

A Blueprint for Re-building a World Class Conservation Power Plant: Releasing the Hidden Dragon

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ABSTRACT

This paper provides a summary of efforts currently underway to rebuild one the nation's oldest utility conservation power plants. Faced with increasingly saturated markets, an aging workforce, competition for staff, limited infrastructure, and capability gaps in key areas, this utility has undertaken an ambitious transformation effort. Building upon their experiences, the authors will address important lessons learned and identify critical success factors that should be useful to other utilities facing a similar situation.

Much like a 30-year old traditional power plant, overhaul and maintenance is essential for ensuring long-term reliability. An intensive review of the current state was first undertaken, leaving no stone unturned. This review highlighted the need for significant investment and renovation. Over the years, the strategic planning and evaluation capabilities were whittled away to contain costs. Further, capabilities in marketing had atrophied, and an antiquated salary structure and job classification scheme had left the utility vulnerable to competition for valuable staff. This work emphasized not only the technical and economic issues, but also examined the market and organizational barriers to long-term success.

An action plan was then developed, providing a solid vision for the organization and, importantly, ensuring organizational alignment within the broader utility. A slate of detailed transition initiatives was then detailed to provide the blueprint for change. Together, these initiatives are intended to shore up core competencies, transform the ways in which the organization conducts business, and firmly establish the utility's capabilities for meeting increased expectations stemming from continued load growth and climate change initiatives.

Introduction

This paper provides a summary of efforts currently underway to rebuild one of the nation's oldest utility conservation power plants. Faced with increasingly saturated markets, an aging workforce, competition for staff, limited infrastructure, and capability gaps in key areas, Seattle City Light has undertaken an ambitious transformation effort. Building upon these experiences, the authors address important lessons learned and identify critical success factors that should be useful to other utilities facing a similar situation.

Much like a 30-year old traditional power plant, overhaul and maintenance is essential for ensuring long-term reliability. Conservation is known to be the cheapest and most cost effective resource; and the 2006 Integrated Resource Plan relies upon it. In fact many observers, including the Seattle City Council, are calling for City Light to study and pursue the acceleration of energy conservation. This is the path the utility is now on.

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Following this introduction, we provide a brief history of energy efficiency at Seattle City Light, an overview of the five-year planning process, and highlights of findings from the Current State Assessment. We then provide a more detailed discussion of the major transition initiatives that are planned and underway within the utility's Conservation Resources Division (CRD).

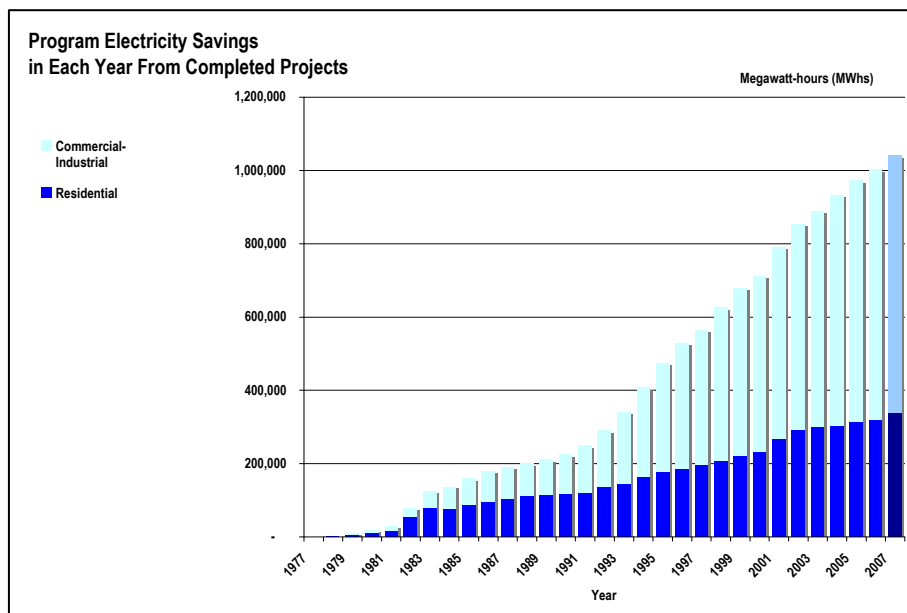
History of Energy Efficiency at Seattle City Light

