Rate Design Report

Proposed 2015-2016 Rates

September 26, 2014

Seattle City Light

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Executive Summary

This report presents electric rates to become effective on January 1, 2015 and on January 1, 2016. The rates are designed to collect revenues consistent with the total revenue requirement established by the Revenue Requirement Analysis and with the rate class revenue targets detailed by the Cost of Service Analysis. The revenue requirements for 2015 and 2016 are also consistent with the Strategic Plan Update for 2015-2020.

The following table summarizes the average rate changes by class resulting from the Cost of Service Analysis. (A full discussion of these results can be found in the Cost of Service and Cost Allocation Report, or COSACAR.)

Table E.1
2015-2016 Rate Increases

2015	Total	Residential	Small	Medium	Large	High Demand
All Areas	4.2%	3.8%	4.8%	3.9%	3.7%	5.6%
City of Seattle	4.5%	3.5%	4.6%	4.4%	5.6%	6.2%
Network	2.1%			2.7%	1.6%	
Shoreline	4.2%	3.9%	5.6%	4.2%	5.3%	
Tukwila	4.3%	5.2%	4.9%	4.1%	5.4%	3.4%
Other Suburbs	5.4%	5.6%	5.9%	3.7%	5.6%	
2016	**Total**	**Residential**	**Small**	**Medium**	**Large**	**High Demand**
All Areas	4.9%	5.0%	5.0%	4.6%	4.8%	6.1%
City of Seattle	5.2%	5.0%	5.0%	5.1%	5.6%	6.1%
Network	3.6%			3.4%	3.9%	
Shoreline	4.8%	4.9%	5.0%	5.1%	5.6%	
Tukwila	5.5%	4.9%	5.0%	5.1%	5.6%	6.1%
Other Suburbs	4.9%	4.9%	5.0%	5.1%	5.6%	

2015 vs. 2016 Rate Impacts

Note from Table E.1 that average rate increases by rate class vary more in 2015 than in 2016. This is because 2015 rates must correct for changes in the cost of service since the last full rate review:

- The energy costs are the main determinant for differences in rate impacts among customer classes in 2015. Generally, higher energy consuming customer classes will see higher average rate impacts than lower consuming customer classes.
- While average network rates remain significantly higher than non-network rates, average network rate increases are lower than those for non-network customers because of a decrease in distribution costs relative to 2014. The network rate premium results from the cost of maintaining redundant distribution service and, therefore, higher reliability.
- Suburban, Shoreline and Tukwila rate impacts vary from City averages due to new terms for renewed franchise agreements and differences in customer consumption patterns.

Methodology

The objectives and guiding principles used in designing rates are unchanged from those used in the previous full rate review (2013-2014). The methodology is also the same. In the summary tables by rate

class shown below, base service charges and minimum charges are shown on a monthly basis for ease of understanding but they are actually charged on a daily basis.

Residential Rates (Standard)

Base service charges have slightly decreased because marginal residential customer service costs have decreased for 2015-2016 compared to 2014, reflecting lower up-to-date actual expenditures. Both first and end-block rates have increased; the end block increase is designed to equal the average customer class rate change to preserve a strong signal for conservation. The following table illustrates 2015-2016 bill impacts for City customers. A typical City of Seattle customer (700 kWh monthly consumption) will see a monthly bill increase of $2.76 in 2015 and $3.15 in 2016.

Table E.2
Residential Standard 2015-2016 Rates and Monthly Bill Impacts

Rates	2014	2015	2016				
First Block ($/kWh)	$0.0506	$0.0557	$0.0588				
End-Block ($/kWh)	$0.1149	$0.1189	$0.1249			2015 Rate change:	**3.5%**
Base Service Charge ($/month)	$4.821	$4.353	$4.449			2016 Rate change:	**5.0%**
Average Rate ($/kWh)	$0.0904	$0.0935	$0.0982			2015 Number of meters:	306,602
Typical Monthly Bill Change (700 kWh)		$2.76	$3.15				
Annual Consumption	Customer Count	% of Customers	2014 Bill	2015 Bill	% Change	2016 Bill	% Change
Low (0-5,000 kWh)	96,248	33.0%	$18.93	$19.75	4.3%	$20.70	4.8%
Medium (5,001-15,000 kWh)	167,870	57.6%	$62.38	$65.19	4.5%	$68.47	5.0%
High (15,000 kWh+)	27,201	9.3%	$181.25	$188.23	3.9%	$197.73	5.0%

Note: Low-Income Residential Rates are set at 40% of Standard Residential Rates.

Small General Service

Small General Service rates have an energy component only, and are derived by dividing the revenue requirement by projected kWh load. Minimum bills are sized to collect marginal customer service costs, which have slightly decreased for 2015-2016 as compared to 2014. The following table illustrates 2015-2016 bill impacts for Small City General Service customers.

Table E.3
Small City General Service 2015-2016 Rates and Monthly Bill Impacts

Rates	2014	2015	2016				
Energy ($/kWh)	$0.0764	$0.0799	$0.0840			2015 Rate change:	**4.6%**
Minimum Bill ($/month)	$8.10	$7.80	$7.80			2016 Rate change:	**5.0%**
Average Rate($/kWh)	$0.0764	$0.0799	$0.0840			2015 Number of meters:	36,915
Customer Description	Annual kWh	Load Factor	2014 Bill	2015 Bill	% Change	2016 Bill	% Change
Small Office	10,543	NA	$67	$70	4.6%	$74	5.1%
Car Wash	58,560	NA	$373	$390	4.6%	$410	5.1%
Housing Group	225,160	NA	$1,434	$1,499	4.6%	$1,576	5.1%

Medium General Service

Medium General Service customers have demand and energy charges. Demand charges are calculated as a portion of marginal distribution costs divided by projected kW demand. The energy charge is set such that it is sufficient to collect the remaining revenue requirement, given projected kWh consumption. Both demand and energy charges have increased in 2015 and 2016 compared to 2014. Energy charges

increased more than demand charges because of increased marginal energy costs and flat marginal distribution costs. Minimum bills are set to recover marginal customer service costs, and will not change for 2015 but increase slightly in 2016. The following table shows bill impacts for City Medium customers; note that bill impacts do not vary greatly with customer load factor[1] or energy consumption.

Table E.4
Medium City General Service 2015-2016 Rates and Monthly Bill Impacts

Rates	2014	2015	2016				
Energy ($/kWh)	$0.0606	$0.0634	$0.0667			2015 Rate change:	**4.4%**
Demand ($/kW)	$2.18	$2.24	$2.32			2016 Rate change:	**5.1%**
Minimum Bill ($/month)	$18.90	$18.90	$19.50			2015 Number of meters:	2,155
Average Rate($/kWh)	$0.0665	$0.0694	$0.0730				
Customer Description	Annual kWh	Load Factor	2014 Bill	2015 Bill	% Change	2016 Bill	% Change
Supply Company	209,030	0.09	$1,400	$1,459	4.2%	$1,529	4.8%
Retail Store	812,480	0.44	$4,474	$4,674	4.5%	$4,911	5.1%
Grocery Store	2,372,259	0.66	$12,773	$13,349	4.5%	$14,030	5.1%

The rate increase for Medium Network Service is smaller than for non-network customers because distribution costs decreased relative to 2014. The following table shows bill impacts for Network customers. Similar to the Medium City results, bill impacts do not vary much among customers within this class.

Table E.5
Medium Network Service 2015-2016 Rates and Monthly Bill Impacts

Rates	2014	2015	2016				
Energy ($/kWh)	$0.0772	$0.0793	$0.0824			2015 Rate change:	**2.7%**
Demand ($/kW)	$4.39	$4.52	$4.54			2016 Rate change:	**3.4%**
Minimum Bill ($/month)	$18.90	$18.90	$19.50			2015 Number of meters:	541
Average Rate($/kWh)	$0.0878	$0.0902	$0.0933				
Customer Description	Annual kWh	Load Factor	2014 Bill	2015 Bill	% Change	2016 Bill	% Change
Retail Store	245,000	0.22	$1,909	$1,962	2.8%	$2,027	3.3%
Shopping Center	3,690,000	0.44	$26,857	$27,595	2.7%	$28,562	3.5%
Hotel	5,925,600	0.67	$42,086	$43,240	2.7%	$44,789	3.6%

Large and High Demand General Service

Large and High Demand General Service customers pay time-of-use energy and demand charges (peak and off-peak). The off-peak demand charge is set at a minimal amount equal to the transformer investment discount. Peak demand charges are set using the same methodology as described for the Medium classes. Peak and off-peak energy charges recover the balance of the revenue requirement, with the peak charge set to equal 1.5 times the off-peak charge. Minimum bills are set to recover marginal customer service costs. The following table shows monthly bill impacts for City Large customers. Customers with lower load factors will see higher bill impacts in 2015 because the peak demand charge

[1] Load factor is the ratio of average energy use (aKW) to peak energy use (kW). A low load factor customer will have low overall use compared to their peak use. A high load factor customer tends to have steadier, round-the-clock energy consumption, close to their peak use.

increased by a higher percentage in 2015 than the energy charges. Bill impacts are more uniform in 2016. Bill impacts are similar for Large Network and High Demand General Service customers.

Table E.6
Large City General Service 2015-2016 Rates and Monthly Bill Impacts

Rates	2014	2015	2016				
Energy Peak ($/kWh)	$0.0690	$0.0717	$0.0759				
Energy Off-peak ($/kWh)	$0.0463	$0.0478	$0.0506			2015 Rate change:	**5.5%**
Demand Peak ($/kW)	$1.52	$2.02	$2.08			2016 Rate change:	**5.6%**
Demand Off-Peak ($/kW)	$0.24	$0.22	$0.22			2015 Number of meters:	80
Minimum Bill ($/month)	$503	$557	$569				
Average Rate($/kWh)	$0.0643	$0.0679	$0.0717				
Customer Description	Annual kWh	Load Factor	2014 Bill	2015 Bill	% Change	2016 Bill	% Change
Stadium	2,404,343	0.18	$13,609	$14,586	7.2%	$15,378	5.4%
Shipyard	23,550,920	0.48	$122,925	$129,235	5.1%	$136,573	5.7%
Hospital	17,300,008	0.81	$89,021	$93,309	4.8%	$98,643	5.7%

The following two tables show bill impacts for Large Network and High Demand General Service customers.

Table E.7
Large Network Service 2015-2016 Rates and Monthly Bill Impacts

Rates	2014	2015	2016				
Energy Peak ($/kWh)	$0.0863	$0.0869	$0.0906				
Energy Off-peak ($/kWh)	$0.0578	$0.0579	$0.0604				
Demand Peak ($/kW)	$3.65	$4.00	$4.05			2015 Rate change:	**1.6%**
Demand Off-Peak ($/kW)	$0.24	$0.22	$0.22			2016 Rate change:	**3.8%**
Minimum Bill ($/month)	$503	$557	$569			2015 Number of meters:	59
Average Rate($/kWh)	$0.0858	$0.0871	$0.0905				
Customer Description	Annual kWh	Load Factor	2014 Bill	2015 Bill	% Change	2016 Bill	% Change
Car Dealership	4,912,971	0.35	$36,412	$37,057	1.8%	$38,479	3.8%
Large Office Tower	16,257,889	0.40	$118,197	$120,099	1.6%	$124,779	3.9%
Interconnection & Data Ctr	31,077,378	0.92	$204,740	$207,024	1.1%	$215,433	4.1%

Table E.8
High Demand City General Service 2015-2016 Rates and Monthly Bill Impacts

Rates	2014	2015	2016				
Energy Peak ($/kWh)	$0.0649	$0.0681	$0.0724				
Energy Off-peak ($/kWh)	$0.0436	$0.0454	$0.0483				
Demand Peak ($/kW)	$1.52	$2.02	$2.08			2015 Rate change:	**6.2%**
Demand Off-Peak ($/kW)	$0.24	$0.22	$0.22			2016 Rate change:	**6.1%**
Minimum Bill ($/month)	$929	$1,707	$1,744			2015 Number of meters:	8
Average Rate($/kWh)	$0.0589	$0.0625	$0.0663				
Customer Description	Annual kWh	Load Factor	2014 Bill	2015 Bill	% Change	2016 Bill	% Change
Cement Plant	51,526,422	0.46	$250,987	$266,526	6.2%	$282,809	6.1%
Educational Institution	290,817,455	0.67	$1,431,395	$1,516,614	6.0%	$1,609,835	6.1%
Glass Manufacturing	86,918,695	0.86	$419,165	$443,464	5.8%	$470,817	6.2%

Suburban Rates

Suburban jurisdictions (Suburban, Shoreline, Tukwila, and Burien) comprise a relatively small part of retail energy use (about 16%). The 2015-2016 rate increases and rate schedule structures for suburban rate classes are similar to those for City rate classes but will vary due to changes in the franchise agreement terms and consumption patterns.

Streetlights

Average streetlight rates increase significantly per kWh due to rising energy and capital costs (associated with LED conversions), coupled with significant drops in streetlight energy consumption due to proliferation of high-efficiency LED streetlights. Because rates are expressed per kWh, the drop in load makes the average rate increase dramatically, while actual bills may not be increasing at all. For example, the City of Seattle General Fund streetlight bill (the largest lighting customer, about 85% of revenues) remains stable because increasing streetlight rates per kWh are offset by lower energy consumption.

Table E.9
Streetlight 2015-2016 Rates and Bill Impacts

	2014	2015	2016
Streetlight Rate Increase		11.30%	15.70%
Annual General Fund Streetlight Bill ($M)	$11.5	$11.2	$11.3

Streetlight rate codes were streamlined for 2015-2016, reducing the total number of rates from approximately 112 to 18. Rapid evolution in LED technology in recent years led to an explosion in the number of different types of streetlight rates. This streamlining of streetlight rates serves to retire a number of no-longer-used high pressure sodium (HPS) streetlight rates, and to cluster similar types of LED rate codes into single codes. The 2015 and 2016 rate schedules will include both the old and new streetlight rate codes in order to provide ample time for transition to new rate codes in the billing system.

Other Rates and Provisions

Other rates updated in this rate review include the power factor rate, transformer investment discount, reserved distribution capacity charge, and pole, duct and vault rental rates.

Chapter 1: Introduction

This Rate Design Report, or RDR, presents electric rates to become effective on January 1, 2015 and on January 1, 2016. The RDR is the last of three reports that comprise the documentation for the 2015-2016 Rate Review. The first report, the Revenue Requirements Analysis (RRA), assesses the amount of revenue needed to sustain the operations and capital program of the utility. The second report, the Cost of Service and Cost Allocation Report (COSACAR), analyzes the cost of providing service to City Light customers and presents the revenue allocation to each of the rate classes. This report presents rates for each customer class designed to collect revenues consistent with the total revenue requirement established by the RRA and with the class revenue targets detailed by the COSACAR.

Organization of RDR

Chapters 2 through 7 provide customer descriptions, rate design detail and expected customer bill impacts for each of the following customer class groups:

- Residential Standard and Assisted
- Small General Service
- Medium General Service
- Large General Service
- High Demand General Service
- Streetlights

Chapter 8 provides detail on other customer charges, including power factor charges, pole attachment fees, and reserved distribution capacity charges. Chapter 8 also includes information on customer credits, including transformer investments and primary metering discounts.

The RDR contains four appendices. Appendix A provides a consolidated list of the 2015-2016 customer rates. Appendix B presents a history of City Light rates and compares the 2015-2016 rates to those of other utilities. Appendix C contains the billing determinants used to set the 2015-2016 rates, and Appendix D contains the rate design inputs from the Cost of Service Model.

Rate Setting Objectives and Methodology

City Council Resolution 31351 adopted in May 2012 provides the following principles to guide rate design:

A. Higher Rates for Higher Consumption: where possible, rates increase as consumption increases. This may be accomplished by establishing thresholds that define ever higher blocks of energy consumption, each block having a higher rate than the preceding block. Such increasing block rates are intended to encourage the efficient use of electricity.

B. Demand Charges: Rate schedules that include demand charges should not contain declining demand charges.

C. Residential First Block: The residential first block of electricity should be priced at or below the average cost of service to those customers. Rates for subsequent blocks within the rate class should be set to recover any subsidy provided by the first block.

D. Rate Discounts: When a customer provides a portion of City Light's service infrastructure (such as a transformer owned and maintained by the customer), or when the customer is metered on the utility's side of the transformer (instead of the more usual customer-side metering), the customer will receive a discount on rates reflecting the reduction in cost of service to the utility.

E. Time-of-Use Rates: City Light shall implement time-of-use rates, whether seasonal, daily, or hourly, where such differentiation options are reasonably feasible.

F. Low Income Rates: Rates for qualified low-income residential customers shall continue to be lower than regular residential rates by at least 50%.
The methodology used in designing rates for each rate class is consistent with the principles and methods used to set 2013-2014 rates.

Billing Determinants

Billing determinants are a collection of datasets that describe customer electricity use by billing component. Rates are designed so that when applied to the forecasted billing determinants for a particular class, this will produce the targeted revenue requirement. A complete listing of the 2015 and 2016 billing determinants can be found in Appendix C.

Bill impacts for a subset of customers are shown for each rate class in the following chapters in this report. Since future electricity use is not forecast at the individual customer level, actual customer use from 2012 is used for analyzing the range of bill impacts resulting from the 2015-2016 rates.

Rate Class Definitions and Disaggregation of Suburban Jurisdictions

In the 2013-2014 rate review Tukwila and Shoreline were aggregated for the purposes of determining rates. However, effective August 1, 2014, Shoreline renewed its City Light franchise agreement. The new agreement contains terms that differ slightly from those of Tukwila's existing agreement. Thus, this rate review produces distinct rates for Tukwila and Shoreline.

In parallel with this rate review process, the cities of Burien, Lake Forest Park and SeaTac are renegotiating their franchise agreements, which are due to expire in 2014 and early 2015. The 2015-2016 rates assume that these new agreements will have the simplified terms that resemble Shoreline's new agreement. As in the past, Burien continues to be aggregated with Suburban billing determinants for the purposes of determining rates. The Burien rate schedule differs from the Suburban rate schedule only in that it includes fees to collect for Burien undergrounding projects. The aggregated Burien and Suburban rate classes are called the "Other Suburbs" category in this report.

All non-City rates are higher than City rates because they incorporate rate differentials, which are allowed by the franchise agreements. Depending on the franchise city's choice of franchise payment, the rate differential can range up to 8%. See the COSACAR Chapter 4.2.2 for details.

Since the 2013-2014 rate review, a new undergrounding charge was added to Burien rate schedules to recover the costs of the second phase of the First Avenue South undergrounding project.

Table 1.1 shows the mapping of the rate class categories.

Table 1.1
Rate Class Categories

Rate Class Name	Cost Allocation & Rate Design Category
Network General Service	Network
Standard General Service: City	City
Standard General Service: Suburban	Other Suburbs
Standard General Service: Burien	Other Suburbs
Standard General Service: Shoreline	Shoreline
Standard General Service: Tukwila	Tukwila

Differences from Cost of Service

Average rates and bill increases/decreases calculated with the rates and billing determinants presented in this report may differ slightly from average rates and rate changes shown in the Cost of Service. These differences result from rounding; actual demand charges are rounded to whole cents and energy charges were rounded to hundredths of a cent. When multiplied by billing determinants, the total dollars to be collected come as close as possible to the revenue requirement for each customer class but do not exactly equal that revenue requirement.

