

Rate Design Report



Adopted 2017-2018 Rates

October 10, 2016

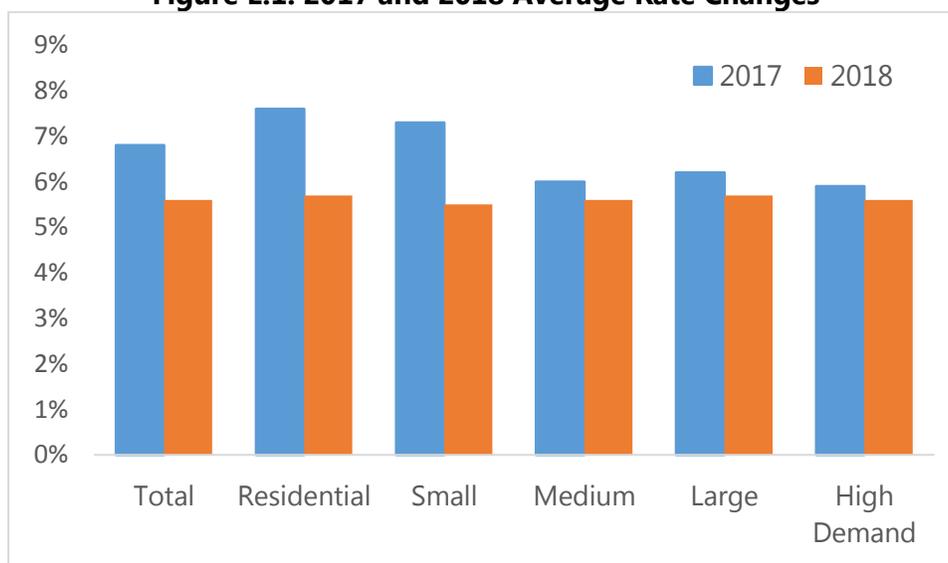
Contents

EXECUTIVE SUMMARY	3
CHAPTER 1: INTRODUCTION	10
CHAPTER 2: RESIDENTIAL RATES.....	12
<i>Rate Class Description.....</i>	<i>12</i>
<i>Rate Design.....</i>	<i>13</i>
<i>Rates and Customer Bill Impacts.....</i>	<i>16</i>
<i>Utility Discount Program (Assisted) Rates.....</i>	<i>19</i>
CHAPTER 3: SMALL GENERAL SERVICE RATES.....	20
<i>Rate Class Description.....</i>	<i>20</i>
<i>Rate Design.....</i>	<i>20</i>
<i>Rates and Customer Bill Impacts.....</i>	<i>21</i>
CHAPTER 4: MEDIUM GENERAL SERVICE RATES	25
<i>Rate Class Description.....</i>	<i>25</i>
<i>Rate Design.....</i>	<i>25</i>
<i>Rates and Customer Bill Impacts.....</i>	<i>28</i>
CHAPTER 5: LARGE GENERAL SERVICE RATES	33
<i>Rate Class Description.....</i>	<i>33</i>
<i>Rate Design.....</i>	<i>34</i>
<i>Rates and Customer Bill Impacts.....</i>	<i>38</i>
CHAPTER 6: HIGH DEMAND GENERAL SERVICE RATES	44
<i>Rate Class Description.....</i>	<i>44</i>
<i>Rate Design.....</i>	<i>44</i>
<i>Rates and Customer Bill Impacts.....</i>	<i>46</i>
CHAPTER 7: STREETLIGHT, PEDESTRIAN AND FLOODLIGHT RATES.....	50
<i>Rate Class Description.....</i>	<i>50</i>
<i>Rate Design.....</i>	<i>51</i>
<i>Rates and Customer Bill Impacts.....</i>	<i>54</i>
CHAPTER 8: OTHER FEES AND DISCOUNTS	55
<i>Power Factor Rate.....</i>	<i>55</i>
<i>Transformer Investment Discount.....</i>	<i>59</i>
<i>Primary Metering Discount</i>	<i>58</i>
<i>Pole Attachment Rental and Duct/Vault Rates.....</i>	<i>58</i>
<i>Reserved Distribution Capacity Charge.....</i>	<i>59</i>
APPENDIX A: RATE SCHEDULES	60
APPENDIX B: PERSPECTIVE ON CITY LIGHT RATES.....	65
APPENDIX C: BILLING DETERMINANTS	72
APPENDIX D: RATE DESIGN INPUTS.....	74

Executive Summary

This report presents electric rates to become effective on January 1, 2017, and on January 1, 2018. Seattle City Council adopted the rates with the passing of Ordinance 125171 on October 10, 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 2017 and 2018 are also consistent with the Strategic Plan Update for 2017-2022. The below figure shows the change in the average rate in City Light's service territory for 2017 and 2018.

Figure E.1: 2017 and 2018 Average Rate Changes



While the change in average rate provides a useful benchmark, new retail rates will impact individual customers differently depending on their consumption patterns. This report illustrates a range of rate increase bill impacts by including a diverse set of example customers for each rate class. Adopted rates for 2017 and 2018 and example monthly bill impacts for City of Seattle and Downtown Network customers are summarized below. More detailed bill impacts are included in the body of this report.

Methodology

Rate design policy and principles are unchanged from the 2015-2016 rate review. Increases to individual rate components reflect changes in costs for different aspects of retail electric service, including customer service, distribution services, and energy.

Residential Rates

Residential rate schedules include a lower first-block energy rate per kWh, a higher end-block energy rate per kWh, and a base service charge. The first-block rate applies to the first 10 kWh per day April-September and the first 16 kWh per day October-March.

The base service charge (a daily per-meter charge) is set to recover 50% of marginal customer costs. Therefore, the increase in the base service charge directly reflects an increase in customer costs.

The second block rate was increased with CPI inflation and the first block rate was set to cover the remainder of the revenue requirement. The result is that lower consumption customers will have a higher rate increase in percentage terms than higher use customers.

Low-income customers enrolled in the Utility Discount Program (UDP) receive a 60% rate discount; thus, UDP bills are calculated at 40% of the standard residential rates. Bill impacts for two example UDP customers are shown at the bottom of the table below.

Table E.2: Residential Rates and Bill Impacts

Residential - City			2016	2017	2018		
Number of meters:	326,151	First Block (\$/kWh)	\$0.0596	\$0.0701	\$0.0782		
		End-Block (\$/kWh)	\$0.1257	\$0.1288	\$0.1320		
		Base Service Charge (\$/month)	\$4.51	\$4.93	\$5.05		
Monthly Bills - Standard		kWh	2016	2017	Increase	2018	Increase
Multifamily Home	463		\$38.17	\$42.78	\$4.61	\$46.21	\$3.43
SF Home- Non-Electric Heat	634		\$58.41	\$63.68	\$5.27	\$67.74	\$4.06
SF Home- Electric Heat	841		\$84.41	\$90.33	\$5.92	\$95.05	\$4.72
High User	1,180		\$127.03	\$133.99	\$6.96	\$139.80	\$5.81
Monthly Bills - UDP*							
Multifamily Home	463		\$15.27	\$17.11	\$1.84	\$18.48	\$1.37
SF Home- Electric Heat	841		\$33.77	\$36.13	\$2.36	\$38.02	\$1.89

*UDP Rates are 40% of standard residential rates

Small General Service Rates

Small General Service customer rates include a single energy charge per kWh and a minimum charge. The minimum charge is set at the marginal customer cost per meter per day.

Table E.3: Small General Service Rates and Bill Impacts

Small General Service - City (< 50 kW)			2016	2017	2018		
Number of meters:	37,781	Energy (\$/kWh)	\$0.0848	\$0.0910	\$0.0960		
Monthly Bills		kWh	2016	2017	Increase	2018	Increase
Small Office	1,195		\$101	\$109	\$7	\$115	\$6
Car Wash	7,573		\$642	\$689	\$47	\$727	\$38
Investment Firm	8,833		\$749	\$804	\$55	\$848	\$44

Medium General Service Rates

Medium General Service rates include an energy charge per kWh, a demand charge per kW, and a minimum charge. The demand charge is levied on the customer's maximum kW use in a billing period. The minimum charge is set at the marginal customer cost per meter per day.

The 2017 and 2018 demand charges are higher than 2016 demand charges, reflecting an increase in the marginal cost of distribution services. For downtown network customers, the energy charge decreases in 2017 because of the increase in the demand charge. Energy charges are set to recover the balance of the revenue requirement for the class after revenue from the demand charge is taken into account.

Table E.4: Medium General Service Rates and Bill Impacts

Medium General Service - City (≥50 kW and < 1,000 kW)			2016	2017	2018		
Number of meters:	2,225		Energy (\$/kWh)	\$0.0675	\$0.0698	\$0.0740	
			Demand (\$/kW)	\$2.32	\$3.36	\$3.44	
Monthly Bills	Load Factor	kWh	2016	2017	Increase	2018	Increase
Office Building	20%	135,650	\$10,229	\$11,022	\$793	\$11,629	\$607
Apt. Complex	34%	216,300	\$15,946	\$17,046	\$1,101	\$18,001	\$955
Produce Co.	54%	50,705	\$3,668	\$3,894	\$227	\$4,116	\$221
Real Estate Dev.	82%	453,050	\$32,082	\$33,796	\$1,715	\$35,751	\$1,955
Medium Downtown Network (≥50 kW and < 1,000 kW)			2016	2017	2018		
Number of meters:	545		Energy (\$/kWh)	\$0.0832	\$0.0797	\$0.0852	
			Demand (\$/kW)	\$4.54	\$7.48	\$7.67	
Monthly Bills	Load Factor	kWh	2016	2017	Increase	2018	Increase
Theater	29%	78,840	\$8,028	\$8,702	\$675	\$9,197	\$495
Hotel	42%	89,220	\$8,370	\$8,671	\$301	\$9,202	\$530
Shopping Ctr.	44%	285,700	\$26,788	\$27,741	\$954	\$29,439	\$1,698
Office Building	66%	43,325	\$4,082	\$4,239	\$157	\$4,497	\$258

Large General Service and High Demand Rates

Large and High Demand General Service rate schedules have peak and off-peak energy charges per kWh and peak and off-peak demand charges per kW, as well as a minimum charge. Like the minimum charges of other non-residential rate schedules, this charge is set at the marginal customer cost per meter per day.

The peak demand charge is levied on the customer's maximum kW use during the peak time in a billing period. The off-peak demand charge is levied on the maximum kW use in the off-peak time, but only on those kW, if any, that exceed the maximum use in the peak time. The peak period is 6:00 a.m. to 10:00 p.m., Monday through Saturday, excluding major holidays. Peak energy charges are set at 1.5 times the off-peak charges, just as they are in the current rate schedules.

For downtown network customers, energy charges decrease in 2017 because of the increase in demand charges. Energy charges are set to recover the balance of the revenue requirement for the class after revenue from the demand charges is taken into account.