The City of Seattle has the longest, continuously operating energy efficiency program in the nation. It has earned a well-deserved reputation as a conservation pioneer and leader. The effort began in 1972 when the "Seattle 2000" Commission identified energy conservation as the *priority power source* to serve the City's growing electrical load. The local municipal electric utility, Seattle City Light, developed its first energy conservation programs in 1977. Unlike those in so many other U.S. cities, Seattle's elected officials, working with an appointed citizen committee, determined that Seattle's load growth would be met with energy conservation rather than nuclear energy. In subsequent legislation, the City designated conservation (and renewable energy) as the City's priority energy resources. This policy direction and support continue today. Since 1977, the City and City Light have stayed committed to energy efficiency as the most cost-effective and environmentally friendly energy resource available.

The City's initial conservation programs focused on building public awareness and emphasized low-cost or no-cost actions. Changing individual behavior — particularly turning off lights, appliances, equipment and other electrical devices when not in use — was the foundation of energy conservation messages. This message is valid today. City Light built on this foundation by encouraging homeowners and business owners and managers to buy and use energy-efficient products and equipment.

In 1978, the utility developed its first grant- or incentive-based energy conservation program, to encourage the installation of attic insulation in the homes of low-income elderly customers. This concept was expanded to include broader weatherization services (e.g., windows, wall insulation and water heater tank wraps) for single-family and multifamily buildings. Programs targeted at specific end uses, including heating water and washing clothes, were also developed. **Figure 1** below shows the electricity savings resulting from City Light's energy efficiency programs since 1977.

Figure 1. Electricity Savings Since 1977 through Energy Efficiency Programs of Seattle



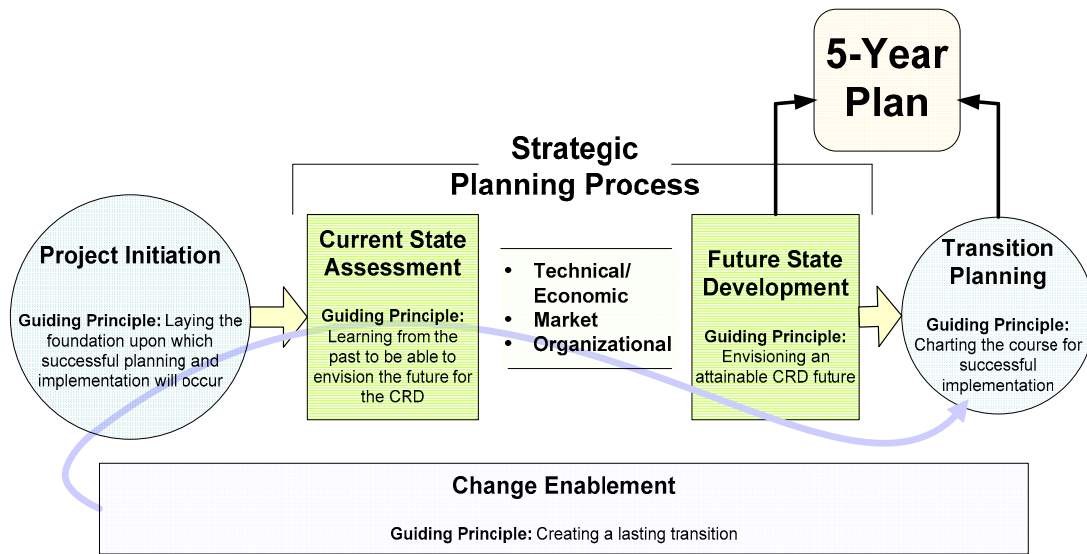
Overview of Five-year Planning Process

Energy Market Innovations, Inc, a Seattle-based consulting firm, was hired to facilitate the five-year planning process at City Light. While this team had the lead role in shepherding City Light staff through the process, it was important that City Light staff owned the outcomes of this process. This was especially important because there were several leadership transitions underway within the Division and elsewhere in the organization.

