Chapter 1 – Introduction

This chapter gives a brief overview of Seattle City Light and this Integrated Resource Plan (IRP), including its purpose, the process for developing the Plan, and Plan organization.

About Seattle City Light

Founded 104 years ago, Seattle City Light is a municipal electric utility that owns and operates electricity generating, transmission and distribution facilities and serves 370,000 metered customers. City Light's service area covers about 131 square miles between Puget Sound and Lake Washington, and between Snohomish County on the north and Renton and South 160th Street on the south. The Utility serves all of the City of Seattle, plus 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.

City Light relies on hydroelectricity for over 90 percent of its power resources, sourced from Utility-owned dams and by contract from Bonneville Power Administration (BPA) and other regional utilities. Resources also include conservation and wind power. City Light depends primarily on BPA for electric transmission to its service area and operates a local transmission network of 657 circuit miles.

About the IRP

The Pacific Northwest has not embraced retail deregulation of power markets, which swept the country from the mid-1990s through the early 2000s. At that time, it was widely believed in the electric utility industry that long-term power resource planning was no longer relevant, because "the market will provide." However, the 2000-2001 power crisis in the West underscored the dangers of relying on the wholesale power market for power resource needs. Since that time, integrated resource planning has been seen increasingly as a way of reducing risks to reliability and utility financial security.

This 2006 Integrated Resource Plan marks the beginning of a new chapter in resource planning for City Light. The last formal evaluation of long-term resources prepared by City Light, the Strategic Resource Assessment (SRA), was published in 2000 as an update of the 1997 plan. The Seattle City Council has directed City Light to re-institute long-term resource planning. An important goal of the 2006 IRP for the Utility is to rebuild long-term resource planning capabilities after a long break.

While City Light will issue updated plans every two years, integrated resource planning is truly an ongoing process. It involves continuously monitoring and re-evaluating generation and demand-side resource choices, new technologies, new market information and trends in customer demand.

City Light's mission is to provide stable, competitively priced and environmentally sound electricity to customers. The IRP process has been designed to support this mission 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.
- Evaluating and recognizing the environmental implications of the Plan by preparing an environmental impact statement.

The overall objective of this IRP is to determine strategies for the type, amount and timing of new resource acquisitions to meet electrical load over the 20 years between 2007 and 2026. The new resources considered for this planning period are conservation, a hydroelectric efficiency improvement, wind, geothermal energy, landfill gas, biomass, cogeneration, a hydro contract, simple-cycle and combined-cycle combustion turbines, pulverized coal, and integrated gasification combined-cycle (IGCC).

For the purposes of analysis, these resources were organized into potential resource portfolios (combinations of resources) that could meet anticipated future needs. Continuation of existing conservation programs, hydro generation resources, and many existing power purchase power contracts is assumed in all portfolios.

IRP Process

City Light began preparing this IRP in 2005. The process included these often-overlapping steps:

- Involving the public, including citizens and stakeholders with diverse perspectives.
- Recruiting expertise from within and from outside the Utility.
- Licensing and installing a sophisticated computer model for power planning.
- Calibrating the model for the characteristics of City Light's complex hydroelectric operations and purchase power contracts.
- Thoroughly assessing conservation resource potential in the service area.
- Forecasting customer demand for power each month through 2026.
- Developing a resource adequacy measure, crucial for defining the timing and amount of future need.
- Developing costs and characteristics of alternative resources to be included in the candidate resource portfolios.
- Constructing and modeling Round 1 candidate resource portfolios for evaluation against four criteria: reliability, cost, risk and environmental impacts.
- Issuing a Draft Environmental Impact Statement (DEIS) for Round 1 portfolios.
- Constructing and modeling Round 2 candidate resource portfolios, based on findings and comments in response to Round 1.
- Recommending a resource strategy and near-term resource action plan.
- Recommending a resource plan to the Mayor and City Council.
- Issuing a final EIS.

Public Involvement

An integral part of the 2006 IRP process was engaging the community to receive comments and ideas about public preferences in planning for power supplies over the next 20 years. At each stage of the planning process, City Light benefited from this public involvement. Throughout, the Utility was advised by representatives of various stakeholder groups and received many comments from the public at public meetings and via the IRP website.

Doing two rounds of analysis allowed for meaningful public input. After the first round, the Utility gathered feedback about IRP assumptions, methodologies and resources evaluated. This information was then incorporated into a second round of analysis that was used to prepare the proposed Plan. This process is summarized below. For details, see Appendix A.

Public Meetings

Public meetings were held at three points in the planning process. The first meeting described the approach to the IRP, some of the assumptions that would be used, and the types of power resources to be evaluated. The second meeting described more detailed assumptions, the first round of resource portfolios and how the resource portfolios performed when evaluated on cost, risk, environmental impact and reliability. The third meeting described the second round of resource portfolios and how they performed. Each public meeting provided an opportunity for members of the public to make comments, ask questions and receive answers from City Light staff.

Stakeholder Group

A group of City Light stakeholders, reflecting a wide range of viewpoints, advised Utility staff in preparing the IRP. They represented residential, commercial and industrial customers, power suppliers, civic organizations and environmental groups. Eight stakeholder meetings have been held since October 2005, all open to the public.

IRP Website

Information and presentation materials used in public and stakeholder meetings were posted on a website to allow citizens to stay abreast of the development of the IRP. The website provided an email address and telephone numbers for the public to make comments about the IRP. Other comments were also taken throughout the process.

Many good ideas and suggestions for further research came from the public involvement process. While many ideas were incorporated into the 2006 IRP, City Light was not able to act on all of them, given limited time and resources. Ideas gathered from the 2006 IRP process will help to guide the design of the 2008 IRP, which will begin in 2007.

Organization of the IRP

This document is organized generally to parallel the development of the Plan. Following this introductory chapter, **Chapter 2** describes the policy context for planning, including local, state, regional and federal laws, policies and guidelines.

Chapter 3 describes the need for power over the next 20 years based on current trends and load forecasts; City Light's existing conservation, generation and market resources; the power supply obtained from these resources; and the resource adequacy standard used to determine how much power will be needed from additional resources to meet the expected load.

Chapter 4 identifies the new resources that are commercially available – additional conservation, renewable and non-renewable generation resources, and market resources. It also peeks ahead to highlight emerging technologies that may provide additional resources in the future.

Chapter 5 reviews the methodology City Light used to evaluate alternative resource portfolios for meeting the expected load under a range of future conditions. First, the baseline forecast or reference case is presented, including assumptions about future fuel supply, costs and electricity prices. The chapter then describes a range of possible future conditions, packaged as hypothetical scenarios. There is a discussion of the computer model used to assess the performance of alternative portfolios under these scenarios against the criteria of reliability, cost, environmental impact and risk. Finally, the objectives for selecting portfolios are presented.

Chapter 6 then presents the results of two rounds of analysis, showing the relative performance of the portfolios to meet City Light's anticipated needs, year by year through 2026. In Round 1 nine portfolios were evaluated; based on these results, eight modified portfolios were evaluated in Round 2. The recommended portfolio was selected based on the second round of analysis.

Finally, **Chapter 7** presents the Action Plan: City Light's recommended long-term strategies and action plan for implementation in the next two years.

A glossary of technical terms and acronyms used in the IRP is at the end of the document. Several appendices are published separately on a compact disk: a review of the public involvement process, the City Council resolution that directed City Light to offset greenhouse gas emissions, a description of additional resources to be monitored and evaluated for future IRPs, and the methodology used in the computer modeling.