Table E.5: Large General Service Rates and Bill Impacts

Large General Service - City (>=1,000 kW and < 10,000 kW)				2016	2017	2018	
Number of meters:	81			Energy On-Peak (\$/kWh)	\$0.0767	\$0.0801	\$0.0848
				Energy Off-peak (\$/kWh)	\$0.0514	\$0.0533	\$0.0565
				Demand On-Peak (\$/kW)	\$2.08	\$3.05	\$3.12
				Demand Off-Peak (\$/kW)	\$0.22	\$0.27	\$0.27
Monthly Bills	Load Factor	kWh	2016	2017	Increase	2018	Increase
Cement	18%	218,316	\$17,369	\$19,361	\$1,992	\$20,333	\$972
Shipyards	35%	974,837	\$71,272	\$76,739	\$5,467	\$80,941	\$4,202
Hospital	69%	1,569,322	\$109,860	\$116,899	\$7,039	\$123,479	\$6,581
Large Downtown Network (>=1,000 kW)				2016	2017	2018	
Number of meters:	60			Energy On-Peak (\$/kWh)	\$0.0914	\$0.0875	\$0.0935
				Energy Off-peak (\$/kWh)	\$0.0612	\$0.0583	\$0.0624
				Demand On-Peak (\$/kW)	\$4.05	\$7.62	\$7.81
				Demand Off-Peak (\$/kW)	\$0.22	\$0.27	\$0.27
Monthly Bills	Load Factor	kWh	2016	2017	Increase	2018	Increase
Event Space	20%	250,567	\$24,713	\$27,606	\$2,893	\$29,152	\$1,537
Office Tower	43%	778,428	\$74,042	\$79,515	\$5,473	\$84,192	\$4,677
Hotel	67%	1,093,011	\$95,436	\$98,869	\$3,433	\$104,990	\$6,120

Table E.6: High Demand General Service Rates and Bill Impacts

High Demand General Service City (>= 10,000 kW)				2016	2017	2018	
Number of meters:	7			Energy On-Peak (\$/kWh)	\$0.0732	\$0.0746	\$0.0791
				Energy Off-peak (\$/kWh)	\$0.0491	\$0.0497	\$0.0527
				Demand On-Peak (\$/kW)	\$2.08	\$3.05	\$3.12
				Demand Off-Peak (\$/kW)	\$0.22	\$0.27	\$0.27
Monthly Bills	Load Factor	kWh	2016	2017	Increase	2018	Increase
Waste Treatment	45%	4,275,991	\$290,424	\$304,957	\$14,534	\$322,074	\$17,117
Education	67%	24,077,474	\$1,630,834	\$1,700,571	\$69,736	\$1,797,662	\$97,092
Glass Manufacturer	88%	7,462,299	\$493,371	\$512,697	\$19,326	\$542,164	\$29,467

Streetlights

Streetlight rates are unique because they typically include the cost of the fixture in the rate. The average monthly streetlight charge per fixture is rising slowly due to increases in capital, O&M and energy costs. Despite increases to the average cost per fixture, the General Fund streetlight bill (which represents about 85% of streetlights load) remains relatively stable because increasing rates are offset by the transition to lower cost streetlights due to the LED Conversion Program.

Table E.7: Streetlight Rate Increases

	2016	2017	% Increase	2018	% Increase
Streetlight Average Monthly Rate per Fixture	\$14.26	\$14.77	4%	\$15.68	6%
Annual General Fund Streetlight Bill (\$M)	\$11.79	\$11.47	-3%	\$11.98	4%

System Average Rate Increase with Updated Billing Determinants

The estimated system average rate increase has changed since the development of the strategic plan financial analysis, which sets the revenue requirement and associated rate trajectory projection. While revenue requirements are consistent with the strategic plan, the 2017 average rate increase needed to collect the revenue requirements is 6.8% as opposed to the 5.6% reported in the 2017-2022 Strategic Plan, the 2017-2018 Revenue Requirement Report and the 2017-2018 Cost of Service and Cost Allocation Report.

The development of rates requires billing determinants, which are detailed customer-rate-class-level sales forecasts. Billing determinants project residential block energy use, non-residential peaking demand, and time-of-use forecasts for large and high demand customers, among other things.

The billing determinants forecast incorporated new 2015 customer billing data, which unexpectedly revealed large shifts in energy consumption patterns, such as significant declines in peaking demand for larger commercial and industrial customers, and much lower residential second block energy use. As a result, the new billing determinants forecast reduced retail revenue expectations compared to the Strategic Plan even though the MWh of expected retail sales did not change.

The below table illustrates how the average rate change is different between the Adopted Rates and the Strategic Plan. Note, the 2017 retail sales (load forecast), 2017 revenue requirement, and the associated 2017 average rate did not change from what was in the Strategic Plan.

Table E.8: 2017 Comparison of Adopted Rates and the Strategic Plan

	Strategic Plan	Adopted Rates
Retail Sales, GWh	9,432	9,432
Revenue Forecast (\$ millions)		
2017 revenue projection given no rate change (rates as of January 1, 2016)	\$807	\$797
2017 revenue projection with proposed rates (revenue requirement)	\$852	\$852
Average Rate, cents/kWh		
With current 2016 rates	8.55	8.45
With proposed rates	9.03	9.03
Average Rate Change	5.6%	6.8%

The new billing determinants forecast showed that even with the same overall retail sales forecast, current rates would yield only \$797 million, which is \$10 million less than the projection from the

Strategic Plan. However, to support all operations and initiatives in the Strategic Plan, rates must be designed to recover the \$852 million revenue requirement. With the new billing determinants forecast, this requires slightly higher change in rates to meet the revenue requirement. As a result, the estimated average rate increase for 2017 in the Strategic Plan was 5.6%, and the average rate increase is now projected at 6.8%.

Table E.9: Summary of Average Rate Changes

2017	Total	Residential	Small	Medium	Large	High Demand
All areas	6.8%	7.6%	7.3%	6.0%	6.2%	5.9%
City of Seattle	7.2%	7.8%	7.2%	6.6%	6.9%	5.6%
Network	4.7%			4.0%	5.4%	
Franchise Cities	7.0%	7.0%	7.7%	6.7%	6.4%	7.4%
2018	Total	Residential	Small	Medium	Large	High Demand
All areas	5.6%	5.7%	5.5%	5.6%	5.7%	5.6%
City of Seattle	5.6%	5.7%	5.5%	5.5%	5.5%	5.7%
Network	6.0%			6.0%	6.0%	
Franchise Cities	5.5%	5.7%	5.4%	5.5%	5.4%	5.6%

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, 2017, and on January 1, 2018. The RDR is the third of three reports that comprise the documentation for the 2017-2018 Rate Review, and 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.

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%.

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 billing determinants for a particular class, the targeted revenue requirement will be collected. A complete listing of the 2017 and 2018 billing determinants can be found in Appendix C.

In the following chapters, bill impacts resulting from the 2017-2018 rate changes are shown for a selection of customers in each rate class. Since future electricity use is not forecast at the individual customer level, actual customer use from 2015 is used.

Rate Class Definitions and Disaggregation of Suburban Jurisdictions

As of this rate review, all suburban franchise cities except Tukwila have new franchise agreements with simplified and more consistent rate differential terms. Tukwila’s franchise agreement continues to have the older rate differential terms. (See the COSACAR Chapter 4.2.2 for details.)

Previously, franchise cities were aggregated by rate differential type, and rates were set separately for each group. Under this method, the resulting rates might be slightly different depending on the customer make up in each franchise city. To simplify the rate process and yield more consistent rate structures, starting with this rate review, all franchise cities are aggregated together for rate-setting purposes. Under this methodology, the only differences in franchise city rates are the agreed-on rate differential (6%, 8%) and any undergrounding charges.

Non-franchise suburban jurisdictions (the “Suburban” rate class) include portions of Renton, Normandy Park and unincorporated King County. Starting in 2017, Suburban customers are aggregated with non-network City customers and assigned the same rates. Previously they were grouped with the franchise cities and assigned an arbitrary differential. Bill impacts for Suburban customers are shown separately from City customers because the two have different 2016 rates.

Table 1.1 and 1.2 show the franchise rate differentials for the rate design categories. The effective rate differential for each rate class in Tukwila is calculated by dividing the franchise adjustment by the total revenue requirement before the franchise adjustment.

Table 1.1: Rate Design Categories

Rate Design Category	Franchise Rate Differential
Downtown Network	NA
City and Suburban	NA
Burien and Lake Forest Park	6%
Shoreline and SeaTac	8%
Tukwila	See Below Table

Table 1.2: Tukwila Effective Rate Differentials

	Residential	Small	Medium	Large	High Demand
2017	7.54%	7.77%	7.95%	7.96%	8.07%
2018	7.49%	7.73%	7.90%	7.92%	8.03%

Since the 2015-2016 rate review, two new undergrounding charges have been added to Shoreline rate schedules to recover the costs of phases 3A and 3B of the Aurora Avenue North undergrounding project.

Downtown Network Demand Charges

Peak demand charges are set to recover a portion of the marginal cost of distribution. In the 2015-2016 rate case, Downtown Network peak demand charges were set to recover 15% of the

marginal cost of distribution. In this rate case, Downtown Network peak demand charges are set to recover 20% of the marginal cost of distribution, the same percentage as non-network customers. The peak demand charges for Downtown Network customers were set at a lower percentage in the previous rate case to help mitigate bill impacts for Downtown Network customers.

Differences from the Cost of Service

Average 2017 and 2018 rates 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

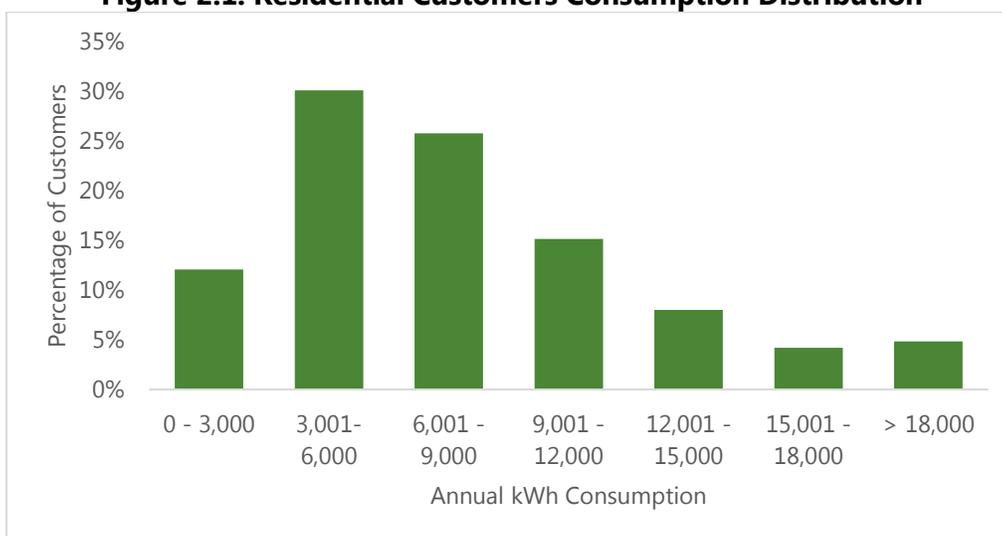
In 2015 there were on average 382,597 residential customers, of which about 5.6% or around 22,700 participated in the Utility Discount Program (UDP). In the past, residential customers were separated into two different rate classes, "Assisted" (UDP) and "Standard". This was required by the billing system to bill at two different rates. However, the new billing system implemented in September 2016 allows the rate discount to be applied as a rider to residential rates, so separate rate schedules are no longer needed and have been eliminated.

Table 2.1 displays average monthly energy consumption by jurisdiction for residential customers, and Figure 2.1 shows the distribution of residential customers based on their annual consumption in kWh. All data is 2015.

Table 2.1: Residential Customer Statistics

Jurisdiction	Percentage of Customers	Number of Customers	Average Monthly kWh
City and Suburban	86.2%	329,850	607
Shoreline and SeaTac	6.3%	24,041	793
Tukwila	1.5%	5,920	762
Burien and Lake Forest Park	6.0%	22,785	819
All		382,597	634

Figure 2.1: Residential Customers Consumption Distribution



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.