An overview of the strategic planning process developed for this project is provided below. Upon recommendation from the consultant, a key element of the approach was the equal emphasis of three critical dimensions: (1) technical / economic, (2) market, and (3) organizational. This approach recognized the fact that, to be truly useful, the development of a plan needed to focus on the entirety of the effort, and not simply on the numbers.

Following a project initiation meeting and an *all-hands* staff briefing, we initiated the Current State Assessment. This assessment included a detailed review of past accomplishments and trends, a review of program cost effectiveness, a strength-weakness-opportunity-threat (SWOT) analysis for each of the major programmatic initiatives, a review of the organizational structure and leadership dimensions, primary research with customers and stakeholders, and an analysis of gaps in program design relative to industry *best practices*.

Figure 2. Strategic Planning Process



Following the Current State Assessment, a permanent new director was hired for the Division, and the Future State development process was launched. This process received the internal project name of Phase II: Hidden Dragon. This Phase included a new step aimed at “optimizing” existing programs based upon findings from the current state assessment. It also included the development of the formal Five-year Plan, as well as the initiation of several distinct transition initiatives.

Current State Assessment Results

The Current State Assessment (CSA) highlighted six important areas of the City Light conservation infrastructure that needed substantial re-investment in order to ensure the long-term reliability of the utility’s conservation power plant.

- **Human Resource** - City Light’s workforce is viewed by management as its most valuable asset and, similar to many other utilities across the nation, is aging and will experience significant turnover in the during the period of the Plan. The CSA highlighted the importance of developing long-term staffing plans, filling several key vacancies, and developing internships and other training opportunities.
- **Monitoring and Verification** - The CSA highlighted the need for increased quality control through on-going measurement and verification of energy savings estimates.
- **Planning, Research, and Evaluation** - This strategic function had dwindled to a shadow of its former self, to the point that the utility had very little remaining capability in this area. Important evaluation projects had languished from lack of staff and focus. Internal modeling capabilities were very limited. The CSA highlighted the need for rebuilding this core infrastructure in order to fine-tune, expand, or phase out existing programs, and to identify new opportunities for achieving conservation resource goals.
- **Marketing** - City Light’s marketing infrastructure had also dwindled over the years and was in need of re-building. Programs had individual marketing plans and rarely was one

program been able to leverage another in a positive manner. Moreover, there has been no compatible and supporting branding.

- **Information Management** - Program tracking databases were not supporting the needs of the program staff sufficiently to move forward with new goals, and market information was found to be quite out-of-date.
- **Organizational Structure** - Issues identified included organizational silos, inconsistent communication flows, and the need for greater flexibility in workforce assignments and classifications.

A detailed description of the investments planned for each of these areas is provided below.

Human Resource

As with other utilities, City Light's human resource is its most valuable asset for delivering energy efficiency. The *Current State Assessment* highlighted several important issues, including the need for succession planning, proactive recruiting, a review of city pay and classification structures and a clear definition of career paths. City Light staff has established the several priorities aimed at enhancing its Human Resource, each outlined below.

Planning for a Smooth Transition

The City Light workforce is aging; 61 percent of staff will be eligible to retire within five years. Transition planning, including the passing of institutional knowledge, is a key element of an organizational development strategy. Wherever possible, City Light plans to work with current staff to identify anticipated retirement dates and plan accordingly. Other actions include:

- Overstaffing key positions to ensure a smooth transfer of institutional knowledge from current staff to their successors, and
- Implementing a job shadow effort.

Recruiting and Training a New Generation of Staff

When City Light started its Conservation Resources Division it tapped into a generation that was eager to make a difference in the world. Going forward, the utility will aggressively recruit and train new staff for planning, evaluation, and implementation roles. There is at present a critical shortage of skilled energy services professionals, and tremendous local, regional and national competition for experienced staff. To address these challenges, City Light will take the following actions:

- Build relationships with key colleges and universities
- Develop and actively promote an internship program
- Hire and train recent college graduates with degrees in economics, business, engineering, environmental studies and public policy
- Design and implement a training program for internal staff.

Ensuring Competitive Pay Scales

Creating a culture where existing staff feels they are valued will require offering competitive financial and non-financial opportunities. Since City Light operates within the city structure, pay scales historically have been aligned with the City's pay structure. Cost-containment efforts have limited the number of City Light's "pockets," and there is competition for all of them. While this structure has had merit in the past, it does not currently give City Light the flexibility it needs to develop and maintain a world-class organization. A salary survey is under way; and recommendations from this study will be incorporated into the utility's transition initiatives.