Chapter 2: Residential Rates

Rate Class Description

In December 2012, there were 366,714 residential customers, of which about 3.5% were Assisted (Utility Discount Program) Residential customers and about 96.5% were Standard Residential customers. Table 2.1 displays average 2012 monthly energy consumption by jurisdiction for Standard Residential customers.

Table 2.1
Standard Residential Customers 2012 Average Consumption

Jurisdiction	Percentage of Customers	Number of Customers	Average Monthly kWh
City	82.3%	291,319	661
Shoreline	6.0%	21,132	867
Tukwila	1.6%	5,532	782
Suburban (including Burien)	10.1%	35,905	887
All		353,888	698

Residential rate schedules consist of two-block energy charges (kWh) and a daily base service charge. Energy charges are designed in ascending blocks, which is intended to encourage energy conservation and reflect the increasing marginal cost of electricity provision. This rate structure is also intended to provide a "lifeline rate", or below-cost electricity for essential lighting, cooking, and refrigeration needs, while also providing a stronger price signal to customers to curb electricity consumption above those basic needs. The lower first block rate is applied to the first 10 kWh per day during the summer (April through September) and 16 kWh per day during the winter (October through March). The higher end block rate is applied to all other kWh consumed.

Rate Design

Rates are set to meet the revenue requirements given a set of billing determinants for all Residential customers (Standard and Assisted). Assisted rates are then calculated by discounting the Standard rates.

The basic equation used to calculate residential rates is

$$RR = BSC + K_1 \times P_1 + K_2 \times P_2$$

where
RR is a revenue requirement for a residential class (jurisdiction) for a specific year;
BSC is the revenue from the base service charge;
K_1 and K_2 are first and end block total energy consumed, respectively;
P_1 and P_2 are first and end block price, respectively.

Base Service Charge

The base service charge per day is calculated by taking 50% of the marginal customer service cost (including taxes), dividing this by the number of meters, and then dividing by 365 days (366 days for a leap year). More information about the derivation of the marginal customer service cost can be found in Chapter 3.5 of the COSACAR. The base service charge is the same for every Standard Residential rate schedule, City or suburb.

$$\text{2015 Base Service Charge} = \frac{(0.5\times\$39{,}557{,}272)}{(365\times373{,}345)} = \$0.1451 \text{ per day}$$

$$\text{2016 Base Service Charge} = \frac{(0.5\times\$40{,}524{,}173)}{(366\times373{,}345)} = \$0.1483 \text{ per day}$$

First and End Block Prices

The end block price was set by increasing the previous year's end block price by the average rate increase for each class established by the Cost of Service analysis, shown in Table 2.2 below. The first block price was set to a level sufficient to collect the remaining revenue requirement not collected by the end block and base service charges. This rate-setting methodology is the same as that used for 2013-2014 rates.

Table 2.2
Average Rate Increase by Jurisdiction from the Cost of Service Analysis

	City	Shoreline	Tukwila	Other Suburbs
2015	3.5%	3.9%	5.2%	5.6%
2016	5.0%	4.9%	4.9%	4.9%

Billing Determinants and Revenue Requirements

A summary of the billing determinants and revenue requirements used to derive 2015-2016 residential rates is provided in Table 2.3. In addition, Table 2.3 shows how these rates meet the target revenue requirement for residential customers.

Table 2.3
2015-2016 Billing Determinants and Revenue Requirements

2015	**City**	**Shoreline**	**Tukwila**	**Suburban/ Burien**
First Block kWh	1,243,330,751	99,216,753	23,933,598	164,553,281
End Block kWh	1,215,437,651	132,800,464	34,784,051	243,606,543
Total	2,458,768,402	232,017,217	58,717,649	408,159,824
Number of Meters	306,602	23,010	5,726	38,007
Target Revenue Requirement	$229,952,769	$24,000,500	$6,018,938	$41,439,302
Revenue from Rates	$230,011,730	$24,003,627	$6,019,638	$41,440,816
Difference	$58,961	$3,128	$700	$1,514
2016	**City**	**Shoreline**	**Tukwila**	**Suburban/ Burien**
First Block kWh	1,243,294,556	99,216,753	23,929,418	164,559,198
End Block kWh	1,214,726,866	132,582,784	34,784,756	243,710,848
Total	2,458,021,422	231,799,537	58,714,174	408,270,046
Number of Meters	306,602	23,011	5,725	38,007
Target Revenue Requirement	$241,432,769	$25,151,200	$6,313,775	$43,478,622
Revenue from Rates	$241,464,764	$25,152,315	$6,314,324	$43,475,549
Difference	$31,995	$1,115	$549	($3,073)

Rates and Customer Bill Impacts

Average monthly bills and average percent increases in monthly bills were calculated for customers by level of consumption as well as various levels of usage under the current and 2015-2016 rates.

Tables 2.4 through 2.7 show 2015-2016 rates and customer bill impacts for Standard Residential customers in each jurisdiction.

In 2015 customers in all jurisdictions across all levels of energy consumption (except Tukwila below 5,000 kWh per year customers) are expected to see an increase in their monthly bills. Percentage bill impacts are higher for low users and slightly lower for high users. An exception is Tukwila customers where the percent increase in bills increases with the level of consumption. In 2016 all customers in all jurisdictions are expected to see an increase in their monthly bill with high-consumption customers having larger average percent increases in their bills than low-consumption customers. Bill impacts among different user groups vary more in 2015 than in 2016.

Table 2.4
RSC: City Rates and Monthly Bill Impacts

	Block Limit	Current Rate	2015 Rate	2016 Rate
Summer				
First Block ($/kWh)	1-300 kWh	$0.0506	$0.0557	$0.0588
End-Block ($/kWh)	over 300 kWh	$0.1149	$0.1189	$0.1249
Winter				
First Block ($/kWh)	1-480 kWh	$0.0506	$0.0557	$0.0588
End-Block ($/kWh)	over 480 kWh	$0.1149	$0.1189	$0.1249
Base Service Charge ($/day)		$0.1607	$0.1451	$0.1483

			2015			2016		
Annual Consumption	**% of Customers**	**Current Bill**	**Monthly Bill**	**$ Change**	**% Change**	**Monthly Bill**	**$ Change**	**% Change**
0 to 5,000 kWh	33.0%	$18.93	$19.75	$0.82	4.3%	$20.70	$0.95	4.8%
5,001 to 10,000 kWh	41.3%	$49.43	$51.77	$2.34	4.7%	$54.38	$2.61	5.0%
10,001 to 15,000 kWh	16.3%	$95.23	$99.20	$3.97	4.2%	$104.21	$5.00	5.0%
15,001 to 20,000 kWh	5.6%	$143.16	$148.81	$5.65	3.9%	$156.32	$7.51	5.0%
20,001 to 25,000 kWh	2.1%	$191.12	$198.45	$7.33	3.8%	$208.46	$10.01	5.0%
Over 25,000 kWh	1.6%	$304.80	$316.08	$11.28	3.7%	$332.03	$15.95	5.0%

Table 2.5
RSH: Shoreline Standard Rates and Monthly Bill Impacts

	Block Limit	Current Rate	2015 Rate	2016 Rate
Summer				
First Block ($/kWh)	1-300 kWh	$0.0545	$0.0622	$0.0656
End-Block ($/kWh)	over 300 kWh	$0.1204	$0.1251	$0.1312
Winter				
First Block ($/kWh)	1-480 kWh	$0.0545	$0.0622	$0.0656
End-Block ($/kWh)	over 480 kWh	$0.1204	$0.1251	$0.1312
Base Service Charge ($/day)		$0.1607	$0.1607	$0.1451

			2015			2016		
Annual Consumption	**% of Customers**	**Current Bill**	**Monthly Bill**	**$ Change**	**% Change**	**Monthly Bill**	**$ Change**	**% Change**
0 to 5,000 kWh	17.1%	$21.90	$23.56	$1.66	7.6%	$24.70	$1.14	4.8%
5,001 to 10,000 kWh	41.4%	$54.54	$58.11	$3.57	6.5%	$60.97	$2.86	4.9%
10,001 to 15,000 kWh	23.7%	$101.77	$107.23	$5.46	5.4%	$112.50	$5.26	4.9%
15,001 to 20,000 kWh	10.1%	$151.11	$158.50	$7.39	4.9%	$166.27	$7.76	4.9%
20,001 to 25,000 kWh	4.2%	$201.07	$210.44	$9.37	4.7%	$220.74	$10.30	4.9%
Over 25,000 kWh	3.6%	$315.24	$329.08	$13.84	4.4%	$345.16	$16.08	4.9%

Table 2.6
RST: Tukwila Rates and Monthly Bill Impacts

	Block Limit	Current Rate	2015 Rate	2016 Rate
Summer				
First Block ($/kWh)	1-300 kWh	$0.0545	$0.0547	$0.0577
End-Block ($/kWh)	over 300 kWh	$0.1204	$0.1267	$0.1329
Winter				
First Block ($/kWh)	1-480 kWh	$0.0545	$0.0547	$0.0577
End-Block ($/kWh)	over 480 kWh	$0.1204	$0.1267	$0.1329
Base Service Charge ($/day)		$0.1607	$0.1607	$0.1451

			2015			2016		
Annual Consumption	**% of Customers**	**Current Bill**	**Monthly Bill**	**$ Change**	**% Change**	**Monthly Bill**	**$ Change**	**% Change**
0 to 5,000 kWh	33.0%	$18.47	$18.15	($0.32)	-1.7%	$19.00	$0.85	4.7%
5,001 to 10,000 kWh	41.3%	$54.75	$55.87	$1.12	2.0%	$58.62	$2.75	4.9%
10,001 to 15,000 kWh	16.3%	$100.21	$103.67	$3.46	3.5%	$108.77	$5.09	4.9%
15,001 to 20,000 kWh	5.6%	$149.62	$155.67	$6.05	4.0%	$163.31	$7.64	4.9%
20,001 to 25,000 kWh	2.1%	$199.50	$208.16	$8.66	4.3%	$218.37	$10.21	4.9%
Over 25,000 kWh	1.6%	$319.03	$333.95	$14.92	4.7%	$350.31	$16.36	4.9%

Table 2.7
RSS/RSB: Suburban/Burien Rates and Monthly Bill Impacts

	Block Limit	Current Rate	2015 Rate	2016 Rate
Summer				
First Block ($/kWh)	1-300 kWh	$0.0520	$0.0584	$0.0615
End-Block ($/kWh)	over 300 kWh	$0.1160	$0.1224	$0.1284
Winter				
First Block ($/kWh)	1-480 kWh	$0.0520	$0.0584	$0.0615
End-Block ($/kWh)	over 480 kWh	$0.1160	$0.1224	$0.1284
Base Service Charge ($/day)		$0.1607	$0.1451	$0.1483

			2015			2016		
Annual Consumption	**% of Customers**	**Current Bill**	**Monthly Bill**	**$ Change**	**% Change**	**Monthly Bill**	**$ Change**	**% Change**
0 to 5,000 kWh	16.1%	$20.17	$21.40	$1.23	6.1%	$22.40	$1.00	4.7%
5,001 to 10,000 kWh	39.1%	$53.14	$56.68	$3.54	6.7%	$59.44	$2.76	4.9%
10,001 to 15,000 kWh	25.3%	$97.79	$103.82	$6.03	6.2%	$108.89	$5.07	4.9%
15,001 to 20,000 kWh	11.2%	$145.38	$154.04	$8.66	6.0%	$161.57	$7.54	4.9%
20,001 to 25,000 kWh	4.9%	$193.54	$204.86	$11.32	5.8%	$214.89	$10.03	4.9%
Over 25,000 kWh	3.4%	$293.25	$310.07	$16.82	5.7%	$325.26	$15.18	4.9%

Utility Discount Program (Assisted) Rates

Utility Discount Program (UDP, also formerly known as Low Income or Assisted) rates for each jurisdiction are derived by taking 40% of each Standard Residential rate component. Table 2.8 summarizes 2015-2016 UDP rates. Table 2.9 shows example customer bills with residential City Standard and UDP rates, and demonstrates that by moving to the UDP program, a customer would see a 60% discount in their bill.

Table 2.8
UDP 2015-2016 Rates by Jurisdiction

	City	Shoreline	Tukwila	Burien/Suburban
2015				
Base Service Charge $/day	$0.0580	$0.0580	$0.0580	$0.0580
First Block Rate, $/kWh	$0.0223	$0.0249	$0.0219	$0.0234
End Block Rate, $/kWh	$0.0476	$0.0500	$0.0507	$0.0490
2016				
Base Service Charge $/day	$0.0593	$0.0593	$0.0593	$0.0593
First Block Rate, $/kWh	$0.0235	$0.0262	$0.0231	$0.0246
End Block Rate, $/kWh	$0.0500	$0.0525	$0.0532	$0.0514

Table 2.9
Example Residential City Customer Monthly Bills, Standard vs. UDP Rates

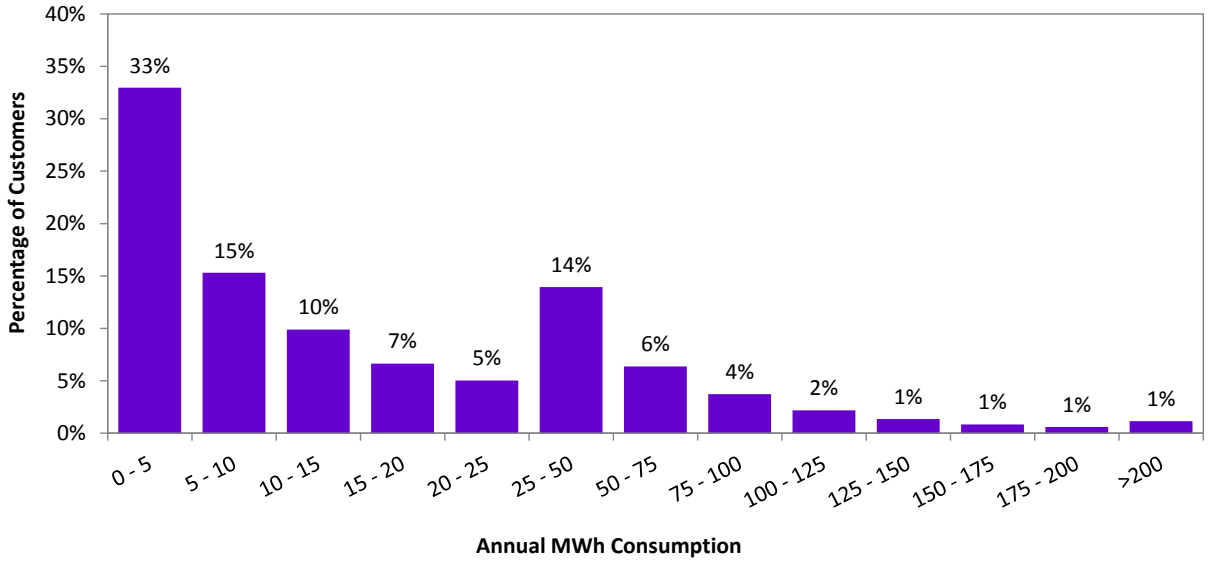
		2015 Monthly Bill			2016 Monthly Bill		
	Annual kWh	**Standard Rates**	**UDP Rates**	**% Discount**	**Standard Rates**	**UDP Rates**	**% Discount**
Low	5,348	$33.47	$13.40	-60%	$35.15	$14.06	-60%
Medium	9,696	$75.43	$30.19	-60%	$79.23	$31.70	-60%
High	18,223	$159.87	$64.00	-60%	$167.94	$67.21	-60%

Chapter 3: Small General Service Rates

Rate Class Description

Small General Service customers have no demand meter or have a monthly billing demand of less than 50 kW for at least half of their normal billings in the previous calendar year. There were approximately 43,332 Small General Service meters in 2012. Figure 3.1 shows a representation of annual energy consumption across the Small General Service class.

Figure 3.1
Small General Service Consumption Profile



Rate Design

The rate structure for Small General Service customers consists of a single flat energy charge and a minimum charge.

Energy Charges

Energy charges are designed by taking the revenue requirements for each rate design category and dividing by the respective forecast energy consumption. Table 3.1 shows the revenue requirements, forecast consumption and resulting energy charge for Small General Service customers.

Table 3.1
Small General Service Rates

	City/ Network	Shoreline	Tukwila	Suburban/ Burien
Target Revenue Requirements				
2015	$83,279,419	$3,673,604	$2,443,075	$7,579,503
2016	$88,302,744	$3,896,314	$ 2,597,978	$8,034,150
Forecast Consumption (kWh)				
2015	1,041,847,199	43,861,794	29,361,458	92,204,621
2016	1,051,825,109	44,315,980	29,739,898	93,103,127
Energy Charge ($/kWh)				
2015	$0.0799	$0.0838	$0.0832	$0.0822
2016	$0.0840	$0.0879	$0.0874	$0.0863
Revenue from Rates				
2015	$83,243,591	$3,675,618	$2,442,873	$7,579,220
2016	$88,353,309	$3,895,375	$2,599,267	$8,034,800
Difference (from Rounding)				
2015	-$35,828	$2,014	-$202	-$283
2016	$50,565	-$939	$1,289	$650

Minimum Charge

All General Service rate classes have a minimum charge that is equal to the marginal cost of customer service per meter per day including taxes. This charge is the same for all Small General Service rate schedules. Marginal customer costs have decreased slightly since the last cost of service study, resulting in a lower minimum charge in 2015 and 2016. Table 3.2 shows the minimum charges for Small General Service customers.

Table 3.2
Small General Service Minimum Charge

	Current	2015	% Change	2016	% Change
Minimum Charge $/day	$0.27	$0.26	-4%	$0.26	0%

Rates and Customer Bill Impacts

Table 3.3 shows the percentage change to the energy rate for the four Small General Service rate schedules. Rate increases in 2015 are slightly lower for City customers (which include network customers) due to the decrease in distribution costs for the network classes compared to 2014. In 2016, all Small General Service rate classes will have an average rate increase of 5.0%.

Table 3.3
Summary of Change to Small General Service Rates

	City/ Network	Shoreline	Tukwila	Suburban/ Burien
2015	4.6%	5.6%	4.9%	5.9%
2016	5.0%	5.0%	5.0%	5.0%

Tables 3.4-3.7 show customer bill impacts for a selection of customers from each class. The Small General Service customer class has only a single energy charge and the impact on most customer bills will be a percentage increase in their respective energy charge that is the same as the increase in the average rate for their class. The exception is very low-use customers who are charged only or primarily a

minimum charge. Since the minimum charge has decreased, these customers will see a smaller bill increase than the rest of the customers. A customer who only pays the minimum bills each month would see a bill decrease of 4% in 2015 and no bill change in 2016.