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 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 for all residential customers by taking 50% of the marginal customer service cost (including taxes), dividing this by the number of residential meters, and then dividing by 365 days. More information about the derivation of the marginal customer service cost can be found in Chapter 3.5 of the COSACAR.

$$2017 \text{ Base Service Charge} = \frac{(0.5 \times \$47,339,520)}{(365 \times 399,976)} = \$0.1621 \text{ per day}$$

$$2018 \text{ Base Service Charge} = \frac{(0.5 \times \$48,504,327)}{(365 \times 399,991)} = \$0.1661 \text{ per day}$$

The base service charge for each of the franchise cities is calculated by escalating the base service charge calculated for all customers (above) by the appropriate rate differential. This differs from the methodology used in the last rate case which set the base service charge equal for all jurisdictions. This simplification more appropriately distributes the additional cost attributable to the franchise rate differential across energy charges and the base service charge.

$$\text{Franchise City Base Service Charge} = \text{Base Service Charge} \times \text{Franchise Rate Differential \%}$$

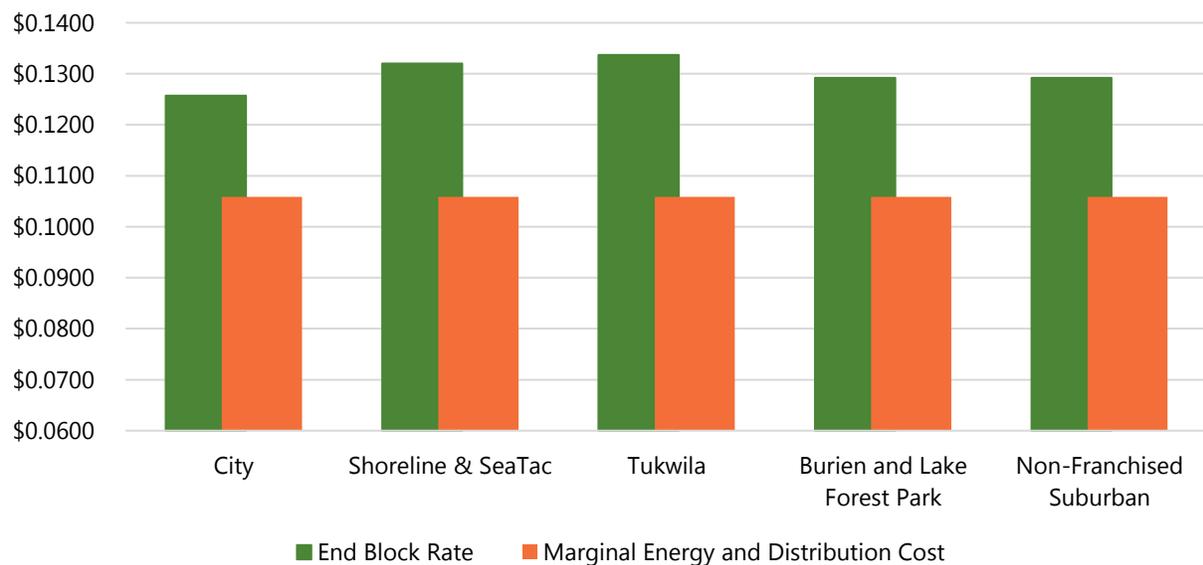
Table 2.2: Base Service Charge by Rate Jurisdiction

	City and Suburban	Tukwila	Burien and Lake Forest Park	Shoreline and SeaTac
Franchise Rate Differential %	0.00%	7.54%	6.00%	8.00%
2017 Base Service Charge	\$0.1621	\$0.1743	\$0.1718	\$0.1751
2018 Base Service Charge	\$0.1661	\$0.1785	\$0.1761	\$0.1794

First and End Block Prices

City Light policy aims to set the end block rate at the marginal cost of energy¹ which reflects the cost to meet incremental energy requirements. Figure 2.2 displays the 2016 end block rate compared to the calculated 2017 marginal cost of energy for the different residential rate jurisdictions. Figure 2.2 also shows that the adopted 2016 end block rate is well above the 2017 marginal cost of energy, in part, due to the recent decline in wholesale electricity prices, outlined in Section 3.3 of the COSACAR.

Figure 2.2: End Block Rate vs. Marginal Cost of Energy



To bring the end block rate closer to the marginal cost of energy, for 2017 and 2018 the end-block rate was increased only by CPI. This effectively holds the end block rate constant, in real terms. The first block rate was set to a level sufficient to collect the remaining revenue requirement after deducting the expected base service charge and second block revenues.

The methodology used to calculate the first and end-block rates for the franchise cities was adjusted to improve simplicity and consistency. All five franchise cities' revenue requirements and billing determinants were aggregated together and based on these, a single set of energy rates was created. These rates were then escalated by the appropriate rate differential percentage for each franchise city.

¹ Marginal Energy Cost for Residential Rate Design is the sum of the Marginal Cost of Energy and the Marginal Cost of Distribution for residential customers divided by the expected residential load for the respective year.

Billing Determinants and Revenue Requirements

A summary of the billing determinants and revenue requirements used to derive 2017-2018 residential rates is provided in Table 2.3. In addition, Table 2.4 shows how these rates meet the target revenue requirement for residential customers.

Table 2.3: Billing Determinants

			Franchise Cities Breakout		
2017	City and Suburban	Franchise Cities	Tukwila	Burien and Lake Forest Park	Shoreline and SeaTac
First Block kWh	1,384,411,363	238,779,763	26,240,853	103,687,715	108,851,195
End Block kWh	1,190,024,454	304,384,408	31,797,692	136,213,684	136,373,033
Total	2,574,435,818	543,164,172	58,038,545	239,901,398	245,224,228
Number of Meters	344,523	55,453	6,278	23,957	25,218
			Franchise Cities Breakout		
2018	City and Suburban	Franchise Cities	Tukwila	Burien and Lake Forest Park	Shoreline and SeaTac
First Block kWh	1,384,464,079	238,788,363	26,240,853	103,692,002	108,855,507
End Block kWh	1,184,108,740	303,138,811	31,665,515	135,663,047	135,810,250
Total	2,568,572,819	541,927,174	57,906,369	239,355,049	244,665,757
Number of Meters	344,536	55,455	6,278	23,958	25,219

Table 2.4: Revenue Requirements

2017	City and Suburban	Franchise Cities
Target Revenue Requirement ²	\$270,725,044	\$62,125,285
Revenue from Rates	\$270,710,568	\$62,124,564
Difference	(\$14,476)	(\$721)
2018	City and Suburban	Franchise Cities
Target Revenue Requirement	\$285,503,505	\$65,497,050
Revenue from Rates	\$285,457,076	\$65,501,952
Difference	(\$46,429)	\$4,902

² The revenue requirement for grouped franchise cities includes rate differential revenue

Table 2.5: Energy Charges by Rate Jurisdiction

	Franchise Cities Breakout				
	City and Suburban	Franchise Cities	Tukwila	Burien and Lake Forest Park	Shoreline and SeaTac
Franchise Differential	0.00%	0.00%	7.53%	6.00%	8.00%
2017					
First Block Rate	\$0.0701	\$0.0668	\$0.0719	\$0.0708	\$0.0722
End Block Rate	\$0.1288	\$0.1274	\$0.1370	\$0.1351	\$0.1376
2018					
First Block Rate	\$0.0782	\$0.0764	\$0.0821	\$0.0810	\$0.0825
End Block Rate	\$0.1320	\$0.1306	\$0.1403	\$0.1384	\$0.1410

Rates and Customer Bill Impacts

Tables 2.6 through 2.10 show 2017-2018 rates and customer bill impacts for residential customers in each jurisdiction. In 2017 and 2018 customers in all jurisdictions across all levels of energy consumption are expected to see an increase in their monthly bills. Percentage bill impacts are higher for low users due to the first-block rate increasing by a larger amount relative to the end-block.

Table 2.6: Residential City (RSC) Rates and Bill Impacts

	Block Limit	Current Rate	2017 Rate	2018 Rate
Summer				
First Block (\$/kWh)	1-300 kWh	\$0.0596	\$0.0701	\$0.0782
End-Block (\$/kWh)	over 300 kWh	\$0.1257	\$0.1288	\$0.1320
Winter				
First Block (\$/kWh)	1-480 kWh	\$0.0596	\$0.0701	\$0.0782
End-Block (\$/kWh)	over 480 kWh	\$0.1257	\$0.1288	\$0.1320
Base Service Charge (\$/day)		\$0.1483	\$0.1621	\$0.1661

Housing Type	Usage	Annual Usage (kWh)	Current Monthly Bill	2017			2018		
				Monthly Bill	\$ Change	% Change	Monthly Bill	\$ Change	% Change
Apartment	Non-Electric Heat	2,444	\$16.65	\$19.21	\$2.56	15.4%	\$20.98	\$1.77	9.2%
Apartment	Electric Heat	5,560	\$38.17	\$42.78	\$4.61	12.1%	\$46.21	\$3.43	8.0%
Single Family Home	Non-Electric Heat	7,606	\$58.41	\$63.68	\$5.27	9.0%	\$67.74	\$4.06	6.4%
Single Family Home	Electric Heat	10,089	\$84.41	\$90.33	\$5.91	7.0%	\$95.05	\$4.72	5.2%
Single Family Home	High User	14,157	\$127.03	\$133.99	\$6.96	5.5%	\$139.80	\$5.81	4.3%

Table 2.7: Residential Shoreline (RSH) and SeaTac (RSE) Rates and Bill Impacts

	Block Limit	Current Rate	2017 Rate	2018 Rate
Summer				
First Block (\$/kWh)	1-300 kWh	\$0.0664	\$0.0722	\$0.0825
End-Block (\$/kWh)	over 300 kWh	\$0.1320	\$0.1376	\$0.1410
Winter				
First Block (\$/kWh)	1-480 kWh	\$0.0664	\$0.0722	\$0.0825
End-Block (\$/kWh)	over 480 kWh	\$0.1320	\$0.1376	\$0.1410
Base Service Charge (\$/day)		\$0.1483	\$0.1751	\$0.1794

Housing Type	Usage	Annual Usage (kWh)	Current Monthly Bill	2017			2018		
				Monthly Bill	\$ Change	% Change	Monthly Bill	\$ Change	% Change
Apartment	Non-Electric Heat	2,444	\$18.03	\$20.03	\$2.00	11.1%	\$22.26	\$2.23	11.1%
Apartment	Electric Heat	5,560	\$41.28	\$44.76	\$3.48	8.4%	\$49.04	\$4.27	9.5%
Single Family Home	Non-Electric Heat	7,606	\$62.60	\$67.04	\$4.44	7.1%	\$72.02	\$4.98	7.4%
Single Family Home	Electric Heat	10,089	\$89.91	\$95.51	\$5.60	6.2%	\$101.19	\$5.68	5.9%
Single Family Home	High User	14,157	\$134.66	\$142.16	\$7.50	5.6%	\$148.99	\$6.83	4.8%

Table 2.8: Residential Tukwila (RST) Rates and Bill Impacts

	Block Limit	Current Rate	2017 Rate	2018 Rate
Summer				
First Block (\$/kWh)	1-300 kWh	\$0.0585	\$0.0719	\$0.0821
End-Block (\$/kWh)	over 300 kWh	\$0.1337	\$0.1370	\$0.1403
Winter				
First Block (\$/kWh)	1-480 kWh	\$0.0585	\$0.0719	\$0.0821
End-Block (\$/kWh)	over 480 kWh	\$0.1337	\$0.1370	\$0.1403
Base Service Charge (\$/day)		\$0.1483	\$0.1743	\$0.1785

Housing Type	Usage	Annual Usage (kWh)	Current Monthly Bill	2017			2018		
				Monthly Bill	\$ Change	% Change	Monthly Bill	\$ Change	% Change
Apartment	Non-Electric Heat	2,444	\$16.42	\$19.94	\$3.52	21.4%	\$22.15	\$2.20	11.1%
Apartment	Electric Heat	5,560	\$38.50	\$44.57	\$6.08	15.8%	\$48.80	\$4.22	9.5%
Single Family Home	Non-Electric Heat	7,606	\$59.93	\$66.75	\$6.82	11.4%	\$71.66	\$4.91	7.4%
Single Family Home	Electric Heat	10,089	\$87.59	\$95.10	\$7.51	8.6%	\$100.69	\$5.59	5.9%
Single Family Home	High User	14,157	\$132.92	\$141.54	\$8.62	6.5%	\$148.25	\$6.71	4.7%

Table 2.9: Residential Burien (RSB) and Lake Forest Park (RSL) Rates and Bill Impacts

	Block Limit	Current Rate	2017 Rate	2018 Rate
Summer				
First Block (\$/kWh)	1-300 kWh	\$0.0623	\$0.0708	\$0.0810
End-Block (\$/kWh)	over 300 kWh	\$0.1292	\$0.1351	\$0.1384
Winter				
First Block (\$/kWh)	1-480 kWh	\$0.0623	\$0.0708	\$0.0810
End-Block (\$/kWh)	over 480 kWh	\$0.1292	\$0.1351	\$0.1384
Base Service Charge (\$/day)		\$0.1483	\$0.1718	\$0.1761

