive deep and persistent process efficiencies. The program has served a wide variety of industries, including wood products, pulp & paper, food processing and storage, high tech, foundries, metal fabrication, chemicals, transportation and aerospace, wastewater and water utilities and agriculture.

Program implementation has been managed centrally, in the early years by a Program Management Contractor and starting in 2007 by Energy Trust staff, and utilizes subcontractors as Program Delivery Contractors (PDCs). PDCs are industrial efficiency engineers who act as long-term energy efficiency “account managers” for medium to large industrial customers. PDCs provide turnkey support to participants in their assigned territories, helping them identify specific efficiency opportunities and facilitating their ongoing participation in Energy Trust programs. The program provides additional expert resources via a pool of specialized Allied Technical Assistance Contractors (ATACs) who perform studies and new Industrial Technical Service Providers (ITSPs) who provide enhanced technical services such as Strategic Energy Management training and support.

Increased efficiency and renewable generation goals have driven an emphasis at Energy Trust on finding and delivering comprehensive and deep energy solutions. As discussed previously, the largest untapped resources in the Industrial sector are in O&M and Strategic Energy Management (SEM), due primarily to the technical difficulty of analyzing savings and the difficulty of supporting persistence through influencing operator behavior. Fortunately, there have been developments in this region which are addressing barriers to industrial SEM, O&M and other behavioral approaches to savings. These developments laid the groundwork for a successful SEM pilot in 2009 and 2010 that focused on achieving O&M and behavioral savings in large industry through the implementation of strategic energy management practices.

The NEEA Industrial Continuous Energy Improvement (CEI) program, in particular, was a major influence by testing and proving out the efficacy of a comprehensive management systems approach to energy efficiency. Energy Trust’s involvement on the NEEA Industrial Advisory Committee provided a rich source of information on this emerging industrial efficiency strategy and exposure to lessons learned by NEEA starting in 2005. In addition, NEEA’s CEI delivery contractors honed expertise which was leveraged by the program when it hired one of these consultants, Strategic Energy Group (SEG), to launch the Energy Trust’s Industrial Efficiency Improvement (IEI) pilot in 2009.

From 2004 – 2008, the Custom track provided on average 78% of the annual savings for the program. Custom capital retrofits and replacements still provide the majority of program savings, but the recession in 2008 – 2010 repressed much capital investment, at the same time that program savings goals were ramping by 25 - 40% per year. Fortunately, both highly cost effective lighting projects and important new low and no cost custom offerings such as O&M and Strategic Energy Management grew during this same period, allowing the program to exceed electric stretch savings goals in 2010 despite the economic downturn.

The goal of the Industrial Efficiency Improvement (IEI) initiative is to have participants embed a management system for energy inside their organization, while saving 5% - 10% of their electrical consumption over the course of the one-year effort. Customers make substantial commitments of time for their Energy Champions and Energy Teams and are also driven by their participation to engage with management and employees alike to implement a comprehensive energy management program. The IEI assists participant firms by putting in place a structured energy program which includes establishing accountability for tracking energy and engaging employees to reduce energy use through the “Plan, Do, Check, Act” cycle.

The IEI targets 8 – 12 non-competing, energy intensive plants as cohort to engage in a peer support network approach where training and services are delivered to participants in a group environment. Monthly trainings are held over the course of a year in various formats, consisting of six, day-long in person workshops, four, two-hour Webinars, and two individual, on site meetings. The workshops are held at the Energy Trust offices and IEI participant firm locations on a rotating basis. One on one technical support is provided in between to establish baselines and other energy models, to drive low and no cost savings through simple O&M and behavior changes and to help sites implement the other training topics.

Recruitment and delivery is through the normal Production Efficiency Custom track, with PDCs scoping for opportunities and managing participation and SEG as the Technical Service Provider delivering the IEI training, tools and other resources to the sites.

All aspects of Industrial Energy Improvement training, support, in-person consultation and coaching, end-use metering services, energy analysis, and referrals to third-parties and Production Efficiency PDC for capital projects are fully supported by the Energy Trust. In addition, participants are given a cash incentive of \$.02/kWh and \$.20/therm for energy savings achieved over the course of the IEI.

Participants provide baseline energy use information (typically electric interval data and monthly natural gas billing information) and correlated production or production indices. Activity by participants is measured by both ‘bottom up’ and ‘top down’ approaches. The top down approach is based on regression to measure changes in energy intensity. The bottom up approach is through documentation of activities by the facility – both large and small with estimated energy impacts.

Two cohorts of the IEI were begun and completed between 2009 and 2010, and the first round of 3rd party evaluation of the 1st cohort, performed by Navigant, was completed in July of 2010. The key conclusions from the IEI Cohort 1, one- month interviews were that:

- Participants thought their participation in the IEI was valuable and a good use of time and resources.
- Most participants reached their energy savings goals with many indicating that they expect the savings to persist and to be able use the tools they’ve learned through the IEI to leverage additional savings.