Table 3.4
SMC/SMD: City/Network Rates and Monthly Bill Impacts

	Current	2015	2016
Energy ($/kWh)	$0.0764	$0.0799	$0.0840
Minimum Charge ($/day)	$0.27	$0.26	$0.26
Average Rate ($/kWh)	$0.0764	$0.0799	$0.0840

			2015			2016		
Customer Description	Annual Use (kWh)	Current Bill	Monthly Bill	$ Change	% Change	Monthly Bill	$ Change	% Change
Apt. Lobby	1,475	$9.83	$10.08	$0.25	2.5%	$10.49	$0.41	4.1%
Small Office	10,543	$67.12	$70.20	$3.08	4.6%	$73.80	$3.60	5.1%
Condo Assn.	17,819	$113.45	$118.64	$5.20	4.6%	$124.73	$6.09	5.1%
Restaurant	21,432	$136.45	$142.70	$6.25	4.6%	$150.02	$7.32	5.1%
Car Wash	58,560	$372.83	$389.91	$17.08	4.6%	$409.92	$20.01	5.1%
Small Office	69,440	$442.10	$462.35	$20.25	4.6%	$486.08	$23.73	5.1%
Coffee Shop	87,150	$554.86	$580.27	$25.42	4.6%	$610.05	$29.78	5.1%
Mini Storage	97,760	$622.41	$650.92	$28.51	4.6%	$684.32	$33.40	5.1%
Salon	144,480	$919.86	$962.00	$42.14	4.6%	$1,011.36	$49.36	5.1%
Retail Store	194,016	$1,235.24	$1,291.82	$56.59	4.6%	$1,358.11	$66.29	5.1%
Housing Group	225,160	$1,433.52	$1,499.19	$65.67	4.6%	$1,576.12	$76.93	5.1%

Table 3.5
SMH: Shoreline Rates and Monthly Bill Impacts

	Current	2015	2016
Energy ($/kWh)	$0.0793	$0.0838	$0.0879
Minimum Charge ($/day)	$0.27	$0.26	$0.26
Average Rate ($/kWh)	$0.0793	$0.0838	$0.0879

			2015			2016		
Customer Description	Annual Use (kWh)	Current Bill	Monthly Bill	$ Change	% Change	Monthly Bill	$ Change	% Change
Retail Store	475	$8.26	$7.95	-$0.31	-3.7%	$7.95	$0.00	0.0%
Dentist	13,743	$90.82	$95.97	$5.15	5.7%	$100.67	$4.70	4.9%
Construction	32,680	$215.96	$228.22	$12.26	5.7%	$239.38	$11.17	4.9%
Fire Station	70,560	$466.28	$492.74	$26.46	5.7%	$516.85	$24.11	4.9%
Car Dealership	130,880	$864.90	$913.98	$49.08	5.7%	$958.70	$44.72	4.9%
Restaurant	198,600	$1,312.42	$1,386.89	$74.48	5.7%	$1,454.75	$67.86	4.9%
School	240,000	$1,586.00	$1,676.00	$90.00	5.7%	$1,758.00	$82.00	4.9%

Table 3.5
SMT: Tukwila Rates and Monthly Bill Impacts

	Current	2015	2016
Energy ($/kWh)	$0.0793	$0.0832	$0.0874
Minimum Charge ($/day)	$0.27	$0.26	$0.26
Average Rate ($/kWh)	$0.0793	$0.0832	$0.0874

			2015			2016		
Customer Description	Annual Use (kWh)	Current Bill	Monthly Bill	$ Change	% Change	Monthly Bill	$ Change	% Change
Property Mgmt.	2,306	$15.63	$16.09	$0.46	3.0%	$16.80	$0.71	4.4%
Security Co.	3,513	$23.22	$24.36	$1.14	4.9%	$25.59	$1.23	5.0%
Insurance Co.	20,267	$133.93	$140.52	$6.59	4.9%	$147.61	$7.09	5.0%
Fire Station	55,720	$368.22	$386.33	$18.11	4.9%	$405.83	$19.50	5.0%
Printing Co.	63,235	$417.88	$438.43	$20.55	4.9%	$460.56	$22.13	5.0%
Motel	178,720	$1,181.04	$1,239.13	$58.08	4.9%	$1,301.68	$62.55	5.0%
Small Store	223,000	$1,473.66	$1,546.13	$72.48	4.9%	$1,624.18	$78.05	5.0%

Table 3.6
SMS/SMB: Suburban/Burien Rates and Monthly Bill Impacts

	Current	2015	2016
Energy ($/kWh)	$0.0776	$0.0822	$0.0863
Minimum Charge ($/day)	$0.27	$0.26	$0.26
Average Rate ($/kWh)	$0.0776	$0.0822	$0.0863

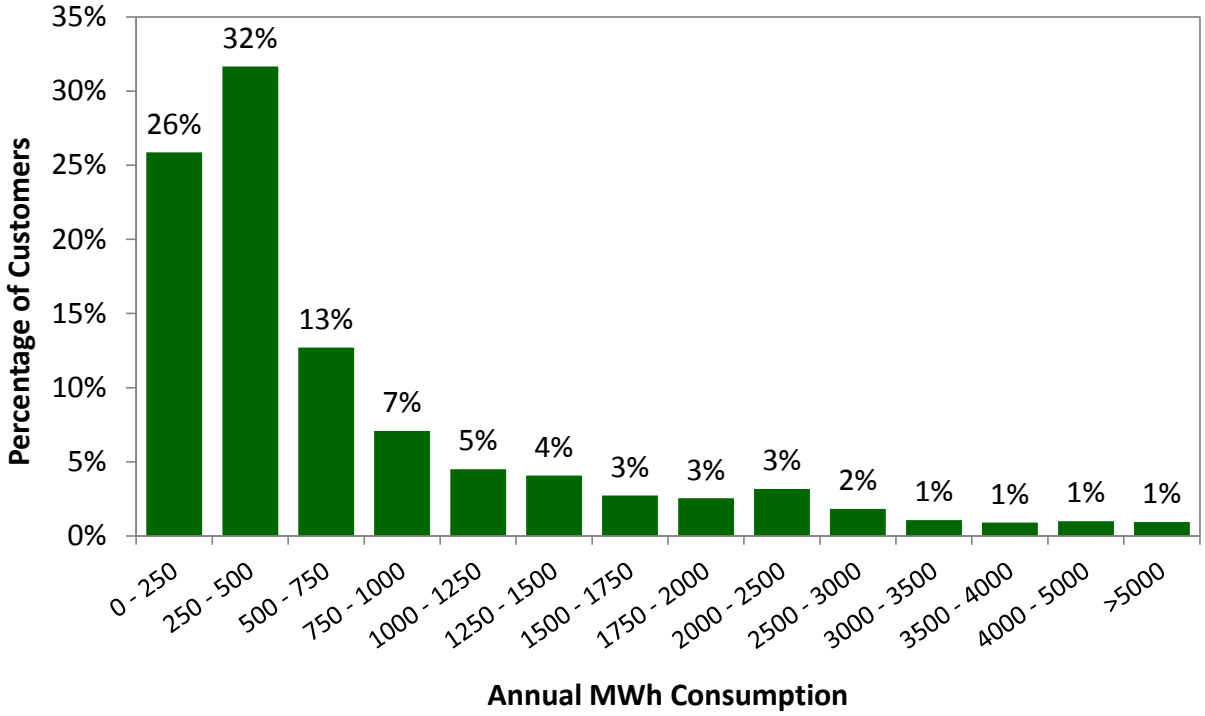
			2015			2016		
Customer Description	Annual Use (kWh)	Current Bill	Monthly Bill	$ Change	% Change	Monthly Bill	$ Change	% Change
Utility	134	$8.24	$7.93	-$0.31	-3.7%	$7.93	$0.00	0.0%
Apt Building	7,566	$48.93	$51.83	$2.90	5.9%	$54.41	$2.59	5.0%
Health Care	20,816	$134.61	$142.59	$7.98	5.9%	$149.70	$7.11	5.0%
Retail Store	30,934	$200.04	$211.90	$11.86	5.9%	$222.47	$10.57	5.0%
Tire Store	31,425	$203.22	$215.26	$12.05	5.9%	$226.00	$10.74	5.0%
Office	56,520	$365.50	$387.16	$21.67	5.9%	$406.47	$19.31	5.0%
Law Office	53,711	$347.33	$367.92	$20.59	5.9%	$386.27	$18.35	5.0%
Grocery Store	188,720	$1,220.39	$1,292.73	$72.34	5.9%	$1,357.21	$64.48	5.0%

Chapter 4: Medium General Service Rates

Rate Class Description

Medium General Service customers must have monthly billed demand between 50 kW and less than 1,000 kW for at least half of their normal billings during the previous calendar year. There were approximately 3,131 Medium General Service meters in 2012. Figure 4.1 shows the distribution of annual energy consumption across the Medium General Service class.

Figure 4.1
Medium General Service Consumption Profile



Rate Design

The Medium General Service rate structure has an energy charge and a demand charge. The methodology for setting the 2015-2016 rates is identical to the methodology for the previous rate review, except for a minor change made to simplify the demand charge calculation. The energy charge for each rate class is set to recover the remainder of the revenue requirement for each rate class.

Demand Charges

Demand charges for Medium General Service customers in 2014 were set to recover the full marginal cost of transformers and service drops, 50% of transformer losses, and a percentage of the remaining marginal distribution costs (5% for network, 10% for non-network). Aggregated, these percentages averaged about 17%. The 2015 and 2016 rate design simplifies the calculation of demand charges by designing them to collect 15% of the marginal cost of distribution including taxes for network customers and 20% of the marginal cost of distribution including taxes for non-network customers. Demand charges are calculated separately for network and non-network customers because the marginal distribution costs are significantly higher (per kW) for network customers.

Table 4.1 illustrates how demand charges are set to recover these allocated marginal costs given the forecast billing demand for each year.

Table 4.1
Medium General Service Demand Charge Calculations

	2015		2016	
	Network	**Non-Network**	**Network**	**Non-Network**
Marginal Distribution Costs (including taxes)	$41,889,267	$58,038,031	$42,119,437	$60,139,541
Percentage of MC Collected with Demand Charge	15%	20%	15%	20%
Revenue to be Collected with Demand Charge	$6,283,390	$11,607,606	$6,317,916	$12,027,908
Billing Demand (kW)	1,391,498	5,177,032	1,391,498	5,177,032
Demand Charge ($/kW)	$4.52	$2.24	$4.54	$2.32

Energy Charges

Energy charges for each Medium General Service rate class are designed to recover any remaining revenue requirement not recovered from the demand charge. Energy charges were calculated with the following formula:

$$P_{Energy} = \frac{Revenue\ Requirement - (P_{Demand} * kW_{forecast})}{kWh_{forecast}}$$

Table 4.2 shows how the 2015-2016 energy and demand charges will collect the targeted revenue requirements; the small differences are due to rounding of rates.

Table 4.2
2015 and 2016 Medium General Service Rate Design

2015					
	City	**Network**	**Shoreline**	**Tukwila**	**Suburban/ Burien**
Billing Determinants					
kWh	1,623,472,587	575,790,905	88,733,338	106,279,988	98,021,764
kW	4,410,866	1,391,498	222,837	253,195	290,133
Rates					
Energy Charge ($/kWh)	$0.0634	$0.0793	$0.0694	$0.0693	$0.0670
Demand Charge ($/kW)	$2.24	$4.52	$2.24	$2.24	$2.24
Revenue					
Energy	$102,928,162	$45,660,219	$6,158,094	$7,365,203	$6,567,458
Demand	$9,880,341	$6,289,570	$499,156	$567,156	$649,899
Total	$112,808,503	$51,949,789	$6,657,250	$7,932,359	$7,217,357
Target Revenue Requirements	$112,734,475	$51,930,664	$6,654,606	$7,929,705	$7,215,064
Difference (from Rounding)	$74,028	$19,125	$2,643	$2,654	$2,294
2016					
	Seattle	**Network**	**Shoreline**	**Tukwila**	**Suburban/ Burien**
Billing Determinants					
kWh	1,640,985,819	580,250,460	90,625,784	106,970,048	98,856,662
kW	4,410,866	1,391,498	222,837	253,195	290,133
Rates					
Energy Charge ($/kWh)	$0.0667	$0.0824	$0.0731	$0.0729	$0.0706
Demand Charge ($/kW)	$2.32	$4.54	$2.32	$2.32	$2.32
Revenue					
Energy	$109,453,754	$47,812,638	$6,624,745	$7,798,116	$6,979,280
Demand	$10,233,210	$6,317,400	$516,983	$587,412	$673,110
Total	$119,686,964	$54,130,038	$7,141,728	$8,385,528	$7,652,390
Target Revenue Requirements	$119,764,567	$54,131,709	$7,143,303	$8,389,327	$7,647,779
Difference (from Rounding)	($77,603)	($1,671)	($1,575)	($3,799)	$4,611

Minimum Charge

Like Small General Service, the Medium General Service minimum charge is equal to the marginal cost of customer service per meter per day including taxes. The minimum charge for Medium General Service customers is currently not active due to constraints in City Light's customer billing system. Despite this, a minimum charge is calculated and included in the rate schedule and it will be implemented once the billing system is capable of including it.

Table 4.3 shows the minimum charges for Medium General Service customers. The charge is the same for all Medium General Service customers. Marginal customer service costs have decreased slightly since the

last rate case resulting in no change in the minimum charge for 2015. In 2016 the minimum charge increases due to an increase in the marginal cost of customer service.

Table 4.3
Medium General Service Minimum Charge

	Current	2015	% Change	2016	% Change
Minimum Charge $/Day	$0.63	$0.63	0%	$0.65	3%

Rates and Customer Bill Impacts

Tables 4.4 through 4.8 report the bill impacts for a sample of customers from each rate design category. In 2015, network rate increases are lower than those for the non-network classes because distribution costs for network customers have decreased since 2014. In 2016, the average rate increase will be 5.1% for all Medium General Service rate classes except for the network class, which will have an average rate increase of 3.4%. Network rates, however, remain significantly higher than non-network rates. Within each jurisdiction, bill impacts are fairly uniform across customers of different sizes and load factors, as can be seen in the tables below.

Table 4.4
MDC: City Rates and Monthly Bill Impacts

	Current Rates	2015 Rates	2016 Rates
Energy ($/kWh)	$0.0606	$0.0634	$0.0667
Demand ($/kW)	$2.18	$2.24	$2.32
Minimum Bill ($/day)	$0.63	$0.63	$0.65
Average Rate ($/kWh)	$0.0665	$0.0694	$0.0730

					2015			2016		
Customer Description	**Load Factor**	**Annual kW**	**Annual kWh**	**Current Bill**	**Bill**	**$ Change**	**% Change**	**Bill**	**$ Change**	**% Change**
Supply Co.	0.09	1,898	209,030	$1,400	$1,459	$58	4.2%	$1,529	$70	4.8%
Shipyard	0.23	1,099	271,810	$1,572	$1,641	$69	4.4%	$1,723	$82	5.0%
Office	0.26	7,894	2,221,200	$12,651	$13,209	$558	4.4%	$13,872	$663	5.0%
Apt. Complex	0.37	7,425	2,851,500	$15,749	$16,451	$702	4.5%	$17,285	$834	5.1%
Retail Store	0.44	2,044	812,480	$4,474	$4,674	$200	4.5%	$4,911	$237	5.1%
Restaurant	0.46	664	254,990	$1,408	$1,471	$63	4.5%	$1,546	$75	5.1%
Produce Co.	0.58	976	495,668	$2,680	$2,801	$121	4.5%	$2,944	$143	5.1%
Grocery Store	0.66	4,368	2,372,259	$12,773	$13,349	$575	4.5%	$14,030	$681	5.1%
Office	0.74	6,167	4,251,300	$22,589	$23,612	$1,023	4.5%	$24,822	$1,210	5.1%
Network Co.	0.86	12,910	8,740,607	$46,485	$48,589	$2,104	4.5%	$51,079	$2,490	5.1%

Table 4.5
MDD: Network Rates and Monthly Bill Impacts

	Current Rates	2015 Rates	2016 Rates
Energy ($/kWh)	$0.0772	$0.0793	$0.0824
Demand ($/kW)	$4.39	$4.52	$4.54
Minimum Bill ($/day)	$0.63	$0.63	$0.65
Average Rate ($/kWh)	$0.0878	$0.0902	$0.0933

					2015			2016		
Customer Description	Load Factor	Annual kW	Annual kWh	Current Bill	Bill	$ Change	% Change	Bill	$ Change	% Change
Boutique	0.22	911	245,000	$1,909	$1,962	$53	2.8%	$2,027	$65	3.3%
Real Estate	0.27	12,405	4,236,674	$31,794	$32,670	$876	2.8%	$33,785	$1,115	3.4%
Theater	0.28	4,488	1,085,520	$8,625	$8,864	$239	2.8%	$9,152	$288	3.2%
Bank	0.42	999	389,400	$2,871	$2,950	$79	2.8%	$3,052	$102	3.5%
Shopping Ctr.	0.44	8,522	3,690,000	$26,857	$27,595	$738	2.7%	$28,562	$967	3.5%
Office Building	0.46	9,101	4,039,800	$29,319	$30,124	$806	2.7%	$31,183	$1,059	3.5%
Hotel	0.44	3,130	1,256,160	$9,226	$9,480	$254	2.8%	$9,810	$330	3.5%
Hotel	0.67	10,837	5,925,600	$42,086	$43,240	$1,154	2.7%	$44,789	$1,549	3.6%

Table 4.6
MDH: Shoreline Rates and Monthly Bill Impacts

	Current Rates	2015 Rates	2016 Rates
Energy ($/kWh)	$0.0665	$0.0694	$0.0731
Demand ($/kW)	$2.18	$2.24	$2.32
Minimum Bill ($/day)	$0.63	$0.63	$0.65
Average Rate ($/kWh)	$0.0720	$0.0750	$0.0788

					2015			2016		
Customer Description	Load Factor	Annual kW	Annual kWh	Current Bill	Bill	$ Change	% Change	Bill	$ Change	% Change
Church	0.13	590	74,840	$522	$543	$21	4.0%	$570	$27	5.0%
Bank	0.29	593	188,720	$1,154	$1,202	$49	4.2%	$1,264	$62	5.2%
School	0.38	2,113	658,700	$4,034	$4,204	$170	4.2%	$4,421	$217	5.2%
Drug Store	0.48	928	382,040	$2,286	$2,383	$97	4.2%	$2,507	$124	5.2%
Car Dealership	0.52	612	283,040	$1,680	$1,751	$71	4.3%	$1,843	$91	5.2%
Grocery Store	0.75	3,636	2,193,000	$12,813	$13,362	$548	4.3%	$14,062	$700	5.2%

Table 4.7
MDT: Tukwila Rates and Monthly Bill Impacts

	Current Rates	2015 Rates	2016 Rates
Energy ($/kWh)	$0.0665	$0.0693	$0.0729
Demand ($/kW)	$2.18	$2.24	$2.32
Minimum Bill ($/day)	$0.63	$0.63	$0.65
Average Rate ($/kWh)	$0.0717	$0.0746	$0.0784