Housing Type	Usage	Annual Usage (kWh)	Current Monthly Bill	2017			2018		
				Monthly Bill	\$ Change	% Change	Monthly Bill	\$ Change	% Change
Apartment	Non-Electric Heat	2,444	\$17.20	\$19.64	\$2.45	14.2%	\$21.85	\$2.21	11.2%
Apartment	Electric Heat	5,560	\$39.50	\$43.92	\$4.42	11.2%	\$48.14	\$4.22	9.6%
Single Family Home	Non-Electric Heat	7,606	\$60.31	\$65.79	\$5.47	9.1%	\$70.70	\$4.91	7.5%
Single Family Home	Electric Heat	10,089	\$87.05	\$93.74	\$6.69	7.7%	\$99.33	\$5.59	6.0%
Single Family Home	High User	14,157	\$130.85	\$139.54	\$8.69	6.6%	\$146.25	\$6.71	4.8%

Table 2.10: Residential Suburban (RSS) Rates and Bill Impacts

	Block Limit	Current Rate	2017 Rate	2018 Rate
Summer				
First Block (\$/kWh)	1-300 kWh	\$0.0623	\$0.0701	\$0.0782
End-Block (\$/kWh)	over 300 kWh	\$0.1292	\$0.1288	\$0.1320
Winter				
First Block (\$/kWh)	1-480 kWh	\$0.0623	\$0.0701	\$0.0782
End-Block (\$/kWh)	over 480 kWh	\$0.1292	\$0.1288	\$0.1320
Base Service Charge (\$/day)		\$0.1483	\$0.1621	\$0.1661

Housing Type	Usage	Annual Usage (kWh)	Current Monthly Bill	2017			2018		
				Monthly Bill	\$ Change	% Change	Monthly Bill	\$ Change	% Change
Apartment	Non-Electric Heat	2,444	\$17.20	\$19.21	\$2.01	11.7%	\$20.98	\$1.77	9.2%
Apartment	Electric Heat	5,560	\$39.50	\$42.78	\$3.28	8.3%	\$46.21	\$3.43	8.0%
Single Family Home	Non-Electric Heat	7,606	\$60.31	\$63.68	\$3.37	5.6%	\$67.74	\$4.06	6.4%
Single Family Home	Electric Heat	10,089	\$87.05	\$90.33	\$3.28	3.8%	\$95.05	\$4.72	5.2%
Single Family Home	High User	14,157	\$130.85	\$133.99	\$3.15	2.4%	\$139.80	\$5.81	4.3%

Utility Discount Program Rates

Customers participating in the Utility Discount Program (UDP) receive a 60% discount on their bill. Table 2.11 shows the 2017-2018 effective rates for UDP customers and provides a range of example bill impacts for City UDP customers.

Table 2.11: UDP 2017-2018 Rates by Jurisdiction and Monthly Bill Impacts*

	City and Suburban	Shoreline & SeaTac	Tukwila	Burien & Lake Forest Park
2017				
Base Service Charge \$/day	\$0.0648	\$0.0700	\$0.0697	\$0.0687
First Block Rate, \$/kWh	\$0.0280	\$0.0289	\$0.0288	\$0.0283
End Block Rate, \$/kWh	\$0.0515	\$0.0550	\$0.0548	\$0.0540
2018				
Base Service Charge \$/day	\$0.0664	\$0.0718	\$0.0714	\$0.0704
First Block Rate, \$/kWh	\$0.0313	\$0.0330	\$0.0328	\$0.0324
End Block Rate, \$/kWh	\$0.0528	\$0.0564	\$0.0561	\$0.0554

Housing Type	Usage	Annual Usage (kWh)	Current Monthly Bill	2017			2018		
				Monthly Bill	\$ Change	% Change	Monthly Bill	\$ Change	% Change
Apartment	Non-Electric Heat	2,444	\$6.66	\$7.68	\$1.02	15.4%	\$8.39	\$0.71	9.2%
Apartment	Electric Heat	5,560	\$15.27	\$17.11	\$1.84	12.1%	\$18.48	\$1.37	8.0%
Single Family Home	Non-Electric Heat	7,606	\$23.36	\$25.47	\$2.11	9.0%	\$27.10	\$1.62	6.4%
Single Family Home	Electric Heat	10,089	\$33.77	\$36.13	\$2.37	7.0%	\$38.02	\$1.89	5.2%
Single Family Home	High User	14,157	\$50.81	\$53.60	\$2.79	5.5%	\$55.92	\$2.32	4.3%

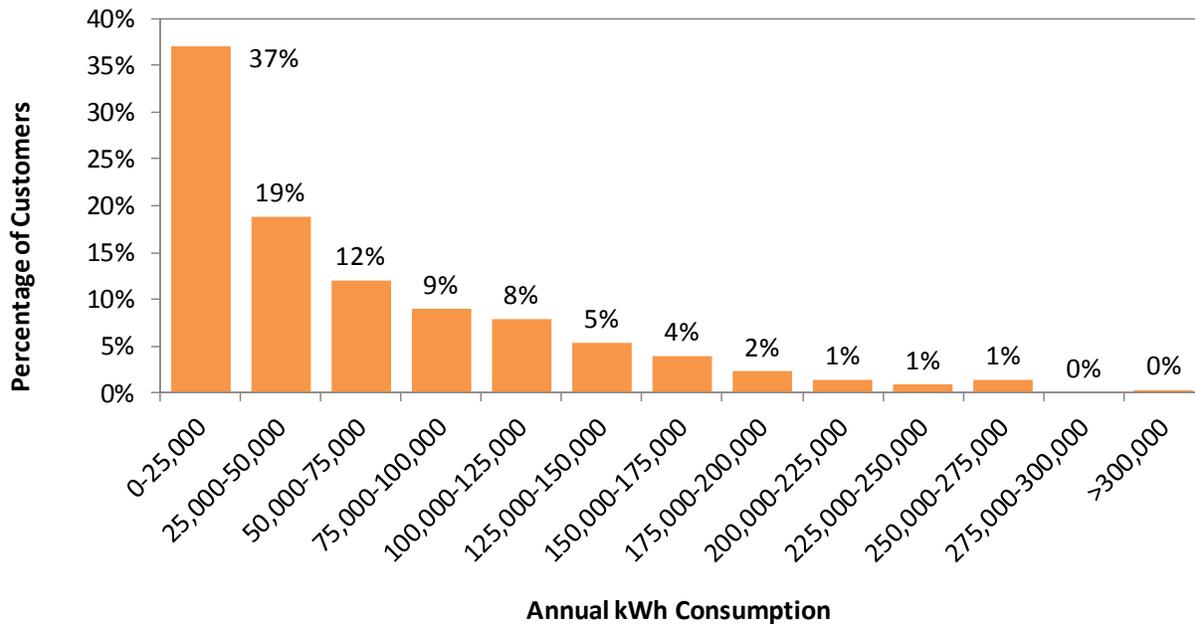
* For City UDP customers

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 44,194 Small General Service meters in 2015. 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 of energy consumption. Rates for franchise cities were calculated by first deriving a base franchise charge by combining the revenue requirements for all franchise cities, subtracting out the franchise fees and then dividing by the total energy consumption. Finally, a differential was applied per the franchise agreement terms (8.0% for Shoreline and SeaTac, 6.0% for Burien and Lake Forest Park and around 7.7% for Tukwila). Table 3.1 shows the revenue requirements, forecast consumption and resulting energy charges for Small General Service customers.

Table 3.1: Small General Service Rates

	City, Downtown Network & Suburban	Shoreline & SeaTac	Tukwila	Burien & Lake Forest Park
Forecast Consumption (kWh)	\$1,067,009,209	\$49,133,244	\$28,089,702	\$54,567,007
2017	\$1,072,278,961	\$49,375,904	\$28,228,432	\$54,836,503
2018				
Energy Charge (\$/kWh)				
2017	\$0.0910	\$0.0955	\$0.0953	\$0.0937
2018	\$0.0960	\$0.1007	\$0.1004	\$0.0988
	City, Downtown Network & Suburban	Franchise Cities		
Target Revenue Requirements				
2017	\$97,088,433	\$12,485,243		
2018	\$102,900,658	\$13,221,234		
Revenue from Adopted Rates				
2017	\$97,097,838	\$12,482,102		
2018	\$102,938,780	\$13,224,135		
Difference (from Rounding)				
2017	\$9,405	-\$3,141		
2018	\$38,122	\$2,900		

Minimum Charge

All general service rate classes have a minimum charge that is equal to the marginal customer cost per meter per day including taxes. Marginal customer costs have increased since the last cost of service study, resulting in a higher minimum charge in 2017 and 2018. Table 3.2 shows the minimum charges for City and Suburban Small General Service customers. Franchise customers pay a slightly higher minimum charge that reflects each franchise city’s respective rate differential.

Table 3.2: Small General Service Minimum Charge

	Current	2017	% Change	2018	% Change
Minimum Charge \$/day	\$0.26	\$0.31	19.2%	\$0.32	3.2%

Rates and Customer Bill Impacts

Table 3.3 shows the percentage change to the energy rate for the Small General Service rate schedules. Suburban customers have the lowest rate increase in 2017 because they no longer have a rate differential. In 2018, all Small General Service rate classes will have an average rate increase of 5.4% to 5.5%.

Table 3.3: Summary of Change to Small General Service Rates

	City & Downtown Network	Shoreline & SeaTac	Tukwila	Burien & Lake Forest Park	Suburban
2017	7.3%	7.6%	8.0%	7.6%	4.5%
2018	5.5%	5.4%	5.4%	5.4%	5.5%

Tables 3.4-3.8 show customer bill impacts for a selection of Small General Service customers. This class has only a single energy charge and the impact on most customer bills is the same on a percentage basis. The exception is very low-use customers who are charged only or primarily a minimum charge. Since the minimum charge will increase significantly more than the energy charge in 2017 but less than the energy charge in 2018, these customers will see larger bill increases in 2017 and smaller increases in 2018.

Table 3.4: Small City (SMC) & Downtown Network (SMD) Rates and Bill Impacts

	Current	2017	% Change	2018	% Change
Energy (\$/kWh)	\$0.0848	\$0.0910	7.3%	\$0.0960	5.5%
Minimum Charge (\$/day)	\$0.26	\$0.31	19.2%	\$0.32	3.2%
Average Rate (\$/kWh)	\$0.0848	\$0.0910	7.3%	\$0.0960	5.5%

Customer Description	Annual Use (kWh)	Current Monthly Bill	2017			2018		
			Monthly Bill	\$ Change	% Change	Monthly Bill	\$ Change	% Change
Apt. Lobby	1,285	\$9.54	\$10.75	\$1.20	12.6%	\$11.21	\$0.47	4.4%
Small Office	14,339	\$101.33	\$108.74	\$7.41	7.3%	\$114.71	\$5.97	5.5%
Condo Assn.	16,850	\$119.07	\$127.78	\$8.71	7.3%	\$134.80	\$7.02	5.5%
Salon	12,240	\$86.50	\$92.82	\$6.32	7.3%	\$97.92	\$5.10	5.5%
Restaurant	22,457	\$158.70	\$170.30	\$11.60	7.3%	\$179.66	\$9.36	5.5%
Coffee Shop	90,171	\$637.21	\$683.80	\$46.59	7.3%	\$721.37	\$37.57	5.5%
Car Wash	90,880	\$642.22	\$689.17	\$46.95	7.3%	\$727.04	\$37.87	5.5%
Mini Storage	100,183	\$707.96	\$759.72	\$51.76	7.3%	\$801.46	\$41.74	5.5%
Investment Co.	106,000	\$749.07	\$803.83	\$54.77	7.3%	\$848.00	\$44.17	5.5%
Retail Store	177,846	\$1,256.78	\$1,348.67	\$91.89	7.3%	\$1,422.77	\$74.10	5.5%
Housing Group	241,440	\$1,706.18	\$1,830.92	\$124.74	7.3%	\$1,931.52	\$100.60	5.5%

