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SEATTLE CITY LIGHT'S 2008 INTEGRATED RESOURCE PLAN TABLE OF CONTENTS

2008 INTEGRATED RESOURCE PLAN: EXECUTIVE SUMMARY

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Integrated Resource Planning Process
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INTRODUCTION

The 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
Integrated Resource Planning
 City Light's Mission and the IRP
 Differences between the 2006 and 2008 IRPs
 The Resource Strategy
 Steps in the Process
Public Involvement
The 2008 IRP's Organization

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CHAPTER 1 ENERGY REQUIREMENTS & RELIABILITY

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- Load Forecast Range

- Peak Load Forecast

- Load Shape

Extreme Weather

- Climate Change's Effect on Energy Resources

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Conservation

- Energy Saved by Conservation Programs

Generation Resources

- City Light Resources

- Contracted Resources

- Power from Existing Generation Resources

- Future Outlook for Current Generation Resources

Market Resources

- Western States Transmission System

Resource Adequacy

- New Resources to Meet Resource Adequacy

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CHAPTER 3 THE PLANNING ENVIRONMENT

This chapter describes the local, state, regional, and federal laws, policies and guidelines that most affect City Light's integrated resource planning process.

The City of Seattle & Seattle City Light

- Environmental Policy

- Conservation and Renewable Resources

- Greenhouse Gases and Climate Change

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State of Washington

- Washington's Energy Independence Act (I-937)
- Integrated Resource Planning
- Facilities Siting
- Net Metering
- Incentives for Renewables
- Governor's Executive Order on Climate Change
- Power Plant Greenhouse Gas Performance Standard
- 2008 Legislation
- Washington State Climate Action Team

Regional

- Bonneville Power Administration
- Northwest Power and Conservation Council
 - Power Planning
 - Regional Resource Adequacy Standard
- Western Governors Association
- Western Climate Initiative
- The Climate Registry

Federal

- Environmental Regulations
- Energy Policy Act of 2005
 - Energy Efficiency
 - Generation Resources and Fuel Supply
- Transmission
- Climate Change
- Amendments to the Public Utility Regulatory Policy Act (PURPA)

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This chapter identifies and describes commercially available resources and addresses transmission issues that can impact market purchases and seasonal exchanges.

Conservation Resource

- Characteristics
- 2006 Conservation Potential Assessment
- Modeling Conservation in the 2008 IRP

Generation Resources

- Evaluating the Resources
- Selecting a Range Of Resources
- Costs of New Generation Resources
- Resources Evaluated in the IRP
 - Hydroelectric Efficiency Improvement
 - Wind Power
 - Biomass

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- Landfill Gas
- Geothermal
- Natural Gas: Combined-Cycle Combustion Turbines & Simple-Cycle Combustion Turbines

Market Resources

- Seasonal Exchanges
- Capacity Purchases

Resource Additions and Portfolio Design Considerations

- Initiative-937 Resource Requirements
- Renewable Energy Credits
- Transmission for New Resources

- Transmission Contracts and Future Planning
- Issues

- Anticipated Need for and Estimating the Cost of New Transmission

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Overview

- Fuel Prices
- Resource Supply
- Supply Forecast
- Electricity Prices

The Evaluation Criteria

- Provide Reliable Service
- Minimize Costs to Customers
- Manage Risk
- Minimize Environmental Impact

Using the AURORAxmp® Electric Market Model to Evaluate Portfolios

- Selecting Portfolios for Analysis

Scenarios

- Climate Change Scenario
- High Load Growth Scenario
- Prolonged Recession Scenario
- High Gas Price Scenario

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High renewable Resource Costs Scenario
Plug-In Hybrid Electric Vehicle Scenario

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Results of two rounds of portfolio analysis are presented, showing the portfolios' relative performance to meet City Light's anticipated power needs.

Round 1 Analysis

Round 1 Portfolios

- Portfolio 1: High Landfill Gas & High Biomass
- Portfolio 2: Simple Cycle Combustion Turbine (SCCT) & High Wind
- Portfolio 3: High Geothermal & High Biomass
- Portfolio 4: CCCT & Biomass
- Portfolio 5: High Exchange & High Geothermal
- Portfolio 6: High Geothermal & Wind

Results of Portfolio Evaluations

Environmental Impact Summary

Conclusions from Round 1 Analysis

Round 2 Portfolios

- Portfolio 1: High Biomass and Geothermal
- Portfolio 2: High Exchange, Geothermal and Biomass
- Portfolio 3: High Wind and Geothermal
- Portfolio 4: High Exchange, Wind and Geothermal
- Portfolio 5: High Biomass, Geothermal and Wind

Evaluation of Round 2 Portfolios

- Reliability
- Cost
- Risk

Evaluating Round 2 Portfolios across Scenarios

- Climate Change
- High Load Growth
- Prolonged Recession
- High Renewable Resource Costs
- High Natural Gas Price
- Plug-in Hybrid Electric Vehicle

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The chapter presents City Light's recommended long term strategy and two year action plan.

Action Plan

- Resource Acquisition

 - Conservation

 - Generation

 - Lost Opportunities

 - Transmission

 - Future Integrated Resource Planning

IRP action plan, 2008-2009

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