

## Seattle City Light CIP White Paper

Department Name: Seattle City Light

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### Section 1 - Overview

Seattle City Light (City Light) is a municipal electric utility, owned by the residents of Seattle and run by the City's elected officials. The Utility serves a population of almost 700,000 people living in a 130 square-mile area, which includes the City of Seattle and several adjoining jurisdictions. To serve these customers, City Light owns, maintains, and operates a multi-billion-dollar physical plant. The physical plant includes:

- ◆ A power supply generation system consisting of seven hydroelectric plants on the Pend Oreille (Boundary Dam), Skagit, Cedar, and Tolt Rivers with a combined capacity of almost 2,000 megawatts;
- ◆ 650 miles of high-voltage transmission lines linking these plants to Seattle;
- ◆ A distribution system with 14 major substations and more than 2,500 miles of overhead and underground cable;
- ◆ A state-of-the-art System Control Center coordinating these activities; and
- ◆ Billing and metering equipment tracking approximately 395,000 accounts.

City Light's Capital Improvement Program (CIP) is the vehicle for repairing, upgrading, and expanding this infrastructure. The CIP funds a variety of safety improvements, mitigation activities, and licensing requirements. The CIP's overriding goal is to ensure that the facilities required to serve City Light customers with low-cost, reliable power are in place. Funding for the CIP comes primarily from retail electricity sales, sales of surplus power on the wholesale market, and the sale of revenue bonds.

The City Council adopted a new Strategic Plan for City Light in July 2012, which established spending priorities and a six-year rate path for the Utility. The Strategic Plan guided development of the 2014 City Light budget and CIP.

### Section 2 - Summary of Upcoming Budget Issues and Challenges

In developing the Strategic Plan, the Utility identified baseline capital expenditures and developed strategic initiatives for replacing aging infrastructure, automating electrical system control, and leveraging new technology to meet the expectations of City Light customers. Additional issues include regional transmission congestion and regulatory requirements to improve the security and reliability of the transmission grid. Section 6 provides a list of Strategic Plan initiatives with capital components.

Recent investments in Utility systems will help to identify and evaluate future capital proposals. The Work and Asset Management System (WAMS) provides the platform for tracking City Light's estimated 900,000 assets, as well as generating the associated work orders and maintenance records of the Utility. The initial phase of WAMS went live for distribution operations and engineering groups in 2011. The Utility completed the extension of WAMS to cover substations, power supply, and utility support services in the spring of 2013.

Tracking this asset information will allow the Utility to achieve operational efficiencies, improve maintenance practices on assets, and identify equipment where there is a high risk of failure. SCL will use data in WAMS to develop strategic asset management plans for each asset type (generation equipment, large power transformers, substation circuit breakers, poles, underground distribution systems, etc.) and to inform operational/maintenance practices and capital replacement decisions. Through the asset management program, the Utility conducted condition assessments on 115,000 poles and 28 power transformers, surveyed 527 miles of overhead transmission lines, and adjusted the CIP based on the results.

Customers benefit from a strong asset management program. With WAMs in place, SCL can utilize both physical and financial resources more efficiently. The Utility will be better able to predict when equipment will need maintaining or

replacing, which translates into improved outage and emergency management. Reductions in outage time and costs associated with emergency repairs provide customers with better service.

### Section 3 - Thematic Priorities

CIP Projects meet a variety of thematic needs:

- ◆ **Maintain existing infrastructure and support basic operations** – The majority of City Light’s CIP projects provide for the maintenance of existing systems and equipment or support the on-going daily operations of the Utility. These projects include major maintenance work to extend the life and function of facilities and equipment, scheduled replacement of old and failing equipment, and capital programs to support customer connections and repair unexpected system outages. Projects are also included in the CIP to respond to external conditions, such as relocations due to major transportation projects. The CIP includes projects to implement Strategic Plan initiatives to renovate streetlights and underground cables.
- ◆ **Upgrade capacity and services to provide new functionality** – CIP Projects also increase the Utility’s generation and distribution capacity, and provide new functionality for management and customer service systems. The 2014-2019 CIP includes continuing funding for these capacity related projects, such as: the Customer Information System, the Denny Substation, and the Energy Management System. In addition, the CIP proposes new projects such as the Automated Metering Infrastructure.
- ◆ **Address licensing, regulatory and safety requirements** – Federal licenses governing the operation of the Utility’s dams require a number of environmental, historic preservation, and recreation mitigation measures. In addition, federal requirements regulating the transmission grid and energy market transactions require system upgrades and improvements. The CIP includes projects to improve safety and proactively reduce infrastructure risks. The CIP implements Strategic Plan initiatives addressing transmission grid improvements and regulatory compliance.
- ◆ **Maintain the Utility’s information technology systems** – Over the last several decades, the electric utility industry has come to rely heavily on information technology systems. IT systems help the Utility provide real time management and automation of operations, design and digitally record utility systems and assets, regulate power across the regional transmission grid, manage financial transactions on the energy market, and increase business efficiencies throughout the organization. The CIP includes projects to maintain the hardware and software necessary to provide these functions and implements Strategic Plan initiatives that improve cyber security and disaster recovery.