Table 3.5: Small Shoreline (SMH) & SeaTac (SME) Rates and Bill Impacts

	Current	2017	% Change	2018	% Change
Energy (\$/kWh)	\$0.0887	\$0.0955	7.7%	\$0.1007	5.4%
Minimum Charge (\$/day)	\$0.26	\$0.33	26.9%	\$0.34	3.0%
Average Rate (\$/kWh)	\$0.0887	\$0.0955	7.7%	\$0.1007	5.4%

Customer Description	Annual Use (kWh)	Current Monthly Bill	2017			2018		
			Monthly Bill	\$ Change	% Change	Monthly Bill	\$ Change	% Change
Retail Store	265	\$6.93	\$8.27	\$1.33	19.2%	\$8.53	\$0.27	3.2%
Dentist	17,243	\$127.45	\$137.23	\$9.77	7.7%	\$144.70	\$7.47	5.4%
Construction	23,560	\$174.15	\$187.50	\$13.35	7.7%	\$197.71	\$10.21	5.4%
Fire Station	82,160	\$607.30	\$653.86	\$46.56	7.7%	\$689.46	\$35.60	5.4%
Car Dealership	124,240	\$918.34	\$988.74	\$70.40	7.7%	\$1,042.58	\$53.84	5.4%
Restaurant	200,120	\$1,479.22	\$1,592.62	\$113.40	7.7%	\$1,679.34	\$86.72	5.4%
School	199,000	\$1,470.94	\$1,583.71	\$112.77	7.7%	\$1,669.94	\$86.23	5.4%

Table 3.6: Small Tukwila (SMT) Rates and Bill Impacts

	Current	2017	% Change	2018	% Change
Energy (\$/kWh)	\$0.0882	\$0.0953	8.0%	\$0.1004	5.4%
Minimum Charge (\$/day)	\$0.26	\$0.33	26.9%	\$0.34	3.0%
Average Rate (\$/kWh)	\$0.0882	\$0.0953	8.0%	\$0.1004	5.4%

			2017			2018		
Customer Description	Annual Use (kWh)	Current Monthly Bill	Monthly Bill	\$ Change	% Change	Monthly Bill	\$ Change	% Change
Security Co.	2,140	\$15.73	\$17.00	\$1.27	8.0%	\$17.90	\$0.91	5.4%
Laundromat	17,267	\$126.91	\$137.13	\$10.22	8.0%	\$144.47	\$7.34	5.4%
Insurance Co.	26,426	\$194.23	\$209.87	\$15.64	8.0%	\$221.10	\$11.23	5.4%
Fire Station	53,600	\$393.96	\$425.67	\$31.71	8.0%	\$448.45	\$22.78	5.4%
Printing Co.	82,391	\$605.57	\$654.32	\$48.75	8.0%	\$689.34	\$35.02	5.4%
Small Store	241,160	\$1,772.53	\$1,915.21	\$142.69	8.0%	\$2,017.71	\$102.49	5.4%
Fast Food Rest.	269,240	\$1,978.91	\$2,138.21	\$159.30	8.0%	\$2,252.64	\$114.43	5.4%

Table 3.7: Small Burien (SMB) & Lake Forest Park (SML) Rates and Bill Impacts

	Current	2017	% Change	2018	% Change
Energy (\$/kWh)	\$0.0871	\$0.0937	7.6%	\$0.0988	5.4%
Minimum Charge (\$/day)	\$0.26	\$0.33	26.9%	\$0.33	0%
Average Rate (\$/kWh)	\$0.0871	\$0.0937	7.6%	\$0.0988	5.4%

			2017			2018		
Customer Description	Annual Use (kWh)	Current Monthly Bill	Monthly Bill	\$ Change	% Change	Monthly Bill	\$ Change	% Change
Utility	132	\$7.89	\$9.40	\$1.52	19.2%	\$9.71	\$0.30	3.2%
Apt Building	3,267	\$23.71	\$25.51	\$1.80	7.6%	\$26.90	\$1.39	5.4%
Retail Store	38,010	\$275.89	\$296.79	\$20.91	7.6%	\$312.95	\$16.15	5.4%
Tire Store	41,040	\$297.88	\$320.45	\$22.57	7.6%	\$337.90	\$17.44	5.4%
Financial Co.	56,840	\$412.56	\$443.83	\$31.26	7.6%	\$467.98	\$24.16	5.4%
Law Office	52,970	\$384.47	\$413.61	\$29.13	7.6%	\$436.12	\$22.51	5.4%
Petroleum Co.	245,040	\$1,778.58	\$1,913.35	\$134.77	7.6%	\$2,017.50	\$104.14	5.4%

Table 3.8: Small Suburban (SMS) Rates and Bill Impacts

	Current	2017	% Change	2018	% Change
Energy (\$/kWh)	\$0.0871	\$0.0910	4.5%	\$0.0960	5.5%
Minimum Charge (\$/day)	\$0.26	\$0.31	19.2%	\$0.32	3.2%
Average Rate (\$/kWh)	\$0.0871	\$0.0910	4.5%	\$0.0960	5.5%

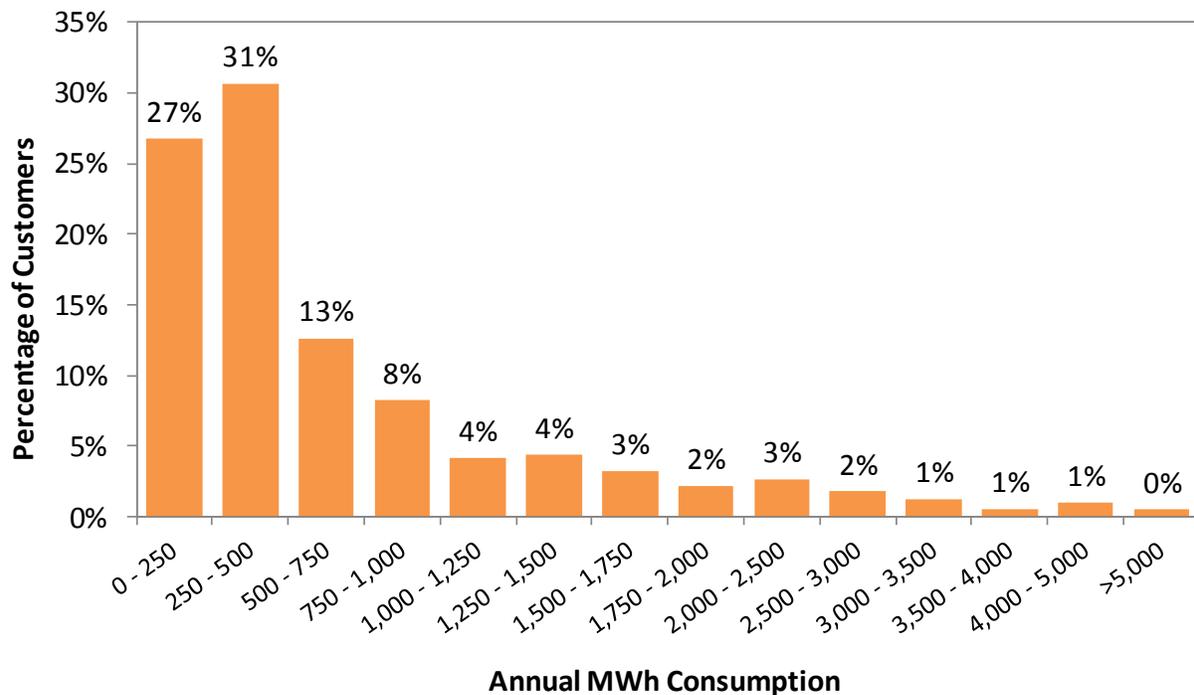
			2017			2018		
Customer Description	Annual Use (kWh)	Current Monthly Bill	Monthly Bill	\$ Change	% Change	Monthly Bill	\$ Change	% Change
Public Storage	548	\$3.98	\$4.34	\$0.36	9.1%	\$4.48	\$0.14	3.2%
Grocery Store	195,160	\$1,416.54	\$1,479.96	\$63.43	4.5%	\$1,561.28	\$81.32	5.5%

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 3,192 Medium General Service meters in 2015. 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 2017-2018 rates is similar to the previous rate review, except for a change in the derivation of the network demand charge, which is discussed below.

Demand Charges

The 2017-2018 rate design sets demand charges to collect 20% of the marginal cost of distribution including taxes for all customers. The 2015-2016 rate design had set demand charges 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. Therefore, the 2017-2018 rate design increases demand charges for network customers by 5% of the marginal cost of distribution including taxes relative to the way that they were set in the 2015-2016 rate design.

Table 4.1 illustrates how demand charges are set to recover these allocated marginal costs, given the forecast billing demand for each year, prior to the addition of the rate differential for suburban franchise customers.

Table 4.1: Medium General Service Demand Charge* Calculations

	2017		2018	
	Network	Non-Network	Network	Non-Network
Marginal Distribution Costs (including taxes)	\$46,755,984	\$82,133,134	\$47,930,563	\$84,193,590
Percentage of MC Collected with Demand Charge	20%	20%	20%	20%
Revenue to be Collected with Demand Charge	\$9,351,197	\$16,426,627	\$9,586,113	\$16,838,718
Billing Demand (kW)	\$1,250,312	\$4,887,971	\$1,250,312	\$4,887,971
Demand Charge (\$/kW)	\$7.480	\$3.360	\$7.670	\$3.440

*Base charges; does not include franchise differentials.

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 illustrates how energy charges are designed to recover all remaining revenue requirement, prior to the addition of the rate differential for suburban franchise customers.

Table 4.2: Medium General Service Energy Charge* Calculations

	2017		2018	
	Network	Non-Network	Network	Non-Network
Total Revenue Requirement	\$49,780,219	\$149,355,761	\$53,038,206	\$158,370,203
Revenue from (rounded) Demand Charge	\$9,352,334	\$16,423,583	\$9,589,893	\$16,814,621
Energy Consumption (kWh)	507,328,466	1,904,426,142	509,909,274	1,914,114,066
Energy Rate (\$/kWh)	\$0.0797	\$0.0698	\$0.0852	\$0.0740

*Before franchise differential

Table 4.3 shows how the 2017-2018 energy and demand charges will collect the targeted revenue requirements, after the addition of the suburban franchise adder; the small differences are due to rounding of rates.

Table 4.3: 2017 and 2018 Medium General Service Rate Design

2017						
	All Customers	Downtown Network	City and Suburban	Shoreline	Tukwila	Burien and Lake Forest Park
Billing Determinants						
kWh	2,411,754,608	507,328,466	1,667,795,148	79,154,255	102,632,903	54,843,836
kW	6,138,283	1,250,312	4,295,205	217,934	235,747	139,084
Franchise Differential				8.00%	7.95%	6.00%
Rates						
Energy Charge (\$/kWh)		\$0.0797	\$0.0698	\$0.0754	\$0.0753	\$0.0740
Demand Charge (\$/kW)		\$7.48	\$3.36	\$3.63	\$3.63	\$3.56
Revenue						
Energy	\$174,601,112	\$40,434,079	\$116,412,101	\$5,968,231	\$7,728,258	\$4,058,444
Demand	<u>\$25,926,227</u>	<u>\$9,352,334</u>	<u>\$14,431,889</u>	<u>\$791,101</u>	<u>\$855,763</u>	<u>\$495,141</u>
Total	\$200,527,340	\$49,786,412	\$130,843,990	\$6,759,331	\$8,584,021	\$4,553,585
Target Revenue Requirement						
	\$200,530,216					
Difference						
	(\$2,876)					
2018						
	All Customers	Downtown Network	City and Suburban	Shoreline	Tukwila	Burien and Lake Forest Park
Billing Determinants						
kWh	2,424,023,340	509,909,274	1,676,279,317	79,556,917	103,155,002	55,122,830
kW	6,138,283	1,250,312	4,295,205	217,934	235,747	139,084
Franchise Differential				8.00%	7.90%	6.00%%
Rates						
Energy Charge (\$/kWh)		\$0.0852	\$0.0740	\$0.0799	\$0.0798	\$0.0784
Demand Charge (\$/kW)		\$7.67	\$3.44	\$3.72	\$3.71	\$3.65
Revenue						
Energy	\$186,398,936	\$43,444,270	\$124,044,669	\$6,356,598	\$8,231,769	\$4,321,630
Demand	<u>\$26,558,395</u>	<u>\$9,589,893</u>	<u>\$14,775,505</u>	<u>\$810,715</u>	<u>\$874,623</u>	<u>\$507,658</u>
Total	\$212,957,331	\$53,034,163	\$138,820,175	\$7,167,312	\$9,106,392	\$4,829,288
Target Revenue Requirement						
	\$212,883,091					
Difference						
	(\$74,240)					

Minimum Charge

Like Small General Service, the Medium General Service minimum charge is equal to the marginal customer cost per meter per day including taxes.