Establishing Clear Career Paths

Job classifications will be reviewed and redefined as necessary to ensure sufficient mobility within the Division to enable staff to work where they can be most effective and successful. Specific steps to improve this area include:

- Revising job pockets into broad classifications will enable City Light to attract and retain talent by providing a clear career path for professionals in the organization. Examples include
 - Modifying the Energy Management Analyst (EMA) position to include four levels: *Assistant EMA*, *EMA*, *Senior EMA* and *Lead EMA*.
 - Creating an "*Engineer*" family of classifications, to include *Assistant Engineer*, *Engineer* and *Senior Engineer*.
- Create positions for *Project Manager* and *Senior Project Manager*, who will manage outside contractors responsible for implementing specific program elements.
- Create market-based pay bands for each of the above classifications.

Monitoring and Verification

In order to ensure the credibility of its conservation power plant, City Light intends to re-emphasize the monitoring and verification¹ (M&V) of energy efficiency savings. This investment is necessary to systematically measure the performance of CRD programs using engineering-based methods and technical data. Such empirical analysis provides objective and reliable results. Since it is imperative that this process be as transparent and objective as possible, City Light will develop and implement a third-party monitoring and verification process that will use specific studies and measurement techniques and generally-accepted industry standards commensurate with program goals.

Standardized M&V protocols will be used to provide adequate methods for measuring energy savings or demand reductions, including (1) the International Performance Measurement and Verification Protocol (IPMVP), (2) Measurement and Verification Guideline for Federal

¹ "Monitoring and verification" (M&V) is also known as "measurement and verification," "measurement and validation," and "monitoring and validation" by other various organizations.

Energy Management Projects (FEMP), (3) ASHRAE Guideline on Measuring Energy and Demand Savings, and (4) the Efficiency Valuation Organization (EVO).

The new organizational structure for the Division includes an M&V project management position reporting directly to the Division Director, thereby reflecting the importance of having this function be truly independent of the program implementation process. This position will also have a dotted-line reporting relationship with City Light's Financial Services Business Unit, which will provide risk management oversight.

Planning, Research, and Evaluation (PR&E)

The complexity of building and maintaining an effective energy-efficient "power plant" requires a sophisticated set of *planning*, *research*, and *evaluation* infrastructure capabilities that will serve as a cornerstone for City Light's continuous improvement goal. *Planning* involves the strategic assessment of energy efficiency options and forecasting of impacts. *Research* enables City Light to stay on top of emerging technology opportunities, customer needs and decision-making. Finally, *evaluation* entails rigorous review, monitoring and verification of program impacts and other information that can be rolled back into the planning process.

In the past, City Light had very strong capabilities in this area. Over the past decade, however, staffing and budget cuts have diminished many of these capabilities. As noted in the Current State Assessment, this lack of in-house capability, if not rectified, will hamper City Light's ability to meet increased energy efficiency goals. Many other utilities are in a similar situation, where once-strong planning, research, and evaluation functions were scaled back. Ironically, most, if not all, of these utilities are now trying to rebuild these capabilities.

Specific needs in this area include the following:

- Re-establishing City Light's *Planning, Research, and Evaluation Group*,
- Developing a structured planning, research and evaluation process,
- Implementing priority research and evaluation projects, and
- Implementing and evaluating pilot programs.

Nationally, utilities spend an average of five percent of their annual energy conservation budget on planning, research and evaluation. Over the past five years, City Light has dedicated less than two percent of its budget to these areas. City Light must re-invest in these functions, including the development of new staff and technical expertise. To underscore the importance of this function, City Light will hire a senior-level Manager of Planning, Research, and Evaluation (PR&E). As currently planned, the PR&E function will include 13 professional staff and a senior-level manager reporting to the Director. This organization will develop and own processes for long-term strategic planning, annual program planning and budgeting, program evaluation and market research. Specific activities for which this group will be responsible include the following:

- Updating Five-year Conservation Action Plan, annual plans and budgets,
- Annual CRD program planning and budgeting,
- Annual planning for program evaluation,

- Annual planning for market research,
- Conducting program evaluations,
- New program development, and
- Pilot program implementation and evaluation.