### Section 4 - Project Selection Criteria

When developing the CIP Plan, project ideas come from throughout SCL, but the staff in the operational divisions is responsible for creating official proposals. Members of each of the Utility’s organizational lines of business (power supply, transmission and distribution, customer service) prioritize capital spending within their divisions and then submit recommended projects to a centralized capital budgeting system.

City Light management compares proposals against criteria that evaluate the projects’ costs, benefits, and risks. The Utility gives priority to mandatory requirements and projects currently underway, before considering future projects and new initiatives. Utility staff develops business cases to document the projects’ expectations and rationale, and to provide a cost benefit analysis of alternatives.

The availability of funding and labor resources constrains the Utility’s CIP Plan. City Light management seeks to balance the overall needs of the Utility within these constraints and may rescope, reschedule, or defer projects to prepare a comprehensive six-year CIP. The Strategic Planning process provides a tool for vetting major capital spending decisions with elected officials and the public. City Light intends to revisit the recently adopted Strategic Plan every two years to maintain transparency and set direction for future CIP development.

### Section 5 - Aligning Infrastructure with Planned Growth

City Light carefully monitors load and reliability. The Utility recommends capital investments to assure that customers have access to reliable electrical power when they need it.

City Light participates in the Interdepartmental Permit Review Team and contributes to the planning of large citywide public projects to identify future CIP project work that will be required. Unless significant area redevelopment (such as Light rail expansion and the expected growth around transit stations) occurs, the existing electrical system is adequate to serve new customers' load. In the majority of cases, the Utility bases the work on a history of customer requests or proposes the work to address reliability issues in an area.

City Light has been involved in the overall City effort to support the development in Urban Centers and Villages, including the current Comprehensive Plan update and the Neighborhood Planning process. Area load forecasts done as part of the Denny Substation Project Ordinance identified the expected system impacts of load growth at the substation level. To meet these load needs, The Strategic Plan includes two projects, the construction of the Denny Substation and the building of a duct and vault system, which will support network distribution feeders in the surrounding area.

## **Section 6 - Future Projects/What is on the Horizon**

SCL proposes the following CIP projects that implement the capital portion of Strategic Plan initiatives:

- Denny Substation Program
- Transmission System Improvements in Puget Sound Area
- Cable Rehabilitation and Replacement
- Streetlight Infrastructure Replacement
- Customer Focused Web Redevelopment
- Compliance Tracking System and Compliance Program Standardization
- Technical Training Center
- Integrated Geospatial Information System
- IT Disaster Recovery Program
- Replace/Upgrade PeopleSoft Financial System
- Enterprise Document Management System
- Implement IT Security Upgrades
- Reduce Environmental Liability
- Performance Based Reporting
- Advanced Metering Infrastructure
- Mobile Workforce Implementation

In addition to these specific initiatives, the Strategic Plan includes a general initiative (Efficiency Projects) to seek efficiencies and reduce the CIP's overall level. The initiative on Project Management Quality Improvements also contains an efficiency component. The Utility meets both of these efficiency commitments in the proposed CIP.

## **Section 7 - CIP Revenue Sources**

Funding for City Light's CIP comes from combination of debt financing and cash from operations. Retail electricity sales and surplus energy sales on the wholesale market are the two major producers of operational cash. Direct customer billing (including service connections and other customer requested work) as well as assorted fees, grants, and transactions provide the remainder of the revenue for SCL. City Light's policy is to limit debt financing to no more than 60% of the CIP (Resolution 31187).

## **Section 8 - CIP Spending by Major Category**

In response to Council's request that the Utility provide more documentation and transparency of capital expenditure decisions, SCL included additional summary information to break down the CIP by category.

