

Introduction

City Light staff has been engaged in the planning process for the 2008 Integrated Resource Plan since the summer of 2007. This introduction gives a brief overview of Seattle City Light, a description of the development process and the organization of the 2008 Integrated Resource Plan.

Seattle City Light

Seattle City Light's Mission: Seattle City Light is dedicated to exceeding our customers' expectations in producing and delivering environmentally responsible, safe, low-cost and reliable power.

Seattle City Light is a municipal electric utility that owns and operates generating, transmission and distribution facilities for electric power. The citizens of Seattle created City Light in 1902 when they approved bonds to build a hydroelectric power plant on the Cedar River. Since the Cedar River power plant first began to supply electricity to Seattle in 1905, City Light has delivered reliable, low-cost power to its ratepayer-owners.

The utility's service area covers roughly 131 square miles between Puget Sound and Lake Washington west to east, and between Snohomish County and Renton and South 160th Street north to south. The utility serves the city of Seattle, all or part of the cities of Shoreline, Lake Forest Park, Mountlake Terrace, Tukwila, Seatac, Burien, Renton and Normandy Park and parts of unincorporated King County.

Integrated Resource Planning

The term integrated resource planning refers to how electric utilities go about acquiring a combination of conservation and generation resources in order to meet their customers' long range power needs. City Light's Integrated Resource Plan (IRP) demonstrates how the utility plans to meet its customers' energy requirements within the context of its mission to provide environmentally responsible, safe, low-cost and reliable power.

Integrated resource planning is seen increasingly as a way of reducing risks to both electric reliability and financial

stability. City light provides integrated resource planning at the direction of the Seattle City Council, and legislation from the state of Washington, HB 1010. This legislation directs electric utilities to develop and file comprehensive plans that explain the mix of generation and demand side resources they plan to use to meet customers' short- and long-term power needs. Legislation and policy that creates the planning environment for the 2008 IRP is discussed more fully in Chapter 3. As required by HB1010, integrated resource plans are submitted to the Washington Community, Trade, and Economic Development Department every two years beginning with 2008.

City Light's Mission and the IRP

The overall objective for this IRP is to determine strategies for the type, amount and timing of new resource acquisitions in order to meet electrical load through 2027 in keeping with City Light's mission. The IRP process is designed to do this by:

- Ensuring stable and reliable power resources through the resource adequacy requirement.
- Looking for least-cost and lower-risk solutions within the context of other goals.
- Updating the 2006 environmental impact statement that recognizes and evaluates any environmental implications of the IRP.

Once City Light evaluates combinations of new resources that could be added to its existing portfolio, it charts a resource strategy that ensures there is enough power to meet customers' long-term load. The process guides City Light staff in selecting a mix of resources that controls supply cost and risk, meets the resource adequacy requirement and fulfills its obligation to environmental stewardship. City Light avoids or mitigates environmental impacts in accordance with City Resolutions 30144 and 30359.

Differences between the 2006 and 2008 IRPs

The 2008 IRP updates pertinent information in the 2006 IRP, but also differs from the earlier plan in a number of ways.

- The AURORAxmp[®] was acquired and calibrated to assess portfolios, replacing the Global Energy Decisions Model used for the 2006 IRP.
- The acquisition of conservation is accelerated.
- With the strong likelihood that Federal legislation designed to discourage the production of CO₂ by electric utilities will be passed within the next two years, a cost of carbon dioxide emissions is included in all candidate portfolios rather than addressed as a scenario as it was in the 2006 plan.
- Rather than using scenarios that represent alternative market conditions to the utility, as was done in the 2006 IRP, scenarios in the 2008 IRP represent specific external changes, based on issues raised by stakeholders and policymakers, that would have a direct impact on loads and/or resources.

Changes in the 2008 plan reflect developments since the 2006 IRP. State Initiative 937, which addresses conservation and renewable resources acquisition, limits the new resources considered for this planning period. The decision to accelerate conservation has resulted in a decrease in acquisition of other resource types. Coal plant technology was excluded as a choice this time. With fewer choices, fewer portfolios were analyzed.

The Resource Strategy

The overall resource strategy calls for going after possible lost opportunities in conservation and certain generation resources, and seeking low-cost ways to improve resource shape. The former can be accomplished by accelerating the acquisition of conservation, and the latter with relatively low-cost seasonal exchanges, capacity purchases, and hydroelectric efficiency improvements at Gorge and Boundary Dams. New generation resources featured in the candidate portfolios are wind, geothermal energy, landfill gas, biomass, and simple cycle and combined cycle combustion turbines. They are detailed in Chapter 4.