In addition, the group will be responsible for a variety of regular and *ad hoc* reporting functions.

As a matter of policy, all CRD energy efficiency programs will be evaluated annually to identify any program performance issues promptly and effectively. Evaluation projects will be shaped by the overall scope and need. In order to determine each program's unique evaluation needs, the PR&E group will identify and document (with input from CRD management, program managers/staff and stakeholders) program-specific issues that are significant to program performance. The group will prioritize these using the needs and risk-based process described below.

The PR&E group will use a needs and risk assessment process to drive evaluation planning activities. The process will identify the elements of risk that are relevant to each program or proposed program; assess the relative degree of risk posed by each of these risk elements to the savings goals of each program or proposed program; and prioritize each program's planning and evaluation needs. This process will incorporate quantitative and qualitative assessment of the following elements of risk:

- **Technical/Economic Risk** - Includes examining key areas of savings and cost, and economic analyses and/or measurement and verification of savings
- **Market Risk** - Includes analysis of external issues that influence program planning and implementation
- **Organizational Risk** - Acknowledges organizational issues that may have an impact on the efficiency with which CRD can secure energy savings.

Within the evaluation plan, PR&E will develop a *rapid feedback evaluation process* to support any need for interim and actionable reviews of program performance and identify opportunities to maximize performance through program design or implementation efforts. This will be a collaborative effort between PR&E and the specific programs.

Program Marketing

For the Conservation Resources Division, marketing is the means to inform and motivate customers and/or trade allies to take actions to use energy more efficiently. It is essential to maintain adequate marketing resources and creative marketing capabilities. For utilities, marketing is particularly complex, as it faces both broad (the utility "brand") and narrow (individual programs and technologies) marketing challenges within a diverse service area.

Marketing has not generally been perceived as a core strength of the Conservation Resources Division. City Light is not alone in this. Traditionally, utilities have been most effective at broad-based marketing efforts that target the residential sector and less able to understand the nuances required to influence transactions on a measure level. City Light's challenge is to develop a marketing team that works creatively across sectors and understands the

strategic dimensions of each. Fortunately, City Light's existing staff has significant marketing and creative assets. The utility must leverage that capability as it develops an appropriate marketing infrastructure.

There is significant opportunity for more effective marketing across all market sectors and segments. In the absence of multimillion-dollar budgets for extensive media campaigns, the CRD Marketing Group must devote its resources to market intelligence, training and creative use of technology, and create and sustain relationships that prove most vital to City Light's strategic interests. The Division has defined the following actions to achieve those purposes:

- ***Redefine the City Light energy efficiency brand*** – In 2008 CRD will solicit a qualified firm to help redefine the CRD and City Light brands. The successful outcome of this project will require an understanding of City Light's history, the value of energy efficiency to the utility and its constituents, and an ability to define a brand and marketing message(s) that will function effectively at the portfolio, sector and programmatic levels for the foreseeable future.
- ***Develop market intelligence infrastructure*** – CRD staff has an enormous amount of experience with the markets they serve and has high-quality relationships/contacts within these markets. The *Current State Assessment* revealed, however, that these valuable organizational resources often are compartmentalized and underutilized. Therefore, an immediate priority will be to develop a market intelligence infrastructure.
- ***Develop strategic peer-to-peer marketing*** – City Light's long-term success depends on the quality and quantity of the relationships CRD has with City Light customers. The findings from the *Current State Assessment* and a review of industry best practices indicate that decision-makers value direct contact from staff at equivalent levels within the City Light organization. To address this need, peer-to-peer marketing efforts will be developed. Developing City Light's capacity to market effectively to these customers will require up-to-date market intelligence, useable marketing collateral, and in many cases, sales and/or customer service training for CRD staff.
- ***Optimize relationships with trade allies*** - The success of planned programs is directly dependent on the quality and quantity of City Light's relationships with trade allies. Firms that interact with City Light's customers every day are most familiar with their facilities and are often best able to influence purchasing decisions related to energy efficiency.
- ***Provide leadership within local, regional and National energy professional communities*** - There is an opportunity for City Light to take a more proactive role in professional associations and networks related to energy efficiency. While City Light has participated in some of these organizations and associations for a long time, it has been less active in them in recent years. It is essential to reinvigorate a presence in and make substantive contributions to these organizations to demonstrate that City Light is a committed, attentive and active community leader.
- ***Develop information technology and information dissemination capacity*** – In order for CRD to be a viable, competitive and valued resource to City Light's constituents, the utility will make a major commitment to and investment in new communication technologies. A primary area of emphasis will be utilization of the web for marketing and program participation.