					2015			2016		
Customer Description	**Load Factor**	**Annual kW**	**Annual kWh**	**Current Bill**	**Bill**	**$ Change**	**% Change**	**Bill**	**$ Change**	**% Change**
Manufacturing	0.07	1,350	86,160	$723	$750	$27	3.7%	$784	$35	4.6%
Museum	0.36	7,698	2,603,280	$15,825	$16,471	$646	4.1%	$17,303	$832	5.1%
Construction	0.38	653	218,160	$1,328	$1,382	$54	4.1%	$1,452	$70	5.1%
Industrial	0.42	1,777	758,240	$4,525	$4,711	$186	4.1%	$4,950	$239	5.1%
Medical Center	0.58	1,185	565,920	$3,351	$3,489	$138	4.1%	$3,667	$178	5.1%
Data Center	0.89	9,411	6,475,800	$37,596	$39,154	$1,558	4.1%	$41,160	$2,005	5.1%

Table 4.8
MDS/MDB: Suburban/Burien Rates and Monthly Bill Impacts

	Current Rates	2015 Rates	2016 Rates
Energy ($/kWh)	$0.0645	$0.0670	$0.0706
Demand ($/kW)	$2.18	$2.24	$2.32
Minimum Bill ($/day)	$0.63	$0.63	$0.65
Average Rate ($/kWh)	$0.0710	$0.0736	$0.0774

					2015			2016		
Customer Description	**Load Factor**	**Annual kW**	**Annual kWh**	**Current Bill**	**Bill**	**$ Change**	**% Change**	**Bill**	**$ Change**	**% Change**
Boat Builder	0.17	1,150	179,760	$1,175	$1,218	$43	3.7%	$1,280	$62	5.1%
Golf Club	0.19	968	201,400	$1,258	$1,305	$47	3.7%	$1,372	$67	5.1%
School	0.24	3,384	892,240	$5,411	$5,613	$203	3.7%	$5,904	$290	5.2%
Apt. Building	0.33	597	156,940	$952	$988	$36	3.7%	$1,039	$51	5.2%
Yacht Club	0.39	886	396,320	$2,291	$2,378	$87	3.8%	$2,503	$125	5.2%
Bowling Alley	0.42	1,023	378,680	$2,221	$2,305	$84	3.8%	$2,426	$120	5.2%
Utility	0.44	2,342	809,360	$4,776	$4,956	$180	3.8%	$5,215	$258	5.2%
Car Dealership	0.49	575	246,070	$1,427	$1,481	$54	3.8%	$1,559	$78	5.2%
Retail Store	0.64	6,424	3,368,410	$19,272	$20,006	$734	3.8%	$21,059	$1,053	5.3%
Grocery Store	0.70	4,140	3,281,200	$18,389	$19,093	$704	3.8%	$20,105	$1,012	5.3%

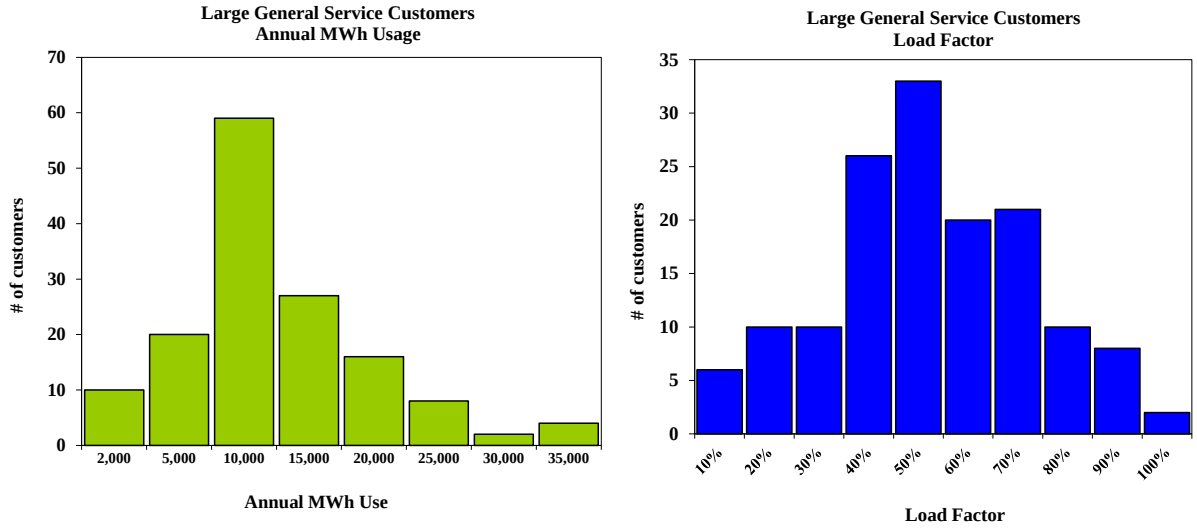
Chapter 5: Large General Service Rates

Rate Class Description

Large Standard General Service rate schedules apply to customers outside the downtown network system who have maximum demand of at least 1,000 kW but less than 10,000 kW for at least six normal monthly billings in a year. Inside the downtown network, all customers with monthly demand equal to or greater than 1,000 kW are classified as Large Network General Service (LGD).

There were 146 customer meters served under Large General Service rate schedules as of 2012. The charts below summarize the MWh usage and load factors for these customers.

Figure 5.1
Large General Service Customer Characteristics



Large and High Demand rates are identical in structure and are derived using the same methodology. Large General Service rate schedules consist of year-round energy (kWh) charges and demand (kW) charges for peak and off-peak time periods, as well as a daily minimum charge.

The peak period is defined as 6:00 a.m. to 10:00 p.m. Monday-Saturday, excluding six major holidays (New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day). It coincides with the peak period defined by NERC (North American Electric Reliability Corporation) and commonly used in wholesale power marketing. The off-peak period encompasses the remaining hours.

Peak demand charges are assessed during the peak period, for all kW of maximum demand within those hours. Off-peak demand is the difference between the maximum demand in all periods and the maximum demand in the peak period. Most customers have an off-peak demand of 0 kW, since their demand during peak hours exceeds their demand in off-peak hours.

For those customers who own their transformers, the applicable discount is given for each kW of maximum demand, regardless of when it occurs (see Section 8.2 for details of this discount).

Rate Design

The design methodology for Large General Service rates can be described in four steps:

1. Set off-peak demand charge equal to transformer investment discount.
2. Set peak demand charge to recover 20% of marginal distribution costs including taxes for non-network customers and 15% of marginal distribution costs including taxes for network customers.
3. Set peak and off-peak energy charges to recover remaining revenue requirement.
4. Set daily minimum charge equal to marginal customer cost.

These four steps are described in detail below.

Off-Peak Demand Charge

The off-peak demand charge is set equal to the transformer investment discount. The derivation of the transformer investment discount is discussed in Chapter 8. City Light sets the off-peak demand charge at the minimum amount possible to provide an incentive for customers to move their consumption away from City Light's peak period. Setting the charge at the same level as the transformer investment discount prevents customers with extremely low load factors and predominantly off-peak consumption (as well as eligibility for the transformer investment discount) from offsetting all their energy charges with the discount. In other words, having this small off-peak demand charge avoids potentially having customers with negative bills.

Table 5.1
Large General Service Off-Peak Demand Charge

	Current	2015	% Change	2016	% Change
Off-peak Demand Charge	$0.24	$0.22	-8.3%	$0.22	0.0%

Peak Demand Charge

City Light sets demand charges to encourage customers to take steps to conserve energy, operate more during the off-peak period, or reduce their peak demand during City Light’s peak period. In the last full rate review, for 2013-2014, peak demand charges were set at levels more than 50% above previous levels in order to recover more of the distribution system’s cost. The rates for 2015 and 2016 increase them again, further strengthening the incentive to customers to reduce or change the time of their peak demand in order to help avoid the need for City Light to build new distribution capacity.

In the 2013-2014 rate review, peak demand charges were set to cover all marginal transformer and service drop costs, ½ of distribution losses, 10% of remaining non-network distribution costs and 5% of remaining network distribution costs. In the current rate review, peak demand charges are set to cover 20% of all marginal distribution costs including taxes for non-network customers and 15% of all marginal distribution costs including taxes for network customers. This methodology, while not identical to the calculations used in the 2013-2014 rate review and slightly less detailed than those calculations, approximates the same level of marginal distribution cost coverage.

Non-network demand charges are set for Large and High Demand customers together. Therefore, the marginal costs that they are based on reflect costs for all of these customers. Similarly, the kW billing determinant is totaled across all Large and High Demand non-network customers. The following table summarizes the derivation of peak demand charges.

Table 5.2
Derivation of Peak Demand Charges

Non-Network	**2015**	**2016**
Total Marginal Cost of Distribution (including taxes)	$50,759,894	$52,190,552
	x 20%	x 20%
Total Marginal Cost to be Recovered with Peak Demand Charge	**$10,151,979**	**$10,438,110**
Total kW	5,017,161	5,017,161
Peak Demand Charge	**$2.02**	**$2.08**
Network	**2015**	**2016**
Total Marginal Cost of Distribution (including taxes)	$41,959,686	$42,519,456
	x 15%	x 15%
Total Marginal Cost to be Recovered with Peak Demand Charge	**$6,293,953**	**$6,377,918**
Total kW	1,574,085	1,574,085
Peak Demand Charge	**$4.00**	**$4.05**

Table 5.3
Peak Demand Charges

	Current	**2015**	**% Change**	**2016**	**% Change**
Non-Network	$1.52	$2.02	32.9%	$2.08	3.0%
Network	$3.65	$4.00	9.6%	$4.05	1.3%

Peak and Off-peak Energy Charges

The projected differential between peak and off-peak marginal energy prices is around 1.3x in 2015 and 1.2x in 2016, but this relationship has been adjusted upward to 1.5x in order to encourage off-peak consumption. This is the same adjustment that was made in the 2013-2014 rate review.

The energy charges are adjusted (maintaining the 1.5x peak to off-peak proportion) so that they collect the remaining revenue requirement for the respective classes after revenues from demand charges have been taken into account. The following formulas illustrate this; the formula is first solved to get the off-peak energy rate, which is then used to determine the peak energy rate.

$$\textit{Revenue Requirement} - \textit{Revenue From Demand Charges} =$$
$$\textit{Energy Rate}_{Offpeak} \text{ x } kWh_{offpeak} + (\textit{Energy Rate}_{Offpeak} \text{ x } 1.5) \text{ x } kWh_{peak}$$

Example for 2015 Large City General Service rates using LGC revenue requirement and billing determinants:

$$\$52{,}043{,}930 - \$4{,}102{,}224 =$$

$$EnergyRate_{Offpeak} \text{ x } 293{,}237{,}049 \text{ kWh} + (EnergyRate_{Offpeak} \text{ x } 1.5) \text{ x } 473{,}085{,}385 \text{ kWh}$$

Solving for $EnergyRate_{Offpeak}$, $EnergyRate_{Offpeak}$ = $0.0478, and $EnergyRate_{onpeak}$ = $0.0478 x 1.5 = $0.0717.

The following table shows how the rates meet the revenue requirement for each Large General Service rate class, given the 2015 and 2016 billing determinants.

Table 5.4
2015 and 2016 Large General Service Rate Design

2015	City	Network	Shoreline	Tukwila	Suburban/ Burien
Billing Determinants					
Peak kWh	473,085,385	385,148,115	10,167,423	64,997,921	14,625,931
Off-peak kWh	293,237,049	212,337,921	6,394,134	47,065,304	10,215,784
Peak kW	2,025,234	1,574,085	31,632	245,344	45,622
Off-peak kW	19,380	2,346	0	1,448	0
# of Meters	80	59	2	10	3
Rates					
$/ Peak kWh	0.0717	0.0869	0.0797	0.0797	0.0791
$/ Off-peak kWh	0.0478	0.0579	0.0532	0.0531	0.0527
$/ Peak kW	2.02	4.00	2.02	2.02	2.02
$/ Off-peak kW	0.22	0.22	0.22	0.22	0.22
Revenue					
Energy Charges	$47,936,953	$45,763,737	$1,150,512	$7,679,502	$1,695,283
Demand Charges	$4,095,235	$6,296,855	$63,896	$495,914	$92,156
Total	$52,032,188	$52,060,592	$1,214,407	$8,175,416	$1,787,439
Target Revenue Requirement	$52,043,930	$52,067,688	$1,214,740	$8,179,003	$1,788,323
Difference (from rounding)	$11,742	$7,096	$333	$3,587	$884
Avg. Rate/kWh	0.0679	0.0871	0.0733	0.0730	0.0720
2016	**City**	**Network**	**Shoreline**	**Tukwila**	**Suburban/ Burien**
Billing Determinants					
Peak kWh	476,489,801	388,334,918	10,255,297	65,434,739	14,635,138
Off-peak kWh	295,080,078	213,892,504	6,442,982	47,338,698	10,210,451
Peak kW	2,025,234	1,574,085	31,632	245,344	45,622
Off-peak kW	19,380	2,346	0	1,448	0
# of Meters	80	59	2	10	3
Rates					
$/ Peak kWh	0.0759	0.0906	0.0844	0.0843	0.0837
$/ Off-peak kWh	0.0506	0.0604	0.0562	0.0562	0.0558
$/ Peak kW	2.08	4.05	2.08	2.08	2.08
$/ Off-peak kW	0.22	0.22	0.22	0.22	0.22
Revenue					
Energy Charges	$51,096,628	$48,102,251	$1,227,643	$8,176,583	$1,794,704
Demand Charges	$4,216,749	$6,375,559	$65,794	$510,635	$94,893
Total	$55,313,377	$54,477,810	$1,293,436	$8,687,218	$1,889,597
Target Revenue Requirement	$55,329,151	$54,503,995	$1,293,225	$8,691,706	$1,888,574
Difference (from rounding)	$15,774	$26,185	-$211	$4,488	-$1,024
Avg. Rate/kWh	0.0717	0.0905	0.0775	0.0770	0.0761

Minimum Charge

All General Service rate classes have a minimum charge that is equal to the marginal customer service cost per meter per day plus taxes. It is set at the same level for all Large General Service customers. In 2015, the minimum charge increases substantially from the current rate because marginal customer service costs have increased.

Table 5.5
Large General Service Daily Minimum Charge

	Current	2015	% Change	2016	% Change
Daily Minimum Charge	$16.77	$18.58	10.8%	$18.98	2.2%

Rates and Customer Bill Impacts

Tables 5.6-5.9 present the bill impacts for a sample of customer meters for each of the Large General Service classes. The samples are not random; they were selected to show a range of impacts and types of businesses. The consumption data represent recent actual demand and energy.

Because peak demand charges for Large non-network customers are increasing by 33% ($.50/kW) in 2015, low load factor customers see more substantial percentage increases than high load factor customers in that year. These customers also use a high proportion of their energy in the peak period.

Rate impacts in 2016 are less varied across the classes, and customers with larger percentage rate impacts in 2015 tend to have smaller increases in 2016.

Rate increases for Large Network customers are the smallest of all of the large and high-demand rate classes, even though the differential for network service remains high. The percentage increase in Large Network peak demand charges in 2015 is smaller than the increase in these charges for non-network customers, but it is still a significant increase. As with other classes, bill impacts are highest for the lowest load factor customers in 2015 but lowest in 2016.

Table 5.6
LGC – City Rates and Monthly Bill Impacts

Large General Service - City (LGC)

Number of meters: 80	Current Rates	2015	2016
Energy Peak ($/kWh)	$0.0690	$0.0717	$0.0759
Energy Off-peak($/kWh)	$0.0463	$0.0478	$0.0506
Demand Peak($/kW)	$1.52	$2.02	$2.08
Demand Off-Peak($/kW)	$0.24	$0.22	$0.22
Minimum Bill ($/day)	$16.77	$18.58	$18.98
Average Rate($/kWh)	$0.0643	$0.0717	$0.0759
Average Rate Change		5.5%	5.6%

			Current	2015		2016		Billing Data			
Customer Description	**Annual kWh**	**Load Factor**	**Monthly Bill**	**Monthly Bill**	**% Change**	**Monthly Bill**	**% Change**	**Peak KWh**	**Off-peak KWh**	**Peak kW**	**Off-peak kW**
Cruise Line	1,599,960	2%	$14,379	$16,705	16.2%	$17,440	4.4%	980,931	619,029	48,037	-
Foundry (Castings)	2,202,978	14%	$14,663	$15,876	8.3%	$16,718	5.3%	2,048,712	154,266	17,375	-
Metal Recycling	5,571,205	15%	$37,581	$40,709	8.3%	$42,873	5.3%	5,476,353	94,852	45,205	-
Construction Materials	2,058,447	17%	$11,971	$12,919	7.9%	$13,607	5.3%	1,177,834	880,613	13,534	78
Stadium	2,404,343	18%	$13,609	$14,586	7.2%	$15,378	5.4%	1,432,329	972,014	12,803	37
University	15,233,614	34%	$84,517	$89,517	5.9%	$94,517	5.6%	10,261,217	4,972,397	49,722	1,594
Cold Storage	4,569,865	44%	$24,993	$26,407	5.7%	$27,891	5.6%	3,021,649	1,548,216	12,984	-
Community College	7,305,415	44%	$40,507	$42,699	5.4%	$45,111	5.7%	5,293,880	2,011,535	17,864	-
Transit	9,429,291	44%	$47,470	$49,749	4.8%	$52,584	5.7%	4,777,930	4,651,361	14,727	2,909
Shipyard	23,550,920	48%	$122,925	$129,235	5.1%	$136,573	5.7%	13,744,922	9,805,998	47,814	-
Office Building	22,636,003	54%	$122,813	$129,303	5.3%	$136,629	5.7%	15,336,526	7,299,477	51,036	-
Medical Research	9,465,376	60%	$50,207	$52,782	5.1%	$55,781	5.7%	5,955,561	3,509,815	19,109	-
Biotech	31,897,092	67%	$165,990	$174,231	5.0%	$184,161	5.7%	18,886,797	13,010,295	56,782	-
Commercial Bakery	7,120,719	72%	$36,761	$38,596	5.0%	$40,794	5.7%	4,039,311	3,081,408	12,992	-
Aerospace	13,399,697	76%	$69,461	$72,892	4.9%	$77,049	5.7%	7,824,126	5,575,571	23,369	-
Hospital	17,300,008	81%	$89,021	$93,309	4.8%	$98,643	5.7%	9,957,171	7,342,837	27,124	-

Table 5.7
LGD - Network Rates and Monthly Bill Impacts

Large General Service - Network (LGD)

Number of meters: 59	Current Rates	2015	2016
Energy Peak ($/kWh)	$0.0863	$0.0869	$0.0906
Energy Off-peak($/kWh)	$0.0578	$0.0579	$0.0604
Demand Peak($/kW)	$3.65	$4.00	$4.05
Demand Off-Peak($/kW)	$0.24	$0.22	$0.22
Minimum Bill ($/day)	$16.77	$18.58	$18.98
Average Rate($/kWh)	$0.0858	$0.0871	$0.0905
Average Rate Change		1.6%	3.8%