Table 4.4 shows the basic minimum charges for Medium General Service customers. Franchise city rates have a slightly higher minimum charge that reflects the franchise rate differential. Marginal customer costs have increased significantly since the last rate case, resulting in a large increase in the minimum charge for 2017 and a moderate increase in the minimum charge in 2018.

Table 4.4: Medium General Service Minimum Charge

	Current	2017	% Change	2018	% Change
Minimum Charge \$/Day	\$0.65	\$0.78	20%	\$0.80	3%

Rates and Customer Bill Impacts

Tables 4.5 through 4.10 report the bill impacts for a sample of customers from each rate design category. In 2017, Downtown Network rate increases are lower than those for most non-network rate classes because the increase in network distribution costs is smaller than the increase in non-network distribution costs. Suburban customers will experience a rate decrease in 2017 because a suburban differential will no longer be added to their rates. In 2018, Downtown Network distribution costs are increasing more quickly than non-network distribution costs, so the Downtown Network rate increase is larger than those for other rate classes. Downtown Network rates will remain higher than non-network rates in both years. Within each jurisdiction, bill impacts are fairly uniform across customers of different sizes and load factors except for those with very low or very high load factors, as can be seen in the tables below.

Table 4.5: Medium City (MDC) Rates and Monthly Bill Impacts

	Current Rates	2017 Rates	% Change	2018 Rates	% Change
Energy (\$/kWh)	\$0.0675	\$0.0698	3.4%	\$0.0740	6.0%
Demand (\$/kW)	\$2.32	\$3.36	44.8%	\$3.44	2.4%
Minimum Bill (\$/day)	\$0.65	\$0.78	20.0%	\$0.80	2.6%
Average Rate (\$/kWh)	\$0.0734	\$0.0785	6.8%	\$0.0828	5.6%

Customer Description	Load Factor	Annual kW	Annual kWh	Current Bill	2017			2018		
					Bill	\$ Change	% Change	Bill	\$ Change	% Change
Shipyards	0.20	1,007	196,900	\$1,302	\$1,427	\$125	9.6%	\$1,503	\$76	5.3%
Office	0.20	5,549	1,627,800	\$10,229	\$11,022	\$793	7.8%	\$11,629	\$607	5.5%
Supply Co.	0.29	209	76,220	\$469	\$502	\$33	7.0%	\$530	\$28	5.6%
Apt. Complex	0.34	6,959	2,595,600	\$15,946	\$17,046	\$1,101	6.9%	\$18,001	\$955	5.6%
Restaurant	0.38	558	194,460	\$1,202	\$1,287	\$86	7.1%	\$1,359	\$72	5.6%
Produce Co.	0.54	1,268	608,465	\$3,668	\$3,894	\$227	6.2%	\$4,116	\$221	5.7%
Retail Store	0.55	2,110	997,120	\$6,017	\$6,391	\$374	6.2%	\$6,754	\$363	5.7%
Grocery	0.64	4,605	2,445,300	\$14,645	\$15,513	\$868	5.9%	\$16,399	\$887	5.7%
Real Estate	0.82	7,762	5,436,600	\$32,082	\$33,796	\$1,715	5.3%	\$35,751	\$1,955	5.8%
Network Co.	0.88	11,263	7,565,406	\$44,733	\$47,159	\$2,426	5.4%	\$49,882	\$2,723	5.8%

Table 4.6: Medium Downtown Network (MDD) Rates and Monthly Bill Impacts

	Current Rates	2017 Rates	% Change	2018 Rates	% Change
Energy (\$/kWh)	\$0.0832	\$0.0797	-4.2%	\$0.0852	6.9%
Demand (\$/kW)	\$4.54	\$7.48	64.8%	\$7.67	2.5%
Minimum Bill (\$/day)	\$0.65	\$0.78	20.0%	\$0.80	2.6%
Average Rate (\$/kWh)	\$0.0944	\$0.0981	4.0%	\$0.1040	6.0%

Customer Description	Load Factor	Annual kW	Annual kWh	Current Bill	2017			2018		
					Bill	\$ Change	% Change	Bill	\$ Change	% Change
Boutique	0.21	776	207,160	\$1,730	\$1,860	\$130	7.5%	\$1,967	\$107	5.8%
Theater	0.29	3,880	946,080	\$8,028	\$8,702	\$675	8.4%	\$9,197	\$495	5.7%
Real Estate	0.36	7,682	2,547,600	\$20,570	\$21,708	\$1,139	5.5%	\$22,998	\$1,289	5.9%
Hotel	0.42	2,503	1,070,640	\$8,370	\$8,671	\$301	3.6%	\$9,202	\$530	6.1%
Shopping Ctr.	0.44	7,975	3,428,400	\$26,788	\$27,741	\$954	3.6%	\$29,439	\$1,698	6.1%
Bank	0.49	1,133	466,400	\$3,662	\$3,804	\$142	3.9%	\$4,036	\$232	6.1%
Office Building	0.66	1,261	519,900	\$4,082	\$4,239	\$157	3.9%	\$4,497	\$258	6.1%
Hotel	0.69	9,901	5,572,800	\$42,384	\$43,184	\$800	1.9%	\$45,895	\$2,711	6.3%

Table 4.7: Medium Shoreline (MDH) and SeaTac (MDE) Rates and Monthly Bill Impacts

	Current Rates	2017 Rates	% Change	2018 Rates	% Change
Energy (\$/kWh)	\$0.0739	\$0.0754	2.0%	\$0.0799	6.0%
Demand (\$/kW)	\$2.32	\$3.63	56.5%	\$3.72	2.5%
Minimum Bill (\$/day)	\$0.65	\$0.84	29.2%	\$0.86	2.4%
Average Rate (\$/kWh)	\$0.0803	\$0.0854	6.4%	\$0.0901	5.5%

Customer Description	Load Factor	Annual kW	Annual kWh	Current Bill	2017			2018		
					Bill	\$ Change	% Change	Bill	\$ Change	% Change
Church	0.12	533	62,440	\$488	\$554	\$66	13.5%	\$581	\$27	5.0%
Bank	0.22	631	138,820	\$977	\$1,063	\$86	8.8%	\$1,120	\$57	5.3%
School	0.31	2,294	578,800	\$4,008	\$4,331	\$323	8.0%	\$4,565	\$234	5.4%
Drug Store	0.49	822	324,800	\$2,159	\$2,289	\$130	6.0%	\$2,417	\$128	5.6%
Nursing Home	0.59	1,078	520,160	\$3,412	\$3,595	\$183	5.3%	\$3,798	\$203	5.7%
Grocery Store	0.79	939	467,700	\$3,062	\$3,223	\$161	5.2%	\$3,405	\$182	5.7%

Table 4.8: Medium Tukwila (MDT) Rates and Monthly Bill Impacts

	Current Rates	2017 Rates	% Change	2018 Rates	% Change
Energy (\$/kWh)	\$0.0737	\$0.0753	2.2%	\$0.0798	6.0%
Demand (\$/kW)	\$2.32	\$3.63	56.5%	\$3.71	2.2%
Minimum Bill (\$/day)	\$0.65	\$0.84	29.2%	\$0.86	2.4%
Average Rate (\$/kWh)	\$0.0790	\$0.0836	5.8%	\$0.0883	5.5%

Customer Description	Load Factor	Annual kW	Annual kWh	Current Bill	2017			2018		
					Bill	\$ Change	% Change	Bill	\$ Change	% Change
Manufacturing	0.06	1,433	74,960	\$737	\$904	\$166	22.6%	\$942	\$38	4.2%
Construction	0.32	655	199,480	\$1,352	\$1,450	\$98	7.3%	\$1,529	\$79	5.5%
Museum	0.35	8,695	2,647,920	\$17,944	\$19,246	\$1,302	7.3%	\$20,297	\$1,051	5.5%
Industrial	0.45	1,994	754,400	\$5,019	\$5,337	\$318	6.3%	\$5,633	\$296	5.5%
Medical Center	0.51	1,134	569,040	\$3,714	\$3,914	\$200	5.4%	\$4,135	\$221	5.6%
Data Center	0.86	6,306	4,181,100	\$26,898	\$28,144	\$1,246	4.6%	\$29,754	\$1,610	5.7%

Table 4.9: Medium Burien (MDB) and Lake Forest Park (MDL) Rates and Monthly Bill Impacts

	Current Rates	2017 Rates	% Change	2018 Rates	% Change
Energy (\$/kWh)	\$0.0714	\$0.0740	3.6%	\$0.0784	5.9%
Demand (\$/kW)	\$2.32	\$3.56	53.4%	\$3.65	2.5%
Minimum Bill (\$/day)	\$0.65	\$0.83	27.7%	\$0.85	2.4%
Average Rate (\$/kWh)	\$0.0773	\$0.0830	7.4%	\$0.0876	5.5%

Customer Description	Load Factor	Annual kW	Annual kWh	Current Bill	2017			2018		
					Bill	\$ Change	% Change	Bill	\$ Change	% Change
Golf Club	0.24	891	223,160	\$1,500	\$1,641	\$140	9.4%	\$1,729	\$89	5.4%
School	0.27	2,594	642,100	\$4,322	\$4,729	\$407	9.4%	\$4,984	\$255	5.4%
Apt. Building	0.33	581	146,210	\$982	\$1,074	\$92	9.3%	\$1,132	\$58	5.4%
Car Dealership	0.49	1,282	500,870	\$3,228	\$3,469	\$241	7.5%	\$3,662	\$193	5.6%
Retail Store	0.59	6,773	3,416,640	\$21,638	\$23,079	\$1,440	6.7%	\$24,382	\$1,304	5.6%
Grocery Store	0.72	1,922	1,219,800	\$7,629	\$8,092	\$463	6.1%	\$8,554	\$462	5.7%

Table 4.10: Medium Suburban (MDS) Rates and Monthly Bill Impacts

	Current Rates	2017 Rates	% Change	2018 Rates	% Change
Energy (\$/kWh)	\$0.0714	\$0.0698	-2.2%	\$0.0740	6.0%
Demand (\$/kW)	\$2.3200	\$3.3600	44.8%	\$3.4400	2.4%
Minimum Bill (\$/day)	\$0.65	\$0.78	20.0%	\$0.8000	2.6%
Average Rate (\$/kWh)	\$0.0789	\$0.0785	-0.5%	\$0.0828	5.6%

Customer Description	Load Factor	Annual kW	Annual kWh	Current Bill	2015			2016		
					Bill	\$ Change	% Change	Bill	\$ Change	% Change
Boat Builder	0.19	1,132	205,560	\$1,442	\$1,513	\$71	4.9%	\$1,592	\$79	5.3%
Engineering	0.26	1,028	299,290	\$1,980	\$2,029	\$49	2.5%	\$2,140	\$112	5.5%
Yacht Club	0.36	703	333,120	\$2,118	\$2,135	\$17	0.8%	\$2,256	\$121	5.7%
Retirement	0.54	2,350	1,288,600	\$8,121	\$8,153	\$32	0.4%	\$8,620	\$467	5.7%
Casino	0.55	711	371,920	\$2,350	\$2,362	\$12	0.5%	\$2,497	\$135	5.7%
Grocery Store	0.71	5,087	3,373,120	\$21,054	\$21,045	-\$9	0.0%	\$22,259	\$1,215	5.8%