- The majority of the participants rated their overall satisfaction with the IEI, as well as the support they received from SEG, as very high.
- Participants preferred face to face meetings, but admit that scheduling a day away from the office is challenging.
- Despite the high level of satisfaction with the IEI, some participants seemed to struggle with the continuous energy improvement concept or felt that some aspects weren't applicable to their firms.

Table 3. First Cohort of IEI Customers, Energy Consumption, and Savings

Participant	Baseline kWh Consumption	kWh Savings	Reduction
Printer Manufacturer	24,700,000	855,000	3.5%
Container Company	1,279,000	26,000	2%
Forest Products	30,500,000	5,573,000	18.3%
Metals Manufacturer	32,621,300	572,000	1.8%
Specialty Plastics	10,515,000	1,075,000	10.2%
Computer Manufacturer	33,279,000	3,385,000	10.2%
Cement Transfer	3,402,000	503,000	14.8%
Municipal Water Provider	19,800,000	348,000	1.8%
Vehicle Parts Manufacturer	10,000,000	480,800	4.8%
Medical Device Manufacturer	4,343,000	690,800	15.9%
Total	170,439,300	13,508,600	7.9%

The 2nd IEI cohort experienced similar results, with 12 million kWh in savings realized across the pool of 7 sites who completed the pilot. Savings at each site ranged from 0% to 23%, with an average of 9% savings per site.

A comparison of current incentive levels, measure life and average levelized costs of energy savings from capital projects, SEM and other O&M savings to date is represented in Table 4 below.

Table 4. Custom Track Measure Comparison

Measure type	Avg Measure Life (yrs)	Cash Incentive \$/annual kWh	Project cost cap %	Avg acquisition cost \$/kWh	Levelized cost \$/kWh
Custom capital - non-lighting	10	\$0.25	50%	\$0.15	\$0.015
Capital < 1 yr payback	10	\$0.02	50%	\$0.025	\$0.003
Custom O&M	3	\$0.08	50%	\$0.038	\$0.013
Custom O&M - 90 by 90 special	3	\$0.08	90%	\$0.043	\$0.014
Custom O&M - SEM	3	\$0.08	50%	\$0.041	\$0.014
O&M/SEM < 1 yr payback	3	\$0.02	50%	\$0.020	\$0.007

*Notes: 1) average acquisition cost includes cash and technical service incentives
2) Levelized is incentives only, does not include program mgmt or delivery*

Going forward the program will deliver on industrial strategic energy management, including using energy information systems and other O&M strategies to gain 5 – 15% energy intensity savings from low cost actions/ measures at medium and large industrial sites. These efforts also provide a basis for increasing customer commitment to energy efficiency, deepening relationships and increasing the flow of capital projects at participating sites. Energy Trust will

also build a pool of qualified Industrial Technical Service Providers (ITSPs) with expertise in these types of emerging solutions. Defining optimal candidate sites for various types of enhanced technical services and the transfer of best practices for recruitment and implementation will be critical to speeding the process. Production Efficiency will continue to test approaches to monitoring, data visualization and control including tracking utility smart grid and smart meter efforts to leverage these as possible.

The primary risk of this strategy is technical, in the evaluation and persistence of O&M savings. The risk is being well managed currently, and will continue to be addressed through utilizing high-quality technical contractors and maintaining stringent internal technical review to enable measurement and verification of these non-traditional sources of savings. A secondary risk comes from the increasing complexity represented by these innovative offerings. Experience in the recent pilots has demonstrated the value of using consistent and standard program processes and procedures in order to maintain quality and customer service. Program Managers will focus on definition, design and integration of the diverse array of technical services to drive savings while averting confusion caused by complexity.

The IEI and recent experience with Custom O&M have demonstrated that highly cost-effective savings can be achieved even at large industrial sites that believe they have harvested their low-hanging fruit capital projects. These participants often discover additional cost-effective capital projects while implementing O&M measures and the savings from these less-expensive projects increase their ability to successfully implement larger capital projects. Further acceleration of electricity savings in industry will be accomplished through the 5 – 15% savings from reducing operational energy waste that is possible at every plant and through an additional 15 – 35 % from the increased implementation of capital efficiency projects at these sites.

Program Comparison and Analysis

BC Hydro and Energy Trust of Oregon are both located in the Pacific Northwest, have both had relatively low electricity rates in their service territories, (Energy Trust does not sell electricity) and both have a significant industrial load. Perhaps the most significant commonality is that both organizations have completed comprehensive resource assessments of the energy efficiency potential in their service territories, and view energy efficiency as a critical component to the electrical resource mix as well as the economic viability of their territory.