			Current	2015		2016		Billing Data			
Customer Description	**Annual kWh**	**Load Factor**	**Monthly Bill**	**Monthly Bill**	**% Change**	**Monthly Bill**	**% Change**	**Peak KWh**	**Off-peak KWh**	**Peak kW**	**Off-peak kW**
Convention Ctr.	2,891,759	22%	$22,615	$23,103	2.2%	$23,958	3.7%	1,976,582	915,177	13,115	121
Office Building	8,933,503	25%	$70,341	$71,788	2.1%	$74,475	3.7%	6,695,482	2,238,021	37,510	-
Car Dealership	4,912,971	35%	$36,412	$37,057	1.8%	$38,479	3.8%	3,323,352	1,589,619	15,960	-
Large Office Tower	16,257,889	40%	$118,197	$120,099	1.6%	$124,779	3.9%	11,061,752	5,196,137	44,766	-
Large Office Tower	20,681,795	43%	$149,274	$151,654	1.6%	$157,569	3.9%	13,723,335	6,958,460	56,100	-
Department Store	12,002,823	47%	$88,212	$89,583	1.6%	$93,096	3.9%	8,834,350	3,168,473	30,959	-
Courthouse	8,507,983	53%	$60,545	$61,435	1.5%	$63,859	3.9%	5,679,966	2,828,017	19,973	-
Hotel	7,351,324	70%	$49,808	$50,435	1.3%	$52,459	4.0%	4,383,740	2,967,584	13,111	7
Office with Data Center	18,380,666	81%	$122,339	$123,787	1.2%	$128,785	4.0%	10,462,416	7,918,250	29,448	-
Interconnect./Data Ctr	31,077,378	92%	$204,740	$207,024	1.1%	$215,433	4.1%	17,486,214	13,591,164	44,451	38

Table 5.8
LGH & LGT – Shoreline and Tukwila Rates and Monthly Bill Impacts

Large General Service - Shoreline (LGH)

Number of meters: 2	Current Rates	2015	2016
Energy Peak ($/kWh)	$0.0765	$0.0797	$0.0844
Energy Off-peak($/kWh)	$0.0513	$0.0532	$0.0562
Demand Peak($/kW)	$1.52	$2.02	$2.08
Demand Off-Peak($/kW)	$0.24	$0.22	$0.22
Minimum Bill ($/day)	$16.77	$18.58	$18.98
Average Rate($/kWh)	$0.0697	$0.0733	$0.0775
Average Rate Change		5.2%	5.6%

Large General Service - Tukwila (LGT)

Number of meters: 10	Current Rates	2015	2016
Energy Peak ($/kWh)	$0.0765	$0.0797	$0.0843
Energy Off-peak($/kWh)	$0.0513	$0.0531	$0.0562
Demand Peak($/kW)	$1.52	$2.02	$2.08
Demand Off-Peak($/kW)	$0.24	$0.22	$0.22
Minimum Bill ($/day)	$16.77	$18.58	$18.98
Average Rate($/kWh)	$0.0692	$0.0730	$0.0770
Average Rate Change		5.4%	5.6%

			Current	2015		2016		Billing Data			
Customer Description	**Annual kWh**	**Load Factor**	**Monthly Bill**	**Monthly Bill**	**% Change**	**Monthly Bill**	**% Change**	**Peak KWh**	**Off-peak KWh**	**Peak kW**	**Off-peak kW**
Shoreline											
School	7,375,501	64%	$42,927	$45,196	5.3%	$47,757	5.7%	4,546,800	2,828,701	14,595	-
College	7,732,556	65%	$45,041	$47,430	5.3%	$50,117	5.7%	4,767,711	2,964,845	15,569	-
Tukwila											
Metals	13,039,995	35%	$76,474	$81,139	6.1%	$85,626	5.5%	7,143,822	5,896,173	45,064	882
Aerospace	6,583,249	42%	$39,020	$41,181	5.5%	$43,487	5.6%	4,189,322	2,393,927	16,416	-
Recycling	5,397,289	54%	$31,510	$33,228	5.5%	$35,092	5.6%	3,250,754	2,146,535	12,701	60
Government	12,120,481	61%	$69,789	$73,466	5.3%	$77,604	5.6%	7,060,442	5,060,039	24,843	-
Hospital	12,794,742	77%	$72,822	$76,487	5.0%	$80,817	5.7%	7,341,645	5,453,097	21,358	77
Data	12,864,776	88%	$72,592	$76,154	4.9%	$80,476	5.7%	7,238,641	5,626,135	18,899	1

Table 5.9
LGS/LGB – Suburban/Burien Rates and Monthly Bill Impacts

Large General Service - Suburban (LGS)
Large General Service – Burien (LGB)

Number of meters: 3	Current Rates	2015	2016
Energy Peak ($/kWh)	$0.0756	$0.0791	$0.0837
Energy Off-peak($/kWh)	$0.0507	$0.0527	$0.0558
Demand Peak($/kW)	$1.52	$2.02	$2.08
Demand Off-Peak($/kW)	$0.24	$0.22	$0.22
Minimum Bill ($/day)	$16.77	$18.58	$18.98
Average Rate($/kWh)	$0.0682	$0.0720	$0.0761
Average Rate Change		5.6%	5.7%

			Current	2015		2016		Billing Data			
Customer Description	**Annual kWh**	**Load Factor**	**Monthly Bill**	**Monthly Bill**	**% Change**	**Monthly Bill**	**% Change**	**Peak KWh**	**Off-peak KWh**	**Peak kW**	**Off-peak kW**
Hospital	8,553,867	67%	$48,584	$51,274	5.5%	$54,194	5.7%	5,073,787	3,480,080	15,124	8
Aerospace	7,633,670	69%	$43,250	$45,648	5.5%	$48,247	5.7%	4,469,048	3,164,622	13,615	-

Chapter 6: High Demand General Service Rates

Rate Class Description

High Demand General Service is assigned to non-network customers with a maximum demand of 10,000 kW or more for at least six normal monthly billings in a year. There are only two High Demand rate schedules, one for City of Seattle and one for Tukwila. There are no customers in the other suburbs that meet the criteria for High Demand General Service. Customers located in the downtown network are not eligible for service under a High Demand rate schedule.

There were 11 customer meters served under High Demand General Service rate schedules in 2012. These 11 customers comprise a very diverse customer set that spans many industries. Annual consumption ranged from less than 6 million kWh to almost 300 million kWh, and load factors ranged from 6% to 86%.

High Demand rates are identical in structure and are derived using the same methodology as Large General Service rates. Some charges are derived for Large and High Demand classes together and are the same across the classes.

Rate Design

The methodology for deriving High Demand rates is identical to that for Large General Service, so for a more detailed explanation of the methodology, see Chapter 5. An abbreviated description of the derivation of High Demand rates follows, focusing on any differences between High Demand and Large General Service rates.

Off-peak Demand Charge

The High Demand off-peak demand charge is identical to that for Large General Service customers; it is calculated using aggregated data for all Large and High Demand customers.

Table 6.1
High Demand Off-Peak Demand Charge

	Current	2015	% Change	2016	% Change
Off-Peak Demand Charge	$0.24	$0.22	-8.3%	$0.22	0.0%

Peak Demand Charge

Non-network peak demand charges are set for Large and High Demand customers together, so the High Demand charges are identical in methodology and result to the charges for Large customers. Table 6.2 repeats the derivation of peak demand charges.

Table 6.2
Derivation of High Demand Peak Demand Charges

Non-Network	**2015**	**2016**
Total Marginal Cost of Distribution (including taxes)	$50,759,894	$52,190,552
	x 20%	x 20%
Total Marginal Cost to be Recovered with Peak Demand Charge	**$10,151,979**	**$10,438,110**
Total kW	5,017,161	5,017,161
Peak Demand Charge	**$2.02**	**$2.08**

Peak and Off-peak Energy Charges

As with Large General Service, once the demand charges have been set, peak and off-peak energy charges (with a differential of 1.5x) are set such that they recover the remaining revenue requirement. Table 6.3 shows how the rates meet the revenue requirement for each rate class given the 2015 and 2016 billing determinants.

Table 6.3
High Demand Rates

	2015		**2016**	
	City	**Tukwila**	**City**	**Tukwila**
Billing Determinants				
Peak kWh	504,955,835	133,343,927	507,022,042	133,586,938
Off-peak kWh	391,328,630	94,686,563	392,448,677	94,768,888
Peak kW	1,923,559	745,771	1,923,559	745,771
Off-peak kW	36,638	109,700	36,638	109,700
# of Meters	8	4	8	4
Rates				
$/ Peak kWh	0.0681	0.0703	0.0724	0.0748
$/ Off-peak kWh	0.0454	0.0468	0.0483	0.0499
$/ Peak kW	2.02	2.02	2.08	2.08
$/ Off-peak kW	0.22	0.22	0.22	0.22
Revenue				
Energy Charges	$52,153,812	$13,805,409	$55,663,667	$14,721,270
Demand Charges	$3,893,650	$1,530,591	$4,009,063	$1,575,338
Total	$52,153,812	$13,805,409	$55,663,667	$14,721,270
Target Revenue Requirement	$56,035,186	$15,336,878	$59,644,525	$16,292,137
Difference (from rounding)	-$12,276	$877	-$28,205	-$4,471
Avg. Rate/kWh	0.0625	0.0673	0.0663	0.0714

Minimum Charge

All General Service rate classes have a minimum charge that is equal to the marginal customer service cost per meter per day plus taxes. It is set at the same level for all High Demand General Service customers. In 2015, the minimum charge increases substantially from the current rate because marginal customer service costs have increased.

Table 6.4
High Demand Daily Minimum Charge

	Current	2015	% Change	2016	% Change
Daily Minimum Charge	$30.97	$56.92	83.8%	$58.15	2.2%

Rates and Customer Bill Impacts

Tables 6.5 and 6.6 present the bill impacts for a sample of customer meters for both of the High Demand General Service classes.. The consumption data represent recent actual demand and energy.

Because peak demand charges for High Demand general service are increasing by 33% ($.50/kW) in 2015, low load factor customers tend to see somewhat higher increases than high load factor customers. This effect is mitigated by proportionately higher off-peak energy consumption, and likewise exacerbated by proportionately higher peak period energy consumption.

Rate impacts in 2016 are less varied across the classes, and customers with larger percentage bill impacts in 2015 tend to have smaller impacts in 2016.

The High Demand rate changes vary greatly between City and Tukwila in 2015. City customers see an average rate increase of 6.2% while Tukwila's increase is only 3.4%. This disparity is due to changes in customer use (billing determinants) since the last rate review in 2013-2014. Since the High Demand class is so small (Tukwila is projected to have only four High Demand customers in 2015, while Seattle will have eight), a single business can greatly change the overall profile of the customer class.

Table 6.5
HDC – City Rates and Monthly Bill Impacts

High Demand - City (HDC)

Number of meters: 8	Current Rates	2015	2016
Energy Peak ($/kWh)	$0.0649	$0.0681	$0.0724
Energy Off-peak($/kWh)	$0.0436	$0.0454	$0.0483
Demand Peak($/kW)	$1.52	$2.02	$2.08
Demand Off-Peak($/kW)	$0.24	$0.22	$0.22
Minimum Bill ($/day)	$30.97	$56.92	$58.15
Average Rate($/kWh)	$0.0589	$0.0625	$0.0663
Average Rate Change		6.2%	6.1%

			Current	2015		2016		Billing Data			
Customer Description	**Annual kWh**	**Load Factor**	**Monthly Bill**	**Monthly Bill**	**% Change**	**Monthly Bill**	**% Change**	**Peak KWh**	**Off-peak KWh**	**Peak kW**	**Off-peak kW**
Cement	51,526,422	46%	$250,987	$266,526	6.2%	$282,809	6.1%	28,175,202	23,351,220	108,575	537
Steel	51,560,074	46%	$254,300	$270,385	6.3%	$286,851	6.1%	29,255,389	22,304,685	118,543	1,080
Waste Treatment	293,238,236	50%	$1,444,501	$1,538,330	6.5%	$1,631,620	6.1%	160,150,432	133,087,804	747,936	3,168
Steel	290,817,455	67%	$1,431,395	$1,516,614	6.0%	$1,609,835	6.2%	174,821,619	115,995,836	508,816	-
University	14,026,262	72%	$67,833	$71,820	5.9%	$76,241	6.2%	7,846,620	6,179,642	23,224	86
Glass	108,533,145	72%	$525,255	$556,884	6.0%	$591,044	6.1%	59,313,664	49,219,481	202,314	486
Glass	86,918,695	86%	$419,165	$443,464	5.8%	$470,817	6.2%	48,663,671	38,255,024	134,024	277

Table 6.6
HDT – Tukwila Rates and Monthly Bill Impacts

High Demand - Tukwila (HDT)

Number of meters: 4	Current Rates	2015	2016
Energy Peak ($/kWh)	$0.0694	$0.0703	$0.0748
Energy Off-peak($/kWh)	$0.0466	$0.0468	$0.0499
Demand Peak($/kW)	$1.52	$2.02	$2.08
Demand Off-Peak($/kW)	$0.24	$0.22	$0.22
Minimum Bill ($/day)	$30.97	$56.92	$58.15
Average Rate($/kWh)	$0.0650	$0.0673	$0.0714
Average Rate Change		3.4%	6.1%

			Current	2015		2016		Billing Data			
Customer Description	**Annual kWh**	**Load Factor**	**Monthly Bill**	**Monthly Bill**	**% Change**	**Monthly Bill**	**% Change**	**Peak KWh**	**Off-peak KWh**	**Peak kW**	**Off-peak kW**
Aerospace	18,936,169	6%	$140,502	$154,028	9.6%	$162,212	5.3%	15,559,890	3,376,280	295,281	-
Forge	5,547,980	6%	$25,109	$25,116	0.0%	$26,604	5.9%	357,720	5,190,260	2,572	127,931
Aerospace	72,559,227	67%	$381,581	$391,078	2.5%	$415,567	6.3%	43,315,022	29,244,205	138,246	-
Data Center	137,769,810	77%	$710,352	$726,307	2.2%	$772,055	6.3%	77,677,321	60,092,489	219,087	387

Chapter 7: Streetlight, Pedestrian and Floodlight Rates

Rate Class Description

Streetlights (or Lights) have flat rates that are charged per light fixture for unmetered services. The largest lighting customer is the City of Seattle. The City is responsible for about 85% of the approximately 85,000 lights in City Light's service area. The remaining lights are billed to other government agencies, businesses, and private citizens.

In 2009, City Light began replacing its existing inventory of high pressure sodium (HPS) lights with light emitting diode (LED) lights, starting with the residential areas. By the end of 2014 the conversion of all scheduled residential areas will have been completed, which constitutes almost 40,000 streetlights. The Customer Service and Energy Delivery (CSED) Ten Year Horizon Plan[2] anticipates that all arterial streetlights will be replaced with LED lights during the 2014-2017 period. According to current estimates, there will be approximately 14,000 arterial LEDs installed by the end of 2015, and 21,000 by the end of 2016. CSED's plan calls for conversion of all streetlights to LEDs by 2022.

As a result of the LED conversion, as well as a recent pole survey and increased data mapping efforts, the accuracy of the streetlight inventory in WAMS (Work and Asset Management System), City Light's system of record, has greatly improved. This has provided an updated lighting inventory and load forecast for the 2015-16 rate case. The mass conversion of lights has changed the landscape of streetlights, and with it rate design.

Table 7.1
Streetlight Inventory

	2015	2016
Residential LED	37,919	39,605
Arterial LED	13,861	21,227
Arterial HPS	16,561	9,197
Floodlight HPS	4,209	4,209
Decorative/Misc. HPS	11,122	9,434
Decorative/Misc. LED	70	70
Customer owned, city maintained HPS	1,422	1,422
Customer owned, city maintained LED	38	38
Customer owned and maintained	39	39
Total	85,241	85,241

Rate Design

Streetlight rates are flat monthly rates that are charged per light fixture for unmetered services. For the majority of streetlights the rate covers the cost of the installed capital, the ongoing operations and maintenance, and the energy powering the light. In general, rates are defined by the service type of the fixture and the type of lamp, detailed below.

Revenue Requirements, Billing Determinants and Average Rates

The revenue requirements, forecasted kWh, average rate per kWh and average monthly rate for lights for the 2015-2016 period are shown below.

[2] *Seattle City Light Street Lighting Ten-Year Horizon Plan 2013-2022*, prepared by DKS Associates, December 2011.

Table 7.2
Streetlight Revenue Requirement and Average Rate

	2015	2016
Total Revenue Requirement	$13,895,889	$14,552,485
Forecast of Total kWh	68,512,407	62,169,078
Average Rate/kWh	$0.2028	$0.2341
Average (monthly) Rate per Fixture	$13.58	$14.23

Types of Lights and Associated Rates

The number and types of rates that can be assigned to lights have been simplified for the 2015-16 rate period. Approximately 120 different lighting rates used in the past have been reduced to 18--nine major categories, with either monthly or bi-monthly billings. These categories are based on two specific attributes at the asset level in WAMS. The first attribute is service type (Residential, Arterial, etc.), and the second is light type (HPS/other, LED). In addition, three rate categories (Energy Only, City Light Maintained and Powered-LED and City Light Maintained and Powered-HPS/Other) are defined to address unique situations where a differentiation is made for ownership and maintenance responsibilities between City Light and the customer. The rates are as follows – listed by service type, light type, and notes:

1. Floodlight - HPS
    - Lights are owned by the City and include a capital charge.
2. Arterial - LED
    - Lights are owned by the City and include a capital charge.
3. Arterial - HPS/other
    - Lights are owned by the City and include a capital charge.
4. Residential – LED
    - Lights are owned by the City and include a capital charge. This category includes only standardized LEDs.
5. Decorative - LED
    - Lights are owned by the City and include a capital charge. This category covers all remaining LED lights that do not fit into the above categories including nonstandard residential lights, pedestrian lights, and miscellaneous lights**.**
6. Decorative - HPS/other
    - Lights are owned by the City and include a capital charge. This category covers all remaining non-LED lights that do not fit into the above categories including nonstandard residential lights, pedestrian lights, and miscellaneous lights**.**
7. Energy Only – Any light type (this rate category is uncommon)
    - Any customer owned and maintained light - City Light provides only power to the light.
    - Note that this category supersedes light type and service type requirements.
8. City Light Maintained and Powered – LED (this category is uncommon)
    - Lights are owned by the customer but are both maintained and powered by City Light.
    - Note that this category supersedes service type requirements (i.e., it doesn't matter if the light is residential, arterial, or decorative—the charge is the same.
9. City Light Maintained and Powered – HPS/Other (this category is uncommon)
    - Lights are owned by the customer but are both maintained and powered by City Light.
    - Note that this category supersedes service type requirements.