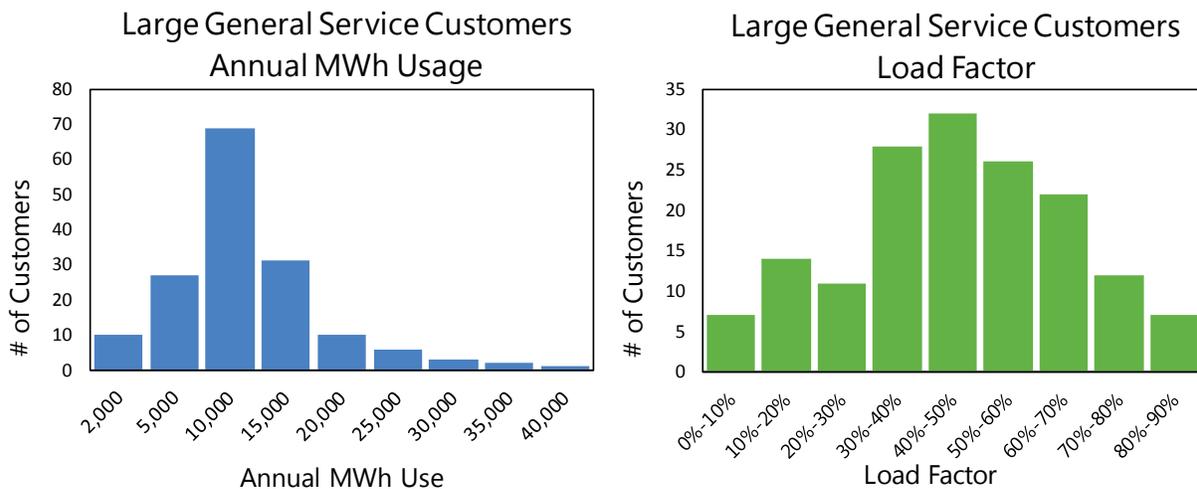
Chapter 5: Large General Service Rates

Rate Class Description

Large Standard General Service rate schedules apply to customers outside the Downtown Network 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 Downtown Network General Service (LGD).

There were 159 customer meters served under Large General Service rate schedules as of 2015. 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. These 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 is 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 or zero, whichever is greater. 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 Chapter 8 for details of this discount).

Rate Design

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

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

After the base rates are set, these rates are multiplied by each franchise area’s payment multiplier to arrive at the final rates for franchise cities. Steps one through four 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. Minimizing the off-peak demand charge provides an incentive for customers to move their consumption into lower-use hours. 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

Off-Peak Demand Charge	Current	2017	% Change	2018	% Change
City	\$0.22	\$0.27	22.7%	\$0.27	0.0%
Downtown Network	\$0.22	\$0.27	22.7%	\$0.27	0.0%
Shoreline + SeaTac	\$0.22	\$0.29	31.8%	\$0.29	0.0%
Tukwila	\$0.22	\$0.29	31.8%	\$0.29	0.0%
Burien + Lake Forest Park	\$0.22	\$0.29	31.8%	\$0.29	0.0%

Peak Demand Charge

Demand charges encourage customers to take steps to conserve energy, operate more during the off-peak period, or reduce their peak demand.

In the current rate review, peak demand charges are set to recover 20% of marginal distribution costs including taxes for all rate classes.

Non-network demand charges are set for Large and High Demand customers together. Therefore, the marginal distribution costs that they are based on reflect costs for all of these customers. Similarly, the kW billing determinants are totaled across all Large and High Demand non-network customers. Table 5.2 summarizes the derivation of peak demand charges. Table 5.3 shows the demand charges for all jurisdictions after applying the franchise differential.

Table 5.2: Derivation of Peak Demand Charges

Non-Network	2017	2018
Total Marginal Cost of Distribution	\$ 73,790,531	\$ 75,627,625
	x 0.2	x 0.2
Total Marginal Cost to be Recovered with Peak Demand Charge	\$ 14,758,106	\$ 15,125,525
Total kW	4,844,437	4,844,437
Peak Demand Charge	\$ 3.05	\$ 3.12
Network	2017	2018
Total Marginal Cost of Distribution	\$ 55,899,709	\$ 57,309,328
	x 0.2	x 0.2
Total Marginal Cost to be Recovered with Peak Demand Charge	\$ 11,179,942	\$ 11,461,866
Total kW	1,467,290	1,467,290
Peak Demand Charge	\$ 7.62	\$ 7.81

Table 5.3: Peak Demand Charges

	2016	2017	% Change	2018	% Change
City + Suburban	\$2.08	\$3.05	46.6%	\$3.12	2.3%
Downtown Network	\$4.05	\$7.62	88.1%	\$7.81	2.5%
Shoreline + SeaTac	\$2.08	\$3.29	58.2%	\$3.37	2.4%
Tukwila	\$2.08	\$3.29	58.2%	\$3.37	2.4%
Burien + Lake Forest Park	\$2.08	\$3.23	55.3%	\$3.31	2.5%

The significant increase in the demand charges is the result of increasing marginal costs of distribution between 2016 and 2017.

Peak and Off-peak Energy Charges

The projected differential between peak and off-peak marginal energy prices is around 1.2x in 2017 and 2018, 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 2015-2016 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.

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

Below is an example for 2018 Large General Service Non-network rates using Large General Service Non-network revenue requirement and billing determinants:

$$\$75,876,430 - \$6,858,215 =$$

$$\text{EnergyRate}_{\text{Offpeak}} \times 358,743,240 \text{ kWh} + (\text{EnergyRate}_{\text{Offpeak}} \times 1.5) \times 574,577,627 \text{ kWh}$$

Solving for $\text{EnergyRate}_{\text{Offpeak}}$, $\text{EnergyRate}_{\text{Offpeak}} = \0.0565 , and $\text{EnergyRate}_{\text{onpeak}} = \$0.0565 \times 1.5 = \$0.0848$.

Table 5.4 on the following page shows how the rates meet the revenue requirement given the 2017 and 2018 billing determinants.

Table 5.4: 2017 and 2018 Large General Service Rate Design

2017						
Billing Determinants	All Customers	City & Suburban	Downtown Network	Shoreline and SeaTac	Tukwila	Burien and Lake Forest Park
Peak kWh	959,142,470	477,247,156	388,073,782	20,704,693	67,140,817	5,976,022
Off Peak kWh	600,201,694	298,646,510	242,844,570	12,956,356	42,014,647	3,739,610
Peak kW	3,662,087	1,913,245	1,467,290	60,315	204,650	16,587
Off Peak kW	22,873	20,333	2,436	-	104	-
# of Meters	155	81	60	4	9	1
Franchise Payment Multiplier				8.00%	7.96%	6.00%
Rates						
\$/Peak kWh		\$0.0801	\$0.0875	\$0.0865	\$0.0865	\$0.0849
\$/Off Peak kWh		\$0.0533	\$0.0583	\$0.0576	\$0.0575	\$0.0565
\$/Peak kW		\$3.05	\$7.62	\$3.29	\$3.29	\$3.23
\$/Off Peak kW		\$0.27	\$0.27	\$0.29	\$0.29	\$0.29
Revenue						
Energy Charges	\$113,739,068	\$54,145,356	\$48,114,294	\$2,537,242	\$8,223,523	\$718,652
Demand Charges	\$17,947,636	\$5,840,887	\$11,181,408	\$198,436	\$673,329	\$53,576
Total	\$131,686,703	\$59,986,243	\$59,295,702	\$2,735,678	\$8,896,852	\$772,228
Revenue Requirement	\$131,784,610					
Difference	-\$97,907					
Average Rate (\$/kWh)		\$0.0773	\$0.0892	\$0.0781	\$0.0782	\$0.0773
2018						
Billing Determinants	All Customers	City & Suburban	Downtown Network	Shoreline and SeaTac	Tukwila	Burien and Lake Forest Park
Peak kWh	965,035,933	480,179,607	390,458,306	20,831,913	67,553,365	6,012,741
Off Peak kWh	602,529,755	299,804,900	243,786,516	13,006,611	42,177,613	3,754,115
Peak kW	3,662,087	1,913,245	1,467,290	60,315	204,650	16,587
Off Peak kW	22,873	20,333	2,436	-	104	-
# of Meters	156	81	61	4	9	1
Franchise Payment Multiplier				8.00%	7.92%	6.00%
Rates						
\$/Peak kWh		\$0.0848	\$0.0935	\$0.0916	\$0.0915	\$0.0899
\$/Off Peak kWh		\$0.0565	\$0.0624	\$0.0610	\$0.0610	\$0.0599
\$/Peak kW		\$3.12	\$7.81	\$3.37	\$3.37	\$3.31
\$/Off Peak kW		\$0.27	\$0.27	\$0.29	\$0.29	\$0.29
Revenue						
Energy Charges	\$121,599,328	\$57,658,208	\$51,720,130	\$2,701,607	\$8,753,967	\$765,417
Demand Charges	\$18,382,872	\$5,974,814	\$11,460,193	\$203,262	\$689,701	\$54,903
Total	\$139,982,201	\$63,633,022	\$63,180,323	\$2,904,868	\$9,443,668	\$820,320
Revenue Requirement	\$140,039,274					
Difference	-\$57,073					
Average Rate (\$/kWh)		\$0.0816	\$0.0996	\$0.0858	\$0.0861	\$0.0840

Minimum Charge

All General Service rate classes have a minimum charge that is equal to the marginal customer cost per meter per day plus taxes. It is set at the same level for all Large General Service customers and then the franchise differentials are applied to this. In 2017, the minimum charge increases substantially from the current rate because marginal customer service costs have increased from 2016.

Table 5.5: Large General Service Daily Minimum Charge

	2016	2017	% Change	2018	% Change
City + Suburban	\$18.98	\$27.69	45.9%	\$28.37	2.5%
Network	\$18.98	\$27.69	45.9%	\$28.37	2.5%
Shoreline + SeaTac	\$18.98	\$29.91	57.6%	\$30.64	2.4%
Tukwila	\$18.98	\$29.89	57.5%	\$30.62	2.4%
Burien + Lake Forest Park	\$18.98	\$29.35	54.6%	\$30.07	2.5%

Rates and Customer Bill Impacts

Tables 5.6 to 5.10 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 are based on billings.

Peak demand charges for large customers are increasing substantially in 2017 while energy prices are only increasing a small amount and decreasing slightly for network customers. This result in greater bill increases for customers with low load factor and smaller increases for high load factor customers.

Rate impacts in 2018 are less varied across the classes and across customers. Low load factor customers with larger bill impacts in 2017 will have smaller increases in 2018 than similar high load factor customer because energy charges are increasing at a greater rate than demand charges.