Portfolio design took into account availability and sizing of projects by technology. There were two rounds of analysis of candidate portfolios, each of which combined new resources with the utility's current holdings. All portfolios were evaluated against the four criteria - providing reliable service, minimizing costs to customers, managing risk and minimizing environmental impacts.

Steps in the Process

This IRP's objective is to determine the strategies for the type, amount and timing of new resource acquisitions to meet electrical load for the 20 year period between 2008 and 2027. Along with the generation resources mentioned above - wind, geothermal energy, landfill gas, biomass, hydro efficiency and simple cycle and combined cycle combustion turbines - new resources considered for this planning period are accelerated conservation, hydroelectric efficiency improvements, seasonal exchanges and capacity purchases. For the purposes of analysis, these resources were combined into potential resource portfolios that, together with the utility's existing resources, could meet anticipated future needs.

The 2008 integrated resource planning process included these steps:

- Public involvement: inviting citizens, stakeholders and representatives of many organizations to participate. (See Appendix A - Public Involvement.)
- Recruiting team members from both inside and outside the utility to work on the plan.
- Licensing and installing a sophisticated computer model, the AURORAxmp[®] Electric Market Model (supplemented by post-processing tools), for assessing portfolio performance.
- Calibrating the AURORAxmp[®] for the characteristics of City Light's hydroelectric operations and purchase power contracts.
- Revisiting the 2006 assessment of conservation resource potential in the service area.
- Forecasting hourly demand for electric power through 2027.

- Determining when additional resources will be needed and how much, taking into account variable hydro conditions and the resource adequacy measure.
- Developing candidate resource portfolios as part of a resource strategy to meet customers' power needs.
- Updating the environmental impact statement that was prepared for the 2006 IRP.
- Evaluating and comparing a Round 1 of alternative portfolios based on cost, risk, reliability and environmental impacts.
- Measuring the effect of certain scenarios on portfolio performance.
- Preparing and evaluating a Round 2 set of more refined resource portfolios.
- Recommending a resource strategy along with a preferred portfolio to the Mayor and City Council.

Public Involvement

As a municipally owned utility, City Light has a long history of public involvement. Ratepayer-owners and stakeholders are invited to contribute ideas and opinions in various forums. For the 2008 IRP process, community members were invited to contribute their comments and ideas about public preferences in planning for power supplies through 2027. Representatives of stakeholder groups advised City Light during the planning process. City Light also received many comments at public meetings and on the IRP website.

Conducting two rounds of analysis allowed for meaningful public input. After the first round, the utility gathered feedback about IRP assumptions, methodologies and resources that were evaluated. The IRP team incorporated that information into a second round of analysis used to develop a resource acquisition strategy and construct a preferred portfolio.

The 2008 IRP'S Organization

Chapter topics parallel the planning process of the 2008 IRP:

Chapter 1 describes power demand through 2027 based on forecast of customer load.

Chapter 2 describes City Light's existing resource portfolio. It also describes the resource adequacy measure that is used to determine how much power will be needed from additional resources to meet expected load.

Chapter 3 describes the ways in which policy guides resource acquisition through requirements for meeting load, protecting the environment and containing power costs - local, state, regional and federal laws, policies and guidelines.

Chapter 4 identifies commercially available resource types.

Chapter 5 reviews the methodology City Light staff uses to evaluate the ability of candidate resource portfolios to meet expected load growth. The chapter gives an overview of the AURORAxmp(r) Electric Market Model used to assess the portfolio performance. The chapter also describes the scenarios used to evaluate Round 2 portfolios.

Chapter 6 presents the results of two rounds of portfolio analysis, showing their relative ability to meet City Light's anticipated power needs and satisfy the four evaluation criteria. The chapter also presents the results of the scenario analysis.

Chapter 7 presents City Light's recommended long-term strategy and two-year action plan.

A **Glossary** of technical terms and abbreviations used in the 2008 IRP appears at the end of this document.

Appendices are published separately. The topics covered are a) public involvement, b) electric generating resources, c) tidal and wave energy, d) distributed generation opportunities, e) demand response assessment, f) the IRP risk measure, and g) climate change in the 2008 IRP.