Calculation Methodology

Streetlight rates are calculated to meet the streetlight revenue requirement based on their capital costs, O&M costs, and energy costs. The revenue requirements for capital and O&M, including taxes, come from the unbundled revenue requirements. The capital component is comprised of plant depreciation, interest

costs and net income allocated to lighting. While most lights in the system are owned by the Department, three rates are designed for circumstances where the customer owns and installs the lights (the last three in the above list). The calculation of these rates does not include a component for capital cost recovery. O&M and A&G are combined for the O&M component. While the majority of lights have an O&M component, the Energy Only rate category does not have a component to recover O&M costs.

Capital

Capital is calculated by rate category and consists of two parts: direct capital and indirect capital costs. Indirect costs, which include costs like interest charges and a net income allocation, are an allocation of the difference between the unbundled revenue requirement for capital and the direct calculation across streetlight rates.

Total Indirect Capital Costs = Unbundled Revenue Requirement for Capital – Total Direct Capital Costs

The direct capital costs consist of the installed fixture cost for lights in each rate category. This includes installation labor and material costs, adjusted for inflation. Labor costs include fringe benefits, transportation loading and job performance times, which were obtained from the Department's work management standards, and travel time. Material costs include a handling charge. Capital costs for floodlights are calculated similarly, except the installation costs are not included as customers are directly billed for floodlight installation.

Capital costs for streetlights are determined by multiplying the installed fixture cost by an annualized capital cost factor based on a 20-year expected fixture life for HPS lights, and a 15-year expected fixture life for LEDs; both discounted at 3%. The annualization factors are as follows:

$$\text{HPS} \quad .03 \times (1 + .03)^{20}/[(1 + .03)^{20} - 1)] = 0.067216$$
$$\text{LED} \quad .03 \times (1 + .03)^{15}/[(1 + .03)^{15} - 1)] = 0.083767$$

Indirect capital is allocated to streetlight rates according to estimated fixed and variable costs. The fixed portion reflects the costs that are needed to purchase and install any light, regardless of type. The variable portion is based on the share of total installed fixture cost, ensuring that more capital intensive lights assume a slightly larger burden of the remaining allocation.

Decorative lights are the most capital intensive of all the categories. These lights are typically ornate and are non-standard, non-stock items. LEDs have historically been more capital intensive than their HPS counterparts, though costs for LEDs have become much more competitive in recent years.

O&M

Similar to capital, O&M is calculated by rate category and consists of two parts: direct O&M and indirect O&M. Indirect O&M, which includes costs for stray voltage testing and pole maintenance, is an allocation of the difference between the unbundled revenue requirement for O&M and the direct calculation.

Total Indirect O&M Costs = Unbundled Revenue Requirement for O&M – Total Direct O&M Costs

Direct O&M covers the labor and material costs associated with scheduled lamp and photoelectric cell replacement for HPS lights, lamp cleaning for LED lights, and both fixture maintenance and pole maintenance for all light types. Damaged fixtures are replaced as necessary. Scheduled pole maintenance consists of the routine repair, treatment, and painting of streetlight poles. Labor costs are based on work management time standards and include fringe benefits, transportation loading, travel time, and inflation. Material costs include a handling charge and an adjustment for inflation.

Direct O&M costs are annualized across the relative O&M cycles of the various lights in each category based on specific standard work practices. For instance, Arterial HPS lights are on a four-year relamping schedule, so the annual cost of relamping is ¼ the total cost of one relamping cycle. LEDs do not require relamping and are far less O&M intensive than HPS lights as a result. Decorative lights are more O&M intensive than other categories.

Indirect O&M is allocated to streetlight rates according to estimated fixed and variable costs, adjusted to account for the relative labor intensity of O&M on streetlights. The adjustment is made in order to prevent undue O&M from being allocated to LED lights. The fixed portion reflects the costs that are needed to operate and maintain any light, regardless of type. The variable portion is based on the share of total direct O&M costs, ensuring that more O&M intensive lights assume a slightly larger burden of the remaining allocation.

Energy

The number of kilowatt-hours per month for each light is determined by multiplying the average of 365 hours of operation per month by the lamp wattage (adjusted for ballast requirements where applicable). The energy charge is set at the value necessary for collection of the revenue requirement, adjusted for capital and maintenance charges. That is,

$$\textit{Energy Charge} = \frac{\textit{Class Revenue Requirement} - \textit{Total Capital \& O\&M}}{\textit{Class Kilowatt-hours}}$$

The streetlight rates consist of the sum of the respective calculations for capital, O&M, and energy by rate category.

Rates and Customer Bill Impacts

Table 7.3 below lists current and 2015-2016 monthly rates for lights.

Table 7.3
Streetlight and Floodlight Rates

		2015		2016	
	2014*	**Rate**	**% Change**	**Rate**	**% Change**
Residential LED	$7.29	$8.45	16%	$9.21	9%
Arterial LED	$12.10	$11.59	-4%	$12.68	9%
Arterial HPS	$18.72	$20.20	8%	$23.24	15%
Floodlight HPS	$19.68	$17.82	-9%	$19.97	12%
Decorative/Misc HPS	$16.97	$22.22	31%	$27.20	22%
Decorative/Misc LED	NA	$21.85	NA	$23.24	6%
Customer owned, City maintained HPS	$12.26	$12.85	5%	$15.86	23%
Customer owned, City maintained LED	NA	$4.10	NA	$4.85	18%
Customer owned and maintained	$3.50	$4.25	21%	$4.39	5%

*****weighted average

Monthly bill impacts for lights in 2015, compared to 2014 bills, range from -59% to +167%. However, both the larger percentage increases and the larger decreases are for little used light types. The largest percentage increase amounts to only $2.66 per month. While rate increases are high for certain light types, it is important to note the relationship between conversion to LEDs and bill impacts. While both LED and HPS rates are increasing, many HPS lights are being replaced by LEDs. Because LED rates are roughly

half those of their respective HPS lights, a rate increase still corresponds to a bill decrease as the HPS lights are replaced.

Labor costs for both installation and O&M of streetlights have increased 17% since the 2013-14 rates were established. In addition, the Utility has increased its efforts to repair damaged streetlights and reduce outage times. The cost of this increased level of service has, to date, largely offset reductions in O&M from LED conversion.

Since many of the issues related to significant changes in costs are addressed in the 2015 rates, the range of bill impacts in 2016 is much more compressed: +3% to +23%. This increase is largely due to increasing capital and energy costs, while O&M remains relatively flat.

As is the case with other customer groups, in general, those lights with energy as a greater proportion of their cost will have larger increases or lower decreases in 2015 than those with a greater proportion of their cost in infrastructure. These changes in cost come from the cost of service results (see the Cost Allocation and Cost of Service Report) as applied to the revenue requirements (see the Revenue Requirements Analysis).

Chapter 8: Other Fees and Discounts

This chapter discusses other rates that were updated with this rate review, including the power factor rate, transformer investment discount, primary metering discount, reserved distribution capacity charge, and pole, duct and vault rental rates. These rates are set based on cost of service and have changed little, if at all.

Power Factor Rate

Table 8.1
Power Factor Rate – (Schedule PF)

	Current	2015	2016
Power Factor Rate (cents / kVarh)	0.15	0.15	0.15

The Power Factor (PF) Rate is a charge that the utility adds to some commercial and industrial customers' bills for having a power factor that is lower than 0.97, the utility standard. When a customer has a low power factor, the utility must either provide extra power to compensate for the low power factor or install capacitors on its system. When any load causes unsatisfactory conditions on the Department's system due to induction, the Department may, at its discretion, install kvarh (kilovolt-ampere hours) meters to measure the kilovar consumption.

The average power factor is determined as follows:

$$Average\ Power\ Factor = \frac{kWh}{\sqrt{(kWh)^2 + (kvarh)^2}}$$

The City Light distribution system is designed to balance reactive energy needs and provide voltage control, given the existing level of power factor correction by customers. The current level and structure of the Power Factor Rate provide some incentive to customers to improve their power factors. The current power factor rate is set to recover the cost of maintaining system stability. There is no change in the Power Factor Rate for 2015-2016.

Table 8.2
Number of Power Factor Meters in 2011[3] by Rate Class

Customer Class	No. of Power Factor Meters	Percent of Power Factor Meters
Small General Service - City	3,124	50.10
Small General Service - Shoreline & Tukwila	267	4.28
Small General Service - Burien and other Suburbs	255	4.08
Medium General Service - City	1,578	25.31
Medium General Service - City Network	525	8.42
Medium General Service - Shoreline & Tukwila	191	3.06
Medium General Service - Burien and other Suburbs	145	2.33
Large General Service - City	71	1.14
Large General Service - City Network	54	0.87
Large General Service - Shoreline & Tukwila	11	0.18
Large General Service - Burien and other Suburbs	2	0.03
High Demand General Service - City	8	0.13
High Demand General Service - Shoreline & Tukwila	4	0.06
Total Number of Meters	**6,235**	**100.00**

Revenue from customers with a power factor meter in 2011 was $2,672,359. About 94% of the customers had twelve months of power factor data, and 43% of these customers had twelve months of power factor below the Department's standard of 0.97. Twenty seven percent of the customers with 12 months of measured power factor data had a power factor at 0.97 or higher throughout the year.

Transformer Investment Discount

Customers who provide their own transformation from the Department's distribution system voltage of 13 kV or above receive a credit equal to the marginal cost savings to City Light. The calculation of City Light's savings takes into account the annualized capital cost and annual operation and maintenance costs of transformers. The total annual value is divided by the expected annual billing kW of customers who own their transformers to determine the discount per kW.

The total cost avoided by City Light was estimated by assigning one or more transformers to the load of each meter with a customer-owned transformer and then calculating the cost of those assigned transformers. Transformers were assigned based on the maximum demand on the meters and the way the Department would have assigned transformers if it, not the customer, were responsible for providing the transformation.

Transformer materials costs were inflated by 1.75% to allow for reserves, added to installation costs and annualized. This total was converted to current dollars and multiplied by a factor reflecting the combined effect of City and State revenue taxes. Operation and maintenance costs were estimated by applying the O&M transformer factor (provided in Chapter 3 of the *Cost of Service and Cost Allocation Report*) to the annualized materials and installation cost for all customer-owned transformers larger than 167 kVA.

[3] This is the most recent data available; 2012 Power Factor meter data was not available in time to complete these rates.

The total estimated annual capital and O&M costs of customer-owned transformers were then divided by the average total billing kilowatts (the sum of monthly maximum demands) forecast for 2015-2016 for customers that own their transformers. The result is the discount per kW of monthly maximum demand. The calculations are shown in the following table.

Table 8.3
Derivation of Transformer Investment Discount

	Inventory reserve factor (Applies to Transformer Cost and Ancillary Eq. & Material Cost only)						1.0175
	Transformer Size (kVA)	**Transformer Cost**	**Ancillary Equipment & Material Cost**	**Installation Cost**	**Subtotal Cost w/ Inventory Reserve**	**Frequency (#)**	**Total w/ Inventory Reserve**
Med	50	$3,295	$355	$1,071	$4,785	12	$57,424
	75	$4,302	$416	$1,071	$5,872	30	$176,153
	100	$5,234	$416	$1,071	$6,820	18	$122,754
	167	$7,476	$846	$1,338	$9,806	27	$264,753
	750	$40,932	$1,236	$8,951	$51,858	5	$259,288
Lg	1,500	$63,111	$1,236	$8,951	$74,424	2	$148,849
	2,000	$74,477	$1,236	$8,951	$85,989	2	$171,978
	5,000	$134,617	$1,236	$8,951	$147,182	2	$294,364
HD	15,000	$373,793	$1,236	$8,951	$390,543	9	$3,514,885
					Total Transformer Capital Cost		**$5,010,448**

$ in thousands	**2015**	**2016**
Capital Cost for Transformers	$5,010	$5,010
Inflation factor (2012=1.0)	x 1.058	x 1.084
Inflated Capital Cost	$5,300	$5,430
Effective Tax Rate = 10.9550%	x 1.10955	x 1.10955
Total Capital Cost with Taxes	$5,881	$6,025
Annualization Factor = 0.04905	x 0.04905	x 0.04905
Annualized Capital Cost	**$288**	**$295**
Percent capital cost subject to O&M = 87.6%	x 87.6%	x 87.6%
Capital Cost Subject to O&M	$253	$259
O&M % of Annual Capital Cost = 27.65%	x 27.65%	x 27.65%
Annualized O&M Cost	**$70**	**$72**
Total = Annualized Capital Cost + Annualized O&M Cost	**$358**	**$367**
Total Annual Billing kW (2012)	1,647,072	1,647,072
Transformer Discount ($/kW)	**$0.22**	**$0.22**

The resulting transformer investment discount for 2015 is slightly lower than in 2014 because of a decrease in capital costs. Table 8.4 shows the transformer investment discount, per kW of monthly maximum demand.

Table 8.4
Transformer Investment Discount

	Current	2015	% Change	2016	% Change
Transformer Investment Discount	$0.24	$0.22	-8.3%	$0.22	0.0%

Primary Metering Discount

Most City Light customers are metered on the secondary (customer's) side of the transformer. A few customers, however, have primary metering; their electricity use is measured before transformation. These customers are mostly industrial facilities, though they also include parks and transit accounts.

Rates are set to recover costs with the assumption that all customers receive energy on the secondary side of the transformer. Customers with primary metering, therefore, receive a kWh discount to compensate them for having metered consumption that is higher, by the amount of transformer losses, than would be the case if they were metered on the secondary side.

For many primary metered customers, specialized meters calculate transformer losses in real time, and these losses are deducted from kWh billed. However, if the metered calculation is not available, a statistical formula is used. The formula for calculating the discount in kWh for transformer losses is:

$$\text{kWh losses} = 1{,}756 + (0.53285 \times \text{kW}) + (0.00002 \times \text{kW}^2) + (0.00527 \times \text{kWh})$$

Note: The first term (1,756) is dropped for Small General Service meters

This equation for calculating the transformer discount in kWh was developed using a multiple regression analysis (see *Primary Metering Study*, February 1988) that relates actual customer maximum demand (kW) and energy (kWh) data (independent variables) to transformer losses (dependent variable).

Pole Attachment Rental and Duct/Vault Rates

There were approximately 81 customers with over 90,000 pole attachments in 2012, producing revenues of $2.10 million.

Rental rates for pole attachments and installations in City Light’s ducts and vaults are charged annually based on the installations and attachments existing as of January 1 of each year. The full annual rate is charged for the year in which an installation is made, regardless of what point in the year use of City Light facilities commences. Each year, each lessee is required to submit to City Light an inventory listing the number and location of all poles, ducts, and vaults used. Any facilities not included in the inventory but identified later are charged three times the normal rental rate. If no inventory is submitted, the lessee must also reimburse City Light for the cost of performing the inventory.

Pole attachment rates are based on capital costs, carrying charges and space allocation. The generally accepted formula for calculating the pole attachment annual rental rate is:

Rate = Capital Cost per Bare Pole x Carrying Charge x Pole Space Allocation

An allowance is made for taxes, and rates for future years are adjusted for inflation. City Light uses Federal Energy Regulatory Commission (FERC) accounts from the past year in the formulas for the estimates of pole costs and carrying charges, along with information unique to the utility. The formulas for the pole costs and carrying charges are:

Capital Cost per Bare Pole = (book value of Poles, Fixtures-Allowance for Crossarms)/ Number of Poles

Carrying Charge = O&M as a % of book value + A&G as a % of Book Value + Interest Rate + Depreciation Rate

City Light uses a pole space allocation method, according to which it allocates 2/3 of the support space equally among users, assigns electrical/communication clearance to the shared support space, and subtracts a crossarms deduction of 33% for 90% of the poles.

Two rental rates are available to customers: one rate for rentals that are in the communication space and one rate for rentals that are below the communication space. These rates differ based on the pole space allocation calculation. The primary difference between the two pole space allocation calculations is in the available space for rental, which is one foot within the communication space and estimated at three feet below the communication space.

Duct and vault rental rates are based on the actual cost of the facilities, allocated to users on a proportional basis. Table 8.5 displays current and 2015-2016 rates for pole attachments, ducts and vaults.

Table 8.5
Pole Attachment Rental and Duct/Vault Rates

Facility	Current	2015	2016
Pole Attachments (per pole)			
Within the Communication Space			
Poles owned solely by City Light	$28.79	$29.26	$29.97
Poles owned jointly by City Light and one other	$14.39	$14.63	$14.99
Poles owned jointly by City Light and two others	$9.60	$9.75	$9.99
Below the Communication Space			
Poles owned solely by City Light		$55.58	$56.94
Poles owned jointly by City Light and one other		$27.79	$28.47
Poles owned jointly by City Light and two others		$18.53	$18.98
Ducts (per duct-foot)	$10.11	$10.22	$10.47
Vaults (per square foot)			
Wall space	$25.23	$25.54	$26.16
Ceiling space	$10.11	$10.22	$10.47

Reserved Distribution Capacity Charge

Non-residential customers located in areas where there is adequate distribution capacity may request that City Light reserve capacity to meet their loads on a circuit that is different from their normal service circuit. For this service, City Light charges a Reserved Distribution Capacity Charge, or RDC charge. As of 2012, there were about 16 meters charged for RDC. Almost all fall within the Medium and Large General Service classes, but one is also in the High Demand General Service class.

Only capital costs are included in the RDC charge. The capital cost of a feeder is based on examination of a variety of services with main and alternate feeders and costs of labor and materials per circuit-foot of wire, switches, and poles. It is assumed that each feeder includes 17,226 circuit feet of wire, 7.9 overhead

switches and 224 poles, that it is loaded to 50% (City Light standard), and that each alternate portion of a feeder utilizes ¼ of the feeder length with its wires, switches and poles.

Table 8.6
Derivation of Feeder Cost

Capital cost, ¼ feeder and associated equipment	$429,155
MW ¼ feeder assuming 27 MW capacity/feeder	6.75
Capital cost per MW	$63,578
$/MW/year assuming 32-year life (annualization factor=.048327)	$3,073
$/kW/year for each kW of peak capacity	$3.073

Table 8.7
Reserved Distribution Capacity per maximum kW per year in 2012 dollars and escalation to 2015 and 2016 dollars:

Feeder	$3.073
Including taxes at an effective rate of 10.955%	$3.41
2015 assuming inflation index of 1.057861	$3.61
2016 assuming inflation index of 1.083718	$3.69

When calculated per monthly maximum billing kW, summed over the year, the charge calculation is as shown in Table 8.7.