The 2014-2019 Proposed CIP summarizes spending in the following categories:

**Power Supply:** Projects in this category include improvements to City Light's dams, generators, powerhouses, and other related projects. In addition, the category contains projects designed to help SCL comply with federal licensing and environmental mitigation requirements at the Utility's dams. City Light sequences work on major power production

equipment (i.e., generator rebuilds and runner replacements) to reduce the impact to power generation and level capital spending.

**Transmission:** Projects in this category include work related to transmission capacity. These projects help SCL deliver power from the dams to the distribution system and regional power grid. City Light owns and maintains 650 miles of transmission capacity that connect the Skagit Facilities to Seattle. SCL leases additional transmission capacity to connect to the Boundary, Cedar Falls, and Tolt facilities.

**Distribution:** Projects in this category include improvements to the distribution substations, relays, feeders, network distribution systems, overhead and underground radial distribution systems, service connections, customer meters, and other projects related to the distribution system.

**External Projects:** Projects in this category respond to requests from local jurisdictions to relocate distribution services from overhead to underground systems per the terms of franchise agreements, maintain and upgrade the streetlight system, relocate utility infrastructure in response to major transportation projects, and provide capital improvements in response to other customer-requested service needs.

**Central Utility Projects:** Projects in this category provide for centralized billing and customer service systems, financial and information technology systems that are critical to the Utility's operation, and vehicle fleets and facilities that are not part of the power generating plant.

**2014-2019 Proposed CIP  
Summary of CIP Project Allocations (in \$1,000s)**

	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>Total</b>
<b>Power Supply</b>	<b>58,183</b>	<b>86,699</b>	<b>86,347</b>	<b>65,453</b>	<b>69,163</b>	<b>49,292</b>	<b>415,137</b>
<i>Boundary</i>	32,796	38,167	42,994	44,250	44,588	33,552	236,347
<i>Skagit</i>	20,952	41,122	36,286	13,649	18,422	9,649	140,080
<i>Cedar Falls - Tolt</i>	779	2,025	1,896	4,116	3,296	4,906	17,018
<i>Power Supply Other</i>	3,656	5,385	5,171	3,438	2,857	1,185	21,692
<b>Transmission</b>	<b>4,053</b>	<b>12,414</b>	<b>14,932</b>	<b>4,069</b>	<b>10,661</b>	<b>55,907</b>	<b>102,036</b>
<b>Distribution</b>	<b>165,510</b>	<b>219,430</b>	<b>259,809</b>	<b>173,383</b>	<b>138,150</b>	<b>170,593</b>	<b>1,126,875</b>
<i>Substations</i>	29,431	50,839	97,478	21,063	21,306	25,583	245,700
<i>Network</i>	25,067	31,909	33,261	28,590	19,890	35,796	174,513
<i>Radial</i>	52,950	56,116	55,036	56,311	52,424	54,381	327,218
<i>Service Connections</i>	38,590	65,003	61,438	61,079	37,300	41,622	305,032
<i>Distribution Other</i>	19,472	15,563	12,596	6,340	7,230	13,211	74,412
<b>External Projects</b>	<b>29,593</b>	<b>48,768</b>	<b>26,475</b>	<b>23,595</b>	<b>23,601</b>	<b>19,837</b>	<b>171,869</b>
<i>Local Jurisdictions</i>	13,920	14,425	12,579	12,679	12,477	13,502	79,582
<i>Transportation Relocations</i>	14,027	34,299	13,894	10,914	11,111	6,322	90,567
<i>Customer Other</i>	1,646	44	2	2	13	13	1,720
<b>Central Utility Projects</b>	<b>33,820</b>	<b>22,355</b>	<b>17,888</b>	<b>15,752</b>	<b>15,610</b>	<b>24,738</b>	<b>130,163</b>
<i>Customer and Billing</i>	3,916	1,707	0	0	0	0	5,623
<i>Finance and IT Systems</i>	7,840	5,840	5,737	5,064	4,835	8,367	37,703
<i>Fleets and Facilities</i>	22,064	14,808	12,151	10,688	10,775	16,351	86,837
<b>Totals:</b>	<b>291,159</b>	<b>389,666</b>	<b>405,451</b>	<b>282,252</b>	<b>257,185</b>	<b>320,367</b>	<b>1,946,080</b>