The description of each organization's program shows different paths and approaches to industrial energy management although they have a number of commonalities. Both BC Hydro and Energy Trust embarked on industrial energy management because they were facing significant increases in their program goals and they faced a number of barriers to energy efficiency in the industrial market. The three most significant barriers to increasing energy efficiency in the industrial market include:

- Limited Staffing – competitive and economic conditions have left the remaining staff with more responsibilities and less time for “non-core” activities
- Limited Capital – again, competitive pressures and economic conditions have reduced the capital availability for the vast majority of industrial plants
- Technical Capability –capturing the majority of the available energy savings (capital and O&M) in industrial facilities requires a combination of a thorough understanding of the

industrial process and an understanding of the relevant energy efficiency techniques that apply to those end-uses or processes

BC Hydro and Energy Trust independently recognized that overcoming these barriers would require that a customer address energy management as a strategic business initiative – similar to how industry has addressed safety, quality, and environmental improvement. Both organizations recognized that sustained energy management within a customer’s organization would require a combination of enabling organizational change, helping the broader organization see opportunities, and providing technical and financial assistance. Some of the common program themes of both organizations, that address these requirements include:

- Continuous Improvement Framework – Both organizations apply the fundamentals of continuous improvement. BC Hydro explicitly communicates the process as “Plan, Discover, Upgrade, Support”. Energy Trust communications are customized in the recruitment process to match the customer’s continuous improvement framework.
- Organizational Commitment – While organizational commitment is an element of the continuous improvement framework - this element is significant enough that both BC Hydro and Energy Trust have program requirements to ensure commitment. Both programs require identifying an Energy Manager (BC Hydro) or Energy Champion (Energy Trust) whose is accountable for the implementation and success of the initiative inside their company.
- Multiple Objectives – Because energy management is a strategic initiative both organizations see industrial energy management as a means to achieve direct low-cost/no-cost energy savings but as a way to broaden the relationship with the customer and increase savings from capital projects.
- Evolution of Program Elements – Both organizations have evolved industrial management from their core offerings of prescriptive and custom capital projects.
- Financial Incentives – In addition to the conventional funding for capital projects, funding is provided by both organizations to encourage customers to implement industrial energy management.
- Training and Education - As noted above, both organizations recognized that sustained energy management would require more than technical and financial assistance. Both BC Hydro and Energy Trust provide workshops that address the organizational elements of energy management and engage the customer’s broader organization (not just the Energy Manager or Champion).
- Coaching – In addition to the training workshops both BC Hydro and Energy Trust provide some level of coaching to the Energy Managers.
- Data and Analysis – One challenge that customers have identified is segmenting the electricity consumption within their facility either through a calculated approach (energy mapping) or with sub-metered data. Both BC Hydro and Energy Trust have added energy metering (BC Hydro) or energy information systems (Energy Trust) as limited services to help customers with this program aspect.

These two organizations have thematic similarities as outlined in the above bullets however within these thematic similarities we begin to see some very different details in the implementation of these program. Some of the more notable differences include:

- Financial approach – As noted above, BC Hydro uses a combination of a tiered rate and funding for an Energy Manager’s salary to address the financial and staffing barriers. Energy Trust provides the training and technical services and provides a financial incentive (\$0.02 per kWh, \$.20/therm) for the O&M and other behavioral savings achieved.
- Individual vs. Multi Customer Delivery – BC Hydro is providing services to customers on an individual basis and Energy Trust is delivering services to a structured network (peer) group of customers.
- Reporting Requirements – The difference in reporting requirements between the programs are a function of the differences in financial incentives. BC Hydro requires the Energy Manager to establish a Sustainable Energy Management Plan and provide quarterly reports on the progress toward that plan, whereas Energy Trust provides the service of establishing the MT&R (statistical) model with a qualitative report documenting the organizational and technical changes to attribute to the energy savings.

In conclusion, as industry leaders BC Hydro and Energy Trust have developed industrial energy management with somewhat different approaches although they have found a number of common elements within their respective success. Both organizations have incorporated program elements that enable organizational change, help the broader organization see opportunities, and providing technical and financial assistance – which is yielding cost effective energy efficiency.

With a handful of other organizations such as Bonneville Power Administration and Pacific Gas and Electric, implementing similar programmatic approaches, this program concept is still in its infancy. The energy efficiency industry will naturally evolve aspects of this approach to better enable organizations to change, discover the opportunities, and provide the technical and financial resources to realize the significant energy efficiency potential from this approach.

BC Hydro and Energy Trust have found that industrial energy management represents a significant, cost-effective resource, but as important, and possibly more so, they have found that energy management represents an opportunity for participating industrial plants to reduce costs (which improve their competitive position) and be leaders within their communities.