Table 8.
Derivation of RDC Charge

	2015	**2016**
Maximum kW (2012)	79,927	79,927
Charge/max kW (above)	$3.61	$3.69
Total dollars	$288,250	$295,296
Sum of max. billing kW/year (2012)	794,922	794,922
Charge/kW	$0.363	$0.371

Appendix A: Rate Schedules

Residential Rates - Standard				
	City (RSC)	Shoreline (RSH)	Tukwila (RST)	Suburban/ Burien (RSS/RSB)
2014				
First Block per kWh	$0.0506	$0.0545	$0.0545	$0.0520
End-Block per kWh	$0.1149	$0.1204	$0.1204	$0.1160
Base Service Charge per day	$0.1607	$0.1607	$0.1607	$0.1607
2015				
First Block per kWh	$0.0557	$0.0622	$0.0547	$0.0584
End-Block per kWh	$0.1189	$0.1251	$0.1267	$0.1224
Base Service Charge per day	$0.1451	$0.1451	$0.1451	$0.1451
2016				
First Block per kWh	$0.0588	$0.0656	$0.0577	$0.0615
End-Block per kWh	$0.1249	$0.1312	$0.1329	$0.1284
Base Service Charge per day	$0.1483	$0.1483	$0.1483	$0.1483
Average Rate (cents/kWh)				
2014	$0.0904	$0.0996	$0.0974	$0.0962
2015	$0.0935	$0.1034	$0.1025	$0.1015
2016	$0.0982	$0.1085	$0.1075	$0.1065
Average Rate Change (%)				
2015	3.5%	3.9%	5.2%	5.6%
2016	5.0%	4.9%	4.9%	4.9%

Residential Rates - Assisted				
	City (REC/RLC)	Shoreline (REH/RLH)	Tukwila (RET/RLT)	Suburban/Burien (RES/RLS/ REB/RLB)
2014				
First Block per kWh	$0.0216	$0.0232	$0.0232	$0.0223
End-Block per kWh	$0.0417	$0.0449	$0.0449	$0.0431
Base Service Charge per day	$0.0643	$0.0643	$0.0643	$0.0643
2015				
First Block per kWh	$0.0223	$0.0249	$0.0219	$0.0234
End-Block per kWh	$0.0476	$0.0500	$0.0507	$0.0490
Base Service Charge per day	$0.0580	$0.0580	$0.0580	$0.0580
2016				
First Block per kWh	$0.0235	$0.0262	$0.0231	$0.0246
End-Block per kWh	$0.0500	$0.0525	$0.0532	$0.0514
Base Service Charge per day	$0.0593	$0.0593	$0.0593	$0.0593
Average Rate (cents/kWh)				
2014	$0.0362	$0.0398	$0.0390	$0.0385
2015	$0.0374	$0.0414	$0.0410	$0.0406
2016	$0.0393	$0.0434	$0.0430	$0.0426
Average Rate Change (%)				
2015	3.5%	3.9%	5.2%	5.6%
2016	5.0%	4.9%	4.9%	4.9%
Small General Service				

	City/Network (SMC/SMD)	Shoreline (SMH)	Tukwila (SMT)	Suburban/ Burien (SMS/SMB)
2014				
Energy ($/kWh)	$0.0764	$0.0793	$0.0793	$0.0776
Minimum Bill ($/Day)	$0.27	$0.27	$0.27	$0.27
Transformer Investment ($/kW)	$0.24	$0.24	$0.24	$0.24
2015				
Energy ($/kWh)	$0.0799	$0.0838	$0.0832	$0.0822
Minimum Bill ($/Day)	$0.26	$0.26	$0.26	$0.26
Transformer Investment ($/kW)	$0.22	$0.22	$0.22	$0.22
2016				
Energy ($/kWh)	$0.0840	$0.0879	$0.0874	$0.0863
Minimum Bill ($/Day)	$0.26	$0.26	$0.26	$0.26
Transformer Investment ($/kW)	$0.22	$0.22	$0.22	$0.22
Average Rate (cents/kWh)				
2014	$0.0764	$0.0793	$0.0793	$0.0776
2015	$0.0799	$0.0838	$0.0832	$0.0822
2016	$0.0840	$0.0879	$0.0874	$0.0863
Average Rate Change (%)				
2015	4.6%	5.7%	4.9%	5.9%
2016	5.1%	4.9%	5.0%	5.0%

Medium General Service					
	City (MDC)	Network (MDD)	Shoreline (MDH)	Tukwila (MDT)	Suburban/ Burien (MDS/MDB)
2014					
Energy ($/kWh)	$0.0606	$0.0772	$0.0665	$0.0665	$0.0645
Demand ($/kW)	$2.18	$4.39	$2.18	$2.18	$2.18
Minimum Bill ($/Day)	$0.63	$0.63	$0.63	$0.63	$0.63
Transformer Investment ($/kW)	$0.24	$0.24	$0.24	$0.24	$0.24
2015					
Energy ($/kWh)	$0.0634	$0.0793	$0.0694	$0.0693	$0.0670
Demand ($/kW)	$2.24	$4.52	$2.24	$2.24	$2.24
Minimum Bill ($/Day)	$0.63	$0.63	$0.63	$0.63	$0.63
Transformer Investment ($/kW)	$0.22	$0.22	$0.22	$0.22	$0.22
2016					
Energy ($/kWh)	$0.0667	$0.0824	$0.0731	$0.0729	$0.0706
Demand ($/kW)	$2.32	$4.54	$2.32	$2.32	$2.32
Minimum Bill ($/Day)	$0.65	$0.65	$0.65	$0.65	$0.65
Transformer Investment ($/kW)	$0.22	$0.22	$0.22	$0.22	$0.22
Average Rate (cents/kWh)					
2014	$0.0665	$0.0878	$0.0720	$0.0717	$0.0710
2015	$0.0694	$0.0902	$0.0750	$0.0746	$0.0736
2016	$0.0730	$0.0933	$0.0788	$0.0784	$0.0774
Average Rate Change (%)					
2015	4.4%	2.7%	4.2%	4.1%	3.7%
2016	5.1%	3.4%	5.1%	5.1%	5.1%

Large General Service					
	City (LGC)	**Network (LGD)**	**Shoreline (LGH)**	**Tukwila (LGT)**	**Suburban/ Burien (LGS/LGB)**
2014					
kWh Peak ($/kWh)	$0.0690	$0.0863	$0.0765	$0.0765	$0.0756
kWh Off-peak ($/kWh)	**$0.0463**	**$0.0578**	**$0.0513**	**$0.0513**	**$0.0507**
kW Peak ($/kW)	$1.52	$3.65	$1.52	$1.52	$1.52
kW Off-Peak ($/kW)	$0.24	$0.24	$0.24	$0.24	$0.24
Minimum bill ($/meter/day)	$16.77	$16.77	$16.77	$16.77	$16.77
Transformer Investment ($/kW)	$0.24	$0.24	$0.24	$0.24	$0.24
2015					
kWh Peak ($/kWh)	$0.0717	$0.0869	$0.0797	$0.0797	$0.0791
kWh Off-peak ($/kWh)	$0.0478	$0.0579	$0.0532	$0.0531	$0.0527
kW Peak ($/kW)	$2.02	$4.00	$2.02	$2.02	$2.02
kW Off-Peak ($/kW)	$0.22	$0.22	$0.22	$0.22	$0.22
Minimum bill ($/meter/day)	$18.58	$18.58	$18.58	$18.58	$18.58
Transformer Investment ($/kW)	$0.22	$0.22	$0.22	$0.22	$0.22
2016					
kWh Peak ($/kWh)	$0.0759	$0.0906	$0.0844	$0.0843	$0.0837
kWh Off-peak ($/kWh)	$0.0506	$0.0604	$0.0562	$0.0562	$0.0558
kW Peak ($/kW)	$2.08	$4.05	$2.08	$2.08	$2.08
kW Off-Peak ($/kW)	$0.22	$0.22	$0.22	$0.22	$0.22
Minimum bill ($/meter/day)	$18.98	$18.98	$18.98	$18.98	$18.98
Transformer Investment ($/kW)	$0.22	$0.22	$0.22	$0.22	$0.22
Average Rate (cents/kWh)					
2014	$0.0643	$0.0858	$0.0697	$0.0692	$0.0682
2015	$0.0679	$0.0871	$0.0733	$0.0730	$0.0720
2016	$0.0717	$0.0905	$0.0775	$0.0770	$0.0761
Average Rate Change (%)					
2015	5.5%	1.5%	5.2%	5.4%	5.6%
2016	5.6%	3.9%	5.7%	5.5%	5.7%

High Demand General Service		
	City (HDC)	**Tukwila (HDT)**
2014		
kWh Peak ($/kWh)	$0.0649	$0.0694
kWh Off-peak ($/kWh)	$0.0436	$0.0466
kW Peak ($/kW)	$1.52	$1.52
kW Off-Peak ($/kW)	$0.24	$0.24
Minimum bill ($/meter/day)	$30.97	$30.97
Transformer Investment ($/kW)	$0.24	$0.24
2015		
kWh Peak ($/kWh)	$0.0681	$0.0703
kWh Off-peak ($/kWh)	$0.0454	$0.0468
kW Peak ($/kW)	$2.02	$2.02
kW Off-Peak ($/kW)	$0.22	$0.22
Minimum bill ($/meter/day)	$56.92	$56.92
Transformer Investment ($/kW)	$0.22	$0.22
2016		
kWh Peak ($/kWh)	$0.0724	$0.0748
kWh Off-peak ($/kWh)	$0.0483	$0.0499
kW Peak ($/kW)	$2.08	$2.08
kW Off-Peak ($/kW)	$0.22	$0.22
Minimum bill ($/meter/day)	$58.15	$58.15
Transformer Investment ($/kW)	$0.22	$0.22
Average Rate (cents/kWh)		
2014	$0.0589	$0.0650
2015	$0.0625	$0.0673
2016	$0.0663	$0.0714
Average Rate Change (%)		
2015	6.2%	3.5%
2016	6.1%	6.1%

Appendix B: Perspective on City Light Rates

History

When electricity first became commercially available, unit costs were high, reflecting the high costs of developing capital-intensive generation, transmission and distribution systems. As demand grew, economies of scale in enlarged production facilities could be realized. Unit costs--and rates--dropped in response.

During the 1970s and early 1980s, double-digit inflation and high interest rates had a major impact on the utility industry's costs, as they did in other key sectors of the national economy. Additionally, utilities found that the raw materials used to generate electricity were becoming scarce, much more expensive, or both. Coal, oil, uranium, and well-located water for hydroelectric production are all examples. Meanwhile, demand throughout the country--and in City Light's service area--continued to grow at impressive rates during the 1970s and early 1980s.

The Utility's first temporary surcharge was added to rates from June 1 through November 30, 1977. The surcharge averaged 60% for the months of June and July and 40% for the months of August through November. Additional revenue from the surcharge was needed to carry the Utility through the drought period in that year. Through the early 1980s, inflation, higher Bonneville Power Administration (BPA) rates, and the cost of new conservation and research programs all contributed to the need for substantial increases.

In July 1992, the City Council approved City Light's second temporary surcharge. The surcharge went into effect on September 1, 1992 and terminated on April 30, 1993. The amount of the surcharge was 10% for all customers except low-income customers served on rate assistance schedules, whose surcharge was 5%.

In March 1993, the City Council approved City Light's eleventh general rate increase and the Department's third temporary surcharge. The permanent rate increase was 12.6% and the temporary surcharge was 4.05%. The permanent rate increase and temporary surcharge went into effect on May 1, 1993. The temporary surcharge was removed from the rates on October 31, 1993.

The City Council approved City Light's fourth temporary surcharge of 8.9% for all rate schedules in April 1994. The temporary surcharge went into effect on June 1, 1994 and continued through February 28, 1995.

In January 1995, the City Council approved City Light’s twelfth and thirteenth general rate increases. The permanent rate increases for 1995 and 1996 were 5.7% and 5.3%, respectively. The 1997-1998 general rate change represented slight decreases. Those rates went into effect on March 6, 1997 and March 1, 1998. In December 1999, the rates increased by 3.2%.

It wasn't until the energy crisis of 2000-2001 that electric rates increased substantially, mainly due to increased power costs, with a cumulative rate increase in 2001 of 56.2% over four rate increases: 9.8% in January, 18% in March, 9.3% in July, and 10.3% in October.

There were three rate changes in 2002. The first, in March, implemented the second step of an increase established in 1999 for downtown Network customers; their rates increased about 5%, resulting in a system increase of 0.5%. The second rate change, in April, was a decrease of 1.1% that passed through to customers a decrease in the power rates that the Bonneville Power Administration (BPA) charges City Light. A third 2002 change occurred in June—a decrease in residential third-block rates and an increase in

the level of consumption at which third-block rates would apply—but this change did not result in any measurable overall percentage rate change.

In April 2003, there was an average rate increase of 1.2% to pass through a BPA power cost increase, and in May of that year, an average increase of 0.2% that affected only Tukwila customers (whose rates were increased about 5%) because of a new franchise agreement signed with that city. In 2004 and 2005 the average rate decreases were slightly more than 2% in each year, passing through changes in BPA power costs to City Light. There was no change in rates during 2006.

The City Council approved an 8.4% general rate decrease in January 2007 and decided that rates should remain at that level through the end of 2008. At that time, City Light also discontinued charging third block rates to residential customers and established a separate rate schedule for suburban franchise customers in Shoreline that incorporated a charge to collect costs of undergrounding requested by the City of Shoreline. In June 2009, City Light established a separate rate schedule for customers in Burien to allow for undergrounding charges for these customers, similar to Shoreline. In October 2009, there was a 1.8% average rate increase caused by passing through higher BPA power costs.

In January 2010, the City Council approved the first general rate increase since the 2000-2001 energy crisis, allowing City Light to implement an across-the-board 13.8% increase in all rates charged to all types of customers. In October 2010, another pass-through of BPA cost increases resulted in an additional average system rate increase of 0.5%. In addition, City Light imposed a temporary surcharge of 4.5% from May through December in order to help initially fund a Rate Stabilization Account (RSA) that was approved by Council in March 2010. No additional RSA surcharges have been imposed since that time. Council approved two more general, across-the-board rate increases of 4.3% and 3.2% in January 2011 and January 2012, respectively.

In 2012, City Light proposed to increase rates by an average of 4.4% in 2013 and 5.6% in 2014. These increases were adopted by the City Council on September 17, 2012, by Ordinance 123988. They were driven by the need to replace and renovate aging equipment and infrastructure, relocate equipment because of transportation-related construction projects, comply with environmental regulations, diversify City Light's power resources and comply with renewable portfolio standards, provide excellent customer service, and keep pace with rising labor and materials costs.

In May 2013, the City Council approved Ordinance 124182, which amended the Seattle Municipal Code Chapter 21.49 to include changes in transmission costs in the automatic BPA pass-though. In October 2013, BPA transmission charges to City Light increased, leading to an automatic pass-through of $0.0009/kWh for all energy charges, except that the amount was $0.0004/kWh for rate-assisted residential classes. This resulted in an average rate increase of 1.2%.

During the 2014 rate case, City Light proposed average rate increases consistent with the 2015-2020 Strategic Plan Update of 4.2% in 2015 and 4.9% in 2016. The reasons for the increases were the same as those mentioned above for 2013 and 2014.
Table B.1 summarizes average annual rate changes since 1971:

Table B.1
Seattle City Light Average Rate Changes by Year

Year	Average Rate Change
1971	7.0%
1974	9.0%
1977	5.0%
1980	40.7%
1982	16.0%
1982	18.4%
1984	30.0%
1986	9.5%
1989	4.4%
1990	(2.4%)
1993	12.6%
1995	5.7%
1996	5.3%
1997	(0.4%)
1998	(0.6%)
1999	3.2%
2001	56.2%
2002	(0.6%)
2003	1.4%
2004	(2.1%)
2005	(2.2 %)
2006	0.0%
2007	(8.4%)
2008	0.0%
2009	1.8%
2010	14.3%
2011	4.3%
2012	3.2%
2013	4.4%
2014	6.8%
2015*	4.2%
2016*	4.9%

*Proposed.

City Light's rate increases and decreases have produced the following changes in average system rates from 1982 through 2013, as displayed in Table B.2.

Table B.2
Average System Rates 1982 to 2013

Year	System Average Revenue in Cents/kWh*	Seattle Consumer Price Index (2013=1.00)*	Real Cost in Cents/kWh (Adjusted for Inflation)
1982	1.78	0.416161	4.28
1983	2.11	0.415321	5.08
1984	2.51	0.428759	5.85
1985	2.73	0.437578	6.24
1986	2.96	0.440937	6.71
1987	3.03	0.451016	6.72
1988	3.12	0.465714	6.70
1989	3.23	0.487971	6.62
1990	3.16	0.522826	6.04
1991	3.18	0.551382	5.77
1992	3.34	0.571119	5.85
1993	3.59	0.587917	6.11
1994	3.75	0.609334	6.15
1995	3.75	0.626971	5.98
1996	3.88	0.647968	5.99
1997	3.93	0.667705	5.89
1998	3.85	0.685343	5.62
1999	3.89	0.706760	5.50
2000	4.06	0.733216	5.54
2001	5.58	0.759252	7.35
2002	6.30	0.772690	8.15
2003	6.20	0.784029	7.91
2004	6.39	0.796207	8.03
2005	6.14	0.820144	7.49
2006	6.17	0.850799	7.25
2007	5.65	0.882992	6.40
2008	5.64	0.922576	6.11
2009	5.62	0.926632	6.06
2010	6.66	0.933880	7.13
2011	6.83	0.963490	7.09
2012	7.02	0.987956	7.11
2013	7.34	1.000000	7.34

*Sources: Average revenue figures are taken from City Light's Annual Financial Statement Reports. The Seattle Consumer Price Index (CPI-W) is based on actual historical indices published by the U.S. Bureau of Labor Statistics (BLS). City Light has restated those indices using 2013 as the base year rather than the 1982-84 average base reported by BLS.

Comparison of City Light Rates with Those of Other Utilities

It is well known that City Light rates are generally lower than those of most utilities in the rest of the country. Table C.3 shows the 2013 average system rate for the 25 largest cities in the US. Of these 25 cities, Seattle rates are the lowest.

Table B.3
2013 Average System Rates (¢/kWh) of 25 Largest US Cities

25 Largest U.S. Cities

Rank	City	Population	Rate
1	Seattle	634,535	7.2
2	Indianapolis	834,852	8.4
3	Charlotte	775,202	8.4
4	Memphis	655,155	8.8
5	San Antonio	1,382,951	8.9
6	Houston*	2,160,821	8.9
6	Dallas*	1,241,162	8.9
6	Fort Worth*	777,992	8.9
9	El Paso	672,538	9.5
10	Denver	634,265	9.6
11	Austin	842,592	9.7
12	Nashville-Davidson	624,496	9.8
13	Chicago	2,714,856	10.3
14	Jacksonville	836,507	10.4
15	Columbus	809,798	11.5
16	Pheonix	1,488,750	11.5
17	Detroit	701,475	11.9
18	Washington DC	632,323	12.7
19	Los Angeles	3,857,799	13.3
20	Philadelphia	1,547,607	13.9
21	San Jose	982,765	14.5
22	San Francisco	825,863	14.5
23	Boston	636,479	15.1
24	San Diego	1,338,348	16.2
25	New York City	8,336,697	23.9

Sources: EEI Winter 2014 Report or directly from each utility
*Texas utilities assigned Texas average rate (EIA), due to deregulation

Table B.4 compares the 2013 average rate for Seattle City Light with neighboring utilities.