Information Management

Information management has evolved from its roots as an automated reporting medium to a critical management tool that enables an organization to learn from itself and create and foster a dynamic knowledge base. As conservation organizations have seen the need to address energy issues more holistically, (i.e. IRP-based management, multiple measures-based management, and performance-based management approaches) the requirement for more complete and diverse information has arisen. The management of information has grown quickly from being a responsibility of information technology professionals to being the responsibility of all employees. Leading-edge conservation managers and professionals are seeing themselves less as auditors and program managers and more as managers of strategic information.

As the perception and value of information has changed from commodity to strategic asset, conservation organizations are now choosing to manage both information and its related business processes as enterprise functions. As such, business leaders are including information management as a major factor in strategic planning, budgeting, program planning, partnership negotiations and performance metrics (programmatic and employee). As enterprise information initiatives, even small in scope, can be expected to require significant business process changes, business leaders are addressing information management issues both technically and organizationally.

CRD, in conjunction with the City Light Information Technology Division, proposes to develop an Information Strategy Plan (ISP) as the organizing document for future investment decisions about information and its integration and management. This ISP will document CRD's overarching vision for information integration and management and information goals, objectives, and key strategies. The objective of this plan is to apply this vision and goals to short- and long-term information strategic directions, information processes supporting decision-making, and sound technical decisions and support.

One likely and significant outcome of the process is the purchase or development of a single comprehensive program tracking and reporting system for CRD that will allow for more effectively tracking of program results relative to energy savings goals and other measurable performance objectives. Ideally such a system will be integrated with utility billing and metering systems (including any future Advanced Metering Infrastructure systems), incorporating strategic market research data and providing contact management capabilities.

Organizational Design

To support planned efforts to rebuild core competencies, expand existing programs, and develop and implement new programs, CRD will reposition and expand its organizational structure. This transition initiative will address several deficiencies highlighted in the Current State Assessment. The Division expects to create an additional 20 positions over the five-year planning horizon. These will include staff to rebuild core competencies, expand existing conservation programs, develop new programs, and incorporate renewables and demand response initiatives.

As a first step, the utility is working to create a senior manager position to lead the planning, research, and evaluation function. In addition, another senior manager position is being created to lead a marketing group with CRD. Following these additions, staff will be added to these functional areas, and for new program efforts as they are initiated.

The Division has reestablished its intern program and recruited several graduate students who are facilitating the implementation of the Five-year Plan. Other initiatives to reclassify positions and create more visible career paths are also underway and will take time to implement.

Conclusion

The initiatives outlined herein have provided the vision and focus needed to re-build City Light's energy conservation infrastructure. These are truly exciting times to be working with this organization, and these aggressive steps are a tribute to the conservation legacy of the City of Seattle.

We suspect that other organizations in similar situations will benefit from our experience. Important lessons learned during this process include the following:

- **Recognize and honor past accomplishments** - throughout the process, we have worked hard to recognize the past accomplishments of City Light conservation staff, and to not diminish the importance of these efforts. Our plan builds upon these past accomplishments.
- **Pay attention to infrastructure needs** - the strategic infrastructure required to support the next generation of demand side management programs is only going to increase in importance. Investment in this infrastructure is necessary to support the human resource so that we can work smarter and leverage existing capability.
- **Outside facilitation is essential** - facilitation of a change management process by outside professionals can challenge the organization to grow and think in new ways that are often simply not possible with the status quo management team and staffing mix.
- **Leadership is critical** - leadership, as distinct from management, is required to carry the mission and vision forward for the organization. While strong management is necessary to support the organization, leadership is essential before embarking upon a change management process.