Table B.4
Average System Rates - Neighboring Utilities

Utility	2013 Rate (cents/kWh)
Tacoma Power	6.35
Seattle City Light	**7.16**
Snohomish PUD	8.30
Avista	8.34
Portland General	8.96
Puget Sound Energy	9.89

The past record indicates that relative to the rest of the industry City Light has responsibly met the financial challenges brought about by growth, inflation, and the changing mix of generation resources. The financial well-being of the Utility has been preserved and rates have remained far below the average of most other utilities. City Light has taken steps to put itself in a strong financial and resource position. The strength of its financial position is demonstrated by its favorable bond rating. In summary, City Light's customers can reasonably expect to continue to enjoy rates that are below the national and regional average.

Appendix C: Billing Determinants

Billing determinants are a collection of datasets that describe customer electricity use by billing component. Customer rates are designed so that, when the charges are applied to the forecasted billing determinants for a particular class, they will produce the targeted revenue requirement.

Tables C.1 and C.2 show billing determinants for 2015 and 2016 for each individual rate class. Note that, for rate design purposes, Suburban and Burien are combined. However, rates are legislated for the six customer groups separately.

Table C.1
2015 Billing Determinants

Billing Determinants as of March 26, 2014		Seattle	Network	Shoreline	Tukwila	Suburban/ Burien
Residential Standard						
Total Energy	kWh	2,325,701,199		216,636,814	53,142,581	373,674,928
First Block Energy	kWh	946,615,422		73,380,004	17,112,539	119,871,526
Second Block Energy	kWh	1,379,085,777		143,256,810	36,030,041	253,803,403
Meters	Count	294,095		21,560	5,216	35,275
Residential Assisted						
Total Energy	kWh	133,067,203		15,380,403	5,575,068	34,484,896
First Block Energy	kWh	40,594,625		4,938,515	1,673,197	9,263,455
Second Block Energy	kWh	92,472,578		10,441,888	3,901,872	25,221,441
Meters	Count	12,507		1,451	510	2,732
Small General Service						
Energy	kWh	1,041,847,199		43,861,794	29,361,458	92,204,621
Meters	Count	36,915		1,536	905	4,044
Medium General Service						
Energy	kWh	1,623,472,587	575,790,905	88,733,338	106,279,988	98,021,764
Demand	kW	4,410,866	1,391,498	222,837	253,195	290,133
Meters	Count	2,155	541	131	99	187
Large General Service						
Peak Energy	kWh	473,085,385	385,148,115	10,167,423	64,997,921	14,625,931
Off-Peak Energy	kWh	293,237,049	212,337,921	6,394,134	47,065,304	10,215,784
Peak Billing Demand	kW	2,025,234	1,574,085	31,632	245,344	45,622
Off-Peak Billing Demand	kW	19,380	2,346	0	1,448	0
Meters	Count	80	59	2	10	3
High Demand General Service						
Peak Energy	kWh	504,955,835			133,343,927	NA
Off-Peak Energy	kWh	391,328,630			94,686,563	NA
Peak Billing Demand	kW	1,923,559			745,771	NA
Off-Peak Billing Demand	kW	36,638			109,700	NA
Meters	Count	8			4	NA

Table C.2
2016 Billing Determinants

Billing Determinants as of March 26, 2014		Seattle	Network	Shoreline	Tukwila	Suburban/ Burien
Residential Standard						
Total Energy	kWh	2,312,542,963		215,182,584	52,627,044	370,409,430
First Block Energy	kWh	942,847,431		72,920,528	16,955,062	119,015,170
Second Block Energy	kWh	1,369,695,532		142,262,056	35,671,982	251,394,260
Meters	Count	292,931		21,425	5,168	35,021
Residential Assisted						
Total Energy	kWh	145,478,459		16,616,953	6,087,130	37,860,616
First Block Energy	kWh	44,369,893		5,397,991	1,827,393	10,124,736
Second Block Energy	kWh	101,108,566		11,218,962	4,259,737	27,735,879
Meters	Count	13,671		1,586	557	2,986
Small General Service						
Energy	kWh	1,051,825,109		44,315,980	29,739,898	93,103,127
Meters	Count	36,915		1,536	905	4,044
Medium General Service						
Energy	kWh	1,640,985,819	580,250,460	90,625,784	106,970,048	98,856,662
Demand	kW	4,410,866	1,391,498	222,837	253,195	290,133
Meters	Count	2,155	541	131	99	187
Large General Service						
Peak Energy	kWh	476,489,801	388,334,918	10,255,297	65,434,739	14,635,138
Off-Peak Energy	kWh	295,080,078	213,892,504	6,442,982	47,338,698	10,210,451
Peak Billing Demand	kW	2,025,234	1,574,085	31,632	245,344	45,622
Off-Peak Billing Demand	kW	19,380	2,346	0	1,448	0
Meters	Count	80	59	2	10	3
High Demand General Service						
Peak Energy	kWh	507,022,042			133,586,938	
Off-Peak Energy	kWh	392,448,677			94,768,888	
Peak Billing Demand	kW	1,923,559			745,771	
Off-Peak Billing Demand	kW	36,638			109,700	
Meters	Count	8			4	

Appendix D: Rate Design Inputs

The rate design models described in this report use two sources of output from the Cost of Service Model: revenue requirement by rate class and marginal costs of energy, distribution and customer service. Tables D.1 and D.2 report the revenue requirements by rate class. Tables D.3 and D.5 report the total marginal costs by rate class for 2015 and 2016, and Tables D.4 and D.6 report the marginal costs per MWh for 2015 and 2016.

Table D.1
2015 Revenue Requirements by Rate Class

	Total	Residential	Small	Medium	Large	High Demand	Lights
All areas	$785,413,261	$301,411,508	$96,975,601	$186,464,514	$115,293,684	$71,372,064	$13,895,889
City of Seattle	$547,941,667	$229,952,769	$83,279,419	$112,734,475	$52,043,930	$56,035,186	
Network	$103,998,352			$51,930,664	$52,067,688		
Shoreline	$35,543,450	$24,000,500	$3,673,604	$6,654,606	$1,214,740		
Tukwila	$39,907,599	$6,018,938	$2,443,075	$7,929,705	$8,179,003	$15,336,878	
Other Suburbs	$58,022,192	$41,439,302	$7,579,503	$7,215,064	$1,788,323		

Table D.2
2016 Revenue Requirements by Rate Class

	Total	Residential	Small	Medium	Large	High Demand	Lights
All areas	$828,480,034	$316,376,365	$102,831,186	$197,076,685	$121,706,651	$75,936,663	$14,552,485
City of Seattle	$579,026,241	$241,432,769	$88,302,744	$119,764,567	$55,329,151	$59,644,525	
Network	$108,635,704			$54,131,709	$54,503,995		
Shoreline	$37,484,042	$25,151,200	$3,896,314	$7,143,303	$1,293,225		
Tukwila	$42,284,924	$6,313,775	$2,597,978	$8,389,327	$8,691,706	$16,292,137	
Other Suburbs	$61,049,124	$43,478,622	$8,034,150	$7,647,779	$1,888,574		

Table D.3
2015 Total Marginal Costs, $ with Tax

Total Service Territory	**Total**	**Residential**	**Small**	**Medium**	**Large**	**High Demand**	**Lights**
Energy	$494,497,954	$164,359,491	$63,002,803	$128,943,451	$77,984,872	$56,852,754	$3,354,583
Distribution	$398,785,748	$156,365,458	$48,315,521	$99,927,297	$67,551,843	$25,167,737	$1,457,891
In Service Area Transmission	$54,163,016	$21,449,867	$6,777,341	$13,289,796	$7,726,407	$4,657,892	$261,712
Stations	$36,930,857	$14,543,068	$4,615,816	$9,102,502	$5,338,210	$3,154,045	$177,216
Wires & Related Equipment	$282,445,875	$111,902,874	$33,235,237	$69,155,526	$50,387,516	$16,828,756	$935,966
Transformers	$18,769,883	$4,118,127	$2,648,377	$8,119,510	$3,335,083	$465,787	$82,998
Meters	$6,476,118	$4,351,522	$1,038,750	$259,963	$764,626	$61,256	
Streetlights							
Customer Costs	$45,650,541	$39,557,272	$4,080,779	$718,643	$1,044,329	$249,518	
Load, MWh	9,567,320	3,157,663	1,207,275	2,492,299	1,517,275	1,124,315	68,493
Non-network	**Total**	**Residential**	**Small**	**Medium**	**Large**	**High Demand**	**Lights**
Energy	$421,631,890	$159,534,709	$55,448,144	$99,236,581	$47,205,119	$56,852,754	$3,354,583
Distribution	$294,750,869	$147,173,580	$37,321,473	$58,038,031	$25,592,157	$25,167,737	$1,457,891
In Service Area Transmission	$46,602,921	$20,901,086	$5,988,224	$10,221,715	$4,572,292	$4,657,892	$261,712
Stations	$31,556,704	$14,152,962	$4,054,867	$6,921,533	$3,096,082	$3,154,045	$177,216
Wires & Related Equipment	$200,865,197	$104,466,881	$24,674,990	$37,265,615	$16,692,989	$16,828,756	$935,966
Transformers	$9,919,414	$3,505,473	$1,691,620	$3,414,383	$759,153	$465,787	$82,998
Meters	$5,806,634	$4,147,179	$911,772	$214,785	$471,642	$61,256	
Streetlights							
Customer Costs	$42,956,040	$37,703,457	$3,761,652	$597,185	$644,229	$249,518	
Load, MWh	8,156,323	3,064,864	1,062,355	1,916,508	919,789	1,124,315	68,493
Network	**Total**	**Residential**	**Small**	**Medium**	**Large**	**High Demand**	**Lights**
Energy	$72,866,064	$4,824,782	$7,554,658	$29,706,870	$30,779,753		
Distribution	$104,034,879	$9,191,878	$10,994,048	$41,889,267	$41,959,686		
In Service Area Transmission	$7,560,095	$548,781	$789,117	$3,068,081	$3,154,116		
Stations	$5,374,153	$390,106	$560,950	$2,180,969	$2,242,128		
Wires & Related Equipment	$81,580,678	$7,435,993	$8,560,247	$31,889,911	$33,694,527		
Transformers	$8,850,468	$612,655	$956,757	$4,705,127	$2,575,930		
Meters	$669,484	$204,343	$126,978	$45,178	$292,985		
Streetlights	$0	$0	$0	$0	$0		
Customer Costs	$2,694,501	$1,853,816	$319,127	$121,458	$400,100		
Load, MWh	1,410,997	92,799	144,921	575,791	597,486		

D.4
2015 Total Marginal Costs, $/MWh with Tax

Total Service Territory	**Total**	**Residential**	**Small**	**Medium**	**Large**	**High Demand**	**Lights**
Energy	$51.69	$52.05	$52.19	$51.74	$51.40	$50.57	$48.98
Distribution	$41.68	$49.52	$40.02	$40.09	$44.52	$22.38	$21.29
ISA Transmission	$5.66	$6.79	$5.61	$5.33	$5.09	$4.14	$3.82
Stations	$3.86	$4.61	$3.82	$3.65	$3.52	$2.81	$2.59
Wires & Related Equipment	$29.52	$35.44	$27.53	$27.75	$33.21	$14.97	$13.67
Transformers	$1.96	$1.30	$2.19	$3.26	$2.20	$0.41	$1.21
Meters	$0.68	$1.38	$0.86	$0.10	$0.50	$0.05	
Streetlights							
Customer Costs	$4.77	$12.53	$3.38	$0.29	$0.69	$0.22	
Non-network	**Total**	**Residential**	**Small**	**Medium**	**Large**	**High Demand**	**Lights**
Energy	$51.69	$52.05	$52.19	$51.78	$51.32	$50.57	$48.98
Distribution	$36.14	$48.02	$35.13	$30.28	$27.82	$22.38	$21.29
ISA Transmission	$5.71	$6.82	$5.64	$5.33	$4.97	$4.14	$3.82
Stations	$3.87	$4.62	$3.82	$3.61	$3.37	$2.81	$2.59
Wires & Related Equipment	$24.63	$34.09	$23.23	$19.44	$18.15	$14.97	$13.67
Transformers	$1.22	$1.14	$1.59	$1.78	$0.83	$0.41	$1.21
Meters	$0.71	$1.35	$0.86	$0.11	$0.51	$0.05	
Streetlights							
Customer Costs	$5.27	$12.30	$3.54	$0.31	$0.70	$0.22	
Network	**Total**	**Residential**	**Small**	**Medium**	**Large**	**High Demand**	**Lights**
Energy	$51.64	$51.99	$52.13	$51.59	$51.52		
Distribution	$73.73	$99.05	$75.86	$72.75	$70.23		
ISA Transmission	$5.36	$5.91	$5.45	$5.33	$5.28		
Stations	$3.81	$4.20	$3.87	$3.79	$3.75		
Wires & Related Equipment	$57.82	$80.13	$59.07	$55.38	$56.39		
Transformers	$6.27	$6.60	$6.60	$8.17	$4.31		
Meters	$0.47	$2.20	$0.88	$0.08	$0.49		
Streetlights							
Customer Costs	$1.91	$19.98	$2.20	$0.21	$0.67		

ISA Transmission = In Service Area Transmission

Table D.5
2016 Total Marginal Costs, $ with Tax

Total Service Territory	Total	Residential	Small	Medium	Large	High Demand	Lights
Energy	$522,321,505	$172,228,131	$66,750,639	$136,847,583	$82,697,997	$60,517,439	$3,279,716
Distribution	$410,643,155	$161,926,736	$50,407,487	$102,258,978	$69,032,087	$25,677,921	$1,339,945
ISA Transmission	$55,486,924	$21,929,120	$7,019,808	$13,648,734	$7,899,518	$4,749,416	$240,329
Stations	$37,834,708	$14,870,818	$4,781,853	$9,346,186	$5,457,094	$3,216,020	$162,737
Wires & Related Eq.	$291,392,551	$116,463,006	$34,811,029	$70,627,165	$51,458,865	$17,172,377	$860,109
Transformers	$19,294,557	$4,205,905	$2,730,657	$8,370,575	$3,433,294	$477,355	$76,770
Meters	$6,634,414	$4,457,887	$1,064,140	$266,317	$783,316	$62,754	
Streetlights							
Customer Costs	$46,766,379	$40,524,173	$4,180,525	$736,209	$1,069,855	$255,617	
Load, MWh	9,611,431	3,156,805	1,218,984	2,517,689	1,528,115	1,127,827	62,011
Non-network	**Total**	**Residential**	**Small**	**Medium**	**Large**	**High Demand**	**Lights**
Energy	$445,225,489	$167,175,885	$58,764,953	$105,389,892	$50,097,604	$60,517,439	$3,279,716
Distribution	$303,966,342	$151,548,533	$38,747,771	$60,139,541	$26,512,631	$25,677,921	$1,339,945
ISA Transmission	$47,707,961	$21,284,566	$6,175,731	$10,561,884	$4,696,036	$4,749,416	$240,329
Stations	$32,304,972	$14,412,632	$4,181,835	$7,151,874	$3,179,874	$3,216,020	$162,737
Wires & Related Eq.	$207,817,793	$108,022,370	$25,710,743	$38,679,368	$17,372,825	$17,172,377	$860,109
Transformers	$10,187,051	$3,580,417	$1,745,403	$3,526,380	$780,726	$477,355	$76,770
Meters	$5,948,566	$4,248,548	$934,058	$220,035	$483,170	$62,754	$0
Streetlights	$0	$0	$0	$0	$0	$0	$0
Customer Costs	$44,006,017	$38,625,044	$3,853,598	$611,782	$659,976	$255,617	$0
Load, MWh	8,190,141	3,064,069	1,072,909	1,937,438	925,887	1,127,827	62,011
Network	**Total**	**Residential**	**Small**	**Medium**	**Large**	**High Demand**	**Lights**
Energy	$77,096,016	$5,052,246	$7,985,686	$31,457,691	$32,600,393		
Distribution	$106,676,812	$10,378,203	$11,659,716	$42,119,437	$42,519,456		
ISA Transmission	$7,778,963	$644,554	$844,076	$3,086,850	$3,203,482		
Stations	$5,529,737	$458,186	$600,018	$2,194,312	$2,277,220		
Wires & Related Eq.	$83,574,758	$8,440,636	$9,100,286	$31,947,797	$34,086,040		
Transformers	$9,107,506	$625,489	$985,254	$4,844,195	$2,652,568		
Meters	$685,849	$209,338	$130,082	$46,283	$300,146		
Streetlights							
Customer Costs	$2,760,362	$1,899,129	$326,927	$124,427	$409,880		
Load, MWh	1,421,289	92,736	146,075	580,250	602,227		

Table D.6
2016 Total Marginal Costs, $/MWh with Tax

Total Service Territory	**Total**	**Residential**	**Small**	**Medium**	**Large**	**High Demand**	**Lights**
Energy	$54.34	$54.56	$54.76	$54.35	$54.12	$53.66	$52.89
Distribution	$42.72	$51.29	$41.35	$40.62	$45.17	$22.77	$21.61
ISA Transmission	$5.77	$6.95	$5.76	$5.42	$5.17	$4.21	$3.88
Stations	$3.94	$4.71	$3.92	$3.71	$3.57	$2.85	$2.62
Wires & Related Eq.	$30.32	$36.89	$28.56	$28.05	$33.67	$15.23	$13.87
Transformers	$2.01	$1.33	$2.24	$3.32	$2.25	$0.42	$1.24
Meters	$0.69	$1.41	$0.87	$0.11	$0.51	$0.06	
Streetlights							
Customer Costs	$4.87	$12.84	$3.43	$0.29	$0.70	$0.23	
Non-network	**Total**	**Residential**	**Small**	**Medium**	**Large**	**High Demand**	**Lights**
Energy	$54.36	$54.56	$54.77	$54.40	$54.11	$53.66	$52.89
Distribution	$37.11	$49.46	$36.11	$31.04	$28.63	$22.77	$21.61
ISA Transmission	$5.83	$6.95	$5.76	$5.45	$5.07	$4.21	$3.88
Stations	$3.94	$4.70	$3.90	$3.69	$3.43	$2.85	$2.62
Wires & Related Eq.	$25.37	$35.25	$23.96	$19.96	$18.76	$15.23	$13.87
Transformers	$1.24	$1.17	$1.63	$1.82	$0.84	$0.42	$1.24
Meters	$0.73	$1.39	$0.87	$0.11	$0.52	$0.06	
Streetlights							
Customer Costs	$5.37	$12.61	$3.59	$0.32	$0.71	$0.23	
Network	**Total**	**Residential**	**Small**	**Medium**	**Large**	**High Demand**	**Lights**
Energy	$54.24	$54.48	$54.67	$54.21	$54.13		
Distribution	$75.06	$111.91	$79.82	$72.59	$70.60		
ISA Transmission	$5.47	$6.95	$5.78	$5.32	$5.32		
Stations	$3.89	$4.94	$4.11	$3.78	$3.78		
Wires & Related Eq.	$58.80	$91.02	$62.30	$55.06	$56.60		
Transformers	$6.41	$6.74	$6.74	$8.35	$4.40		
Meters	$0.48	$2.26	$0.89	$0.08	$0.50		
Streetlights	$0.00	$0.00	$0.00	$0.00	$0.00		
Customer Costs	$1.94	$20.48	$2.24	$0.21	$0.68		