Table 5.6: Large City (LGC) and Suburban (LGS) Rates and Bill Impacts

Large General Service - City (LGC)

	Current Rates	2017	2018
Number of meters: 81			
Energy Peak (\$/kWh)	\$0.0767	\$0.0801	\$0.0848
Energy Off-peak (\$/kWh)	\$0.0514	\$0.0533	\$0.0565
Demand Peak (\$/kW)	\$2.08	\$3.05	\$3.12
Demand Off-Peak (\$/kW)	\$0.22	\$0.27	\$0.27
Minimum Bill (\$/day)	\$18.98	\$27.69	\$28.37
Average Rate (\$/kWh)	\$0.0721	\$0.0773	\$0.0816
Average Rate Change		7.2%	5.5%

Customer Description	Annual kWh	Load Factor	Current	2017		2018		Annual Billing Data			
			Monthly Bill	Monthly Bill	% Change	Monthly Bill	% Change	Peak KWh	Off-peak KWh	Peak kW	Off-peak kW
Cruise Line	1,153,396	2%	\$12,117	\$15,043	24.2%	\$15,621	3.8%	798,100	355,296	30,982	-
Metals	2,636,511	13%	\$20,846	\$23,707	13.7%	\$24,858	4.9%	2,343,884	292,627	26,603	-
Cement	2,619,789	18%	\$17,072	\$18,996	11.3%	\$19,968	5.1%	1,419,628	1,200,161	16,478	50
Event Space	2,618,722	19%	\$16,853	\$18,607	10.4%	\$19,576	5.2%	1,501,142	1,117,580	14,236	215
School	5,774,412	35%	\$36,857	\$39,719	7.8%	\$41,901	5.5%	4,317,890	1,456,522	17,422	-
Shipyard	11,698,049	35%	\$70,781	\$76,136	7.6%	\$80,337	5.5%	7,151,551	4,546,498	32,262	224
Office Tower	20,284,622	52%	\$123,507	\$132,169	7.0%	\$139,543	5.6%	13,548,361	6,736,261	46,479	-
Hospital	18,831,866	69%	\$109,336	\$116,256	6.3%	\$122,836	5.7%	10,991,671	7,840,195	31,722	-
Aerospace	13,140,923	75%	\$76,271	\$81,123	6.4%	\$85,713	5.7%	7,630,211	5,510,712	22,485	-
Data Center	32,439,979	87%	\$228,555	\$233,982	2.4%	\$248,768	6.3%	18,405,567	14,034,412	49,750	-

Table 5.7: Large Downtown Network (LGD) Rates and Bill Impacts

	Current Rates	2017	2018
Number of meters: 60			
Energy Peak (\$/kWh)	\$0.0914	\$0.0875	\$0.0935
Energy Off-peak (\$/kWh)	\$0.0612	\$0.0583	\$0.0624
Demand Peak (\$/kW)	\$4.05	\$7.62	\$7.81
Demand Off-Peak (\$/kW)	\$0.22	\$0.27	\$0.27
Minimum Bill (\$/day)	\$18.98	\$27.69	\$28.37
Average Rate (\$/kWh)	\$0.0892	\$0.0940	\$0.0996
Average Rate Change		5.4%	6.0%

Customer Description	Annual kWh	Load Factor	Current	2017		2018		Annual Billing Data			
			Monthly Bill	Monthly Bill	% Change	Monthly Bill	% Change	Peak KWh	Off-peak KWh	Peak kW	Off-peak kW
Event Space	3,006,806	20%	\$24,512	\$27,360	11.6%	\$28,896	5.6%	1,963,958	1,041,144	12,559	276
Retail/Office Tower	12,815,398	30%	\$103,694	\$112,738	8.7%	\$119,294	5.8%	9,416,818	3,393,647	43,443	-
Office Tower	9,341,130	43%	\$73,606	\$78,981	7.3%	\$83,657	5.9%	6,633,328	2,705,294	27,507	111
Retail Store	11,159,974	49%	\$85,704	\$90,479	5.6%	\$95,955	6.1%	7,784,365	3,372,998	27,292	-
Hotel	13,116,134	67%	\$95,011	\$98,348	3.5%	\$104,468	6.2%	7,946,023	5,167,874	24,093	75
Data Center	24,721,777	84%	\$173,656	\$177,625	2.3%	\$188,863	6.3%	13,906,500	10,811,931	37,314	28

Table 5.8: Large Shoreline (LGH) and SeaTac (LGE) Rates and Bill Impacts

	Current Rates	2017	2018
Number of meters: 4			
Energy Peak (\$/kWh)	\$0.0852	\$0.0865	\$0.0916
Energy Off-peak (\$/kWh)	\$0.0570	\$0.0576	\$0.0610
Demand Peak (\$/kW)	\$2.08	\$3.29	\$3.37
Demand Off-Peak (\$/kW)	\$0.22	\$0.29	\$0.29
Minimum Bill (\$/day)	\$18.98	\$29.91	\$30.64
Average Rate (\$/kWh)	\$0.0781	\$0.0813	\$0.0858
Average Rate Change		4.1%	5.6%

			Current	2017		2018		Annual 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											
College	7,742,098	63%	\$50,750	\$52,971	4.4%	\$55,949	5.6%	4,811,046	2,931,052	15,400	-
School	7,514,067	64%	\$49,103	\$51,231	4.3%	\$54,113	5.6%	4,621,572	2,892,495	14,712	-
SeaTac											
Car Park	10,854,414	80%	\$69,553	\$72,251	3.9%	\$76,345	5.7%	6,351,240	4,503,174	17,704	15

Table 5.9: Large Tukwila (LGT) Rates and Bill Impacts

	Current Rates	2017	2018
Number of meters: 19			
Energy Peak (\$/kWh)	\$0.0851	\$0.0865	\$0.0915
Energy Off-peak (\$/kWh)	\$0.0570	\$0.0575	\$0.0610
Demand Peak (\$/kW)	\$2.08	\$3.29	\$3.37
Demand Off-Peak (\$/kW)	\$0.22	\$0.29	\$0.29
Minimum Bill (\$/day)	\$18.98	\$29.89	\$30.62
Average Rate (\$/kWh)	\$0.0782	\$0.0815	\$0.0861
Average Rate Change		4.2%	5.6%

Customer Description	Annual kWh	Load Factor	Current	2017		2018		Annual Billing Data			
			Monthly Bill	Monthly Bill	% Change	Monthly Bill	% Change	Peak kWh	Off-peak kWh	Peak	Off-peak kW
Metals	5,375,547	16%	\$38,107	\$41,136	7.9%	\$43,310	5.3%	3,503,348	1,872,199	25,210	-
Aerospace	5,177,467	38%	\$34,739	\$36,691	5.6%	\$38,707	5.5%	3,237,147	1,940,320	14,549	-
Manufacturing	4,915,177	47%	\$32,740	\$34,414	5.1%	\$36,318	5.5%	3,102,790	1,812,387	11,981	61
Office Building	11,381,937	73%	\$72,825	\$75,780	4.1%	\$80,050	5.6%	6,551,233	4,830,704	19,730	4
Data Center	20,558,204	87%	\$130,089	\$134,888	3.7%	\$142,537	5.7%	11,595,955	8,962,249	30,478	28

Table 5.10: Large Burien (LGB) Rates and Bill Impacts

	Current Rates	2017	2018
Number of meters: 1			
Energy Peak (\$/kWh)	\$0.0845	\$0.0849	\$0.0899
Energy Off-peak(\$/kWh)	\$0.0566	\$0.0565	\$0.0599
Demand Peak(\$/kW)	\$2.08	\$3.23	\$3.31
Demand Off-Peak(\$/kW)	\$0.22	\$0.29	\$0.29
Minimum Bill (\$/day)	\$18.98	\$29.35	\$30.07
Average Rate(\$/kWh)	\$0.0773	\$0.0795	\$0.0840
Average Rate Change		2.8%	5.7%

Customer Description	Annual kWh	Load Factor	Current	2015		2016		Annual Billing Data			
			Monthly Bill	Monthly Bill	% Change	Monthly Bill	% Change	Peak kWh	Off-peak kWh	Peak kW	Off-peak kW
Hospital	9,382,222	64%	\$60,014	\$61,756	2.9%	\$65,264	5.7%	5,542,395	3,839,827	16,587	-

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 12 customer meters served under High Demand General Service rate schedules in 2015. These 12 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 8% to 88%.

High Demand General Service 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. 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. The Tukwila off-peak demand charge is then adjusted by the Tukwila effective franchise differential of 8.07% in 2017 and 8.03% in 2018.

Table 6.1: High Demand Off-Peak Demand Charge

Off-Peak Demand Charge	2016	2017	% Change	2018	% Change
City	\$0.22	\$0.27	22.7%	\$0.27	0.0%
Tukwila	\$0.22	\$0.29	31.8%	\$0.29	0.0%

Peak Demand Charge

Peak demand charges are set together for Large and High Demand non-network customers and thus the High Demand General Service charges are identical in methodology and result to the charges for Large General Service customers. Table 6.2 repeats the derivation of peak demand charges.

Table 6.2: Derivation of High Demand Peak Demand Charges

Non-Network	2017	2018
Total Marginal Cost of Distribution	\$ 73,790,531	\$ 75,627,625
	x 0.2	x 0.2
Total Marginal Cost to be Recovered with Peak Demand Charge	\$ 14,758,106	\$ 15,125,525
Total kW	4,844,437	4,844,437
Peak Demand Charge	\$ 3.05	\$ 3.12

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 to recover the remaining revenue requirement. Tables 6.3 and 6.4 show how the rates meet the revenue requirement for each rate class given the 2017 and 2018 billing determinants.

Table 6.3: High Demand Rate Design 2017

2017			
Billing Determinants	All Customers	City	Tukwila
Peak kWh	625,536,364	506,536,750	118,999,614
Off Peak kWh	459,983,163	372,477,749	87,505,414
Peak kW	2,649,640	1,974,711	674,929
Off Peak kW	12,542	11,488	1,054
# of Meters	12	7	5
Franchise Differential			8.07%
Rates			
\$/Peak kWh		\$0.0746	\$0.0806
\$/Off Peak kWh		\$0.0497	\$0.0537
\$/Peak kW		\$3.05	\$3.29
\$/Off Peak kW		\$0.27	\$0.29
Revenue			
Energy Charges	\$70,590,195	\$56,299,786	\$14,290,410
Demand Charges	\$8,246,792	\$6,025,970	\$2,220,822
Total	\$78,836,988	\$62,325,756	\$16,511,232
Revenue Requirement	\$78,730,322		
Difference	\$106,666		
Average Rate (\$/kWh)		\$0.0709	\$0.0800

Table 6.4: High Demand Rate Design 2018

2018			
Billing Determinants	All Customers	City	Tukwila
Peak kWh	629,029,934	509,365,717	119,664,217
Off Peak kWh	463,754,630	375,531,746	88,222,884
Peak kW	2,649,640	1,974,711	674,929
Off Peak kW	12,542	11,488	1,054
# of Meters	12	7	5
Franchise Differential			8.03%
Rates			
\$/Peak kWh		\$0.0791	\$0.0855
\$/Off Peak kWh		\$0.0527	\$0.0569
\$/Peak kW		\$3.12	\$3.37
\$/Off Peak kW		\$0.27	\$0.29
Revenue			
Energy Charges	\$75,332,524	\$60,081,351	\$15,251,173
Demand Charges	\$8,439,016	\$6,164,200	\$2,274,816
Total	\$83,771,540	\$66,245,551	\$17,525,989
Revenue Requirement	\$83,734,199		
Difference	\$37,341		
Average Rate (\$/kWh)		0.0749	0.0843

Minimum Charge

All General Service rate classes have a minimum charge that is equal to the marginal customer cost per meter per day plus taxes. Tukwila’s minimum charge is then adjusted by the franchise differential.

Table 6.5: High Demand Daily Minimum Charge

Daily Minimum Charge	2016	2017	% Change	2018	% Change
City	\$58.15	\$59.25	1.9%	\$60.71	2.5%
Tukwila	\$58.15	\$64.03	10.1%	\$65.59	2.4%

Rates and Customer Bill Impacts

Tables 6.6 and 6.7 present the bill impacts for a sample of customer meters for both City and Tukwila High Demand General Service classes. The consumption data represent 2015 actual demand and energy use.

As a result of demand charges are increasing more than energy charges, low load factor customers will have larger 2017 bill increases than high load factor customers, all else equal. In 2018 energy rates increases will be larger (relatively speaking) than demand charge increases. Low load factors

will thus see smaller bill increases in 2018 than higher load factor customers, all else equal. The bill impacts will be less varied across different customers in 2018 than in 2017.

Table 6.6: High Demand City (HDC) Rates and Monthly Bill Impacts

High Demand - City (HDC)

	Current Rates	2017	2018
Number of meters: 7			
Energy Peak (\$/kWh)	\$0.0732	\$0.0746	\$0.0791
Energy Off-peak (\$/kWh)	\$0.0491	\$0.0497	\$0.0527
Demand Peak (\$/kW)	\$2.08	\$3.05	\$3.12
Demand Off-Peak (\$/kW)	\$0.22	\$0.27	\$0.27
Minimum Bill (\$/day)	\$58.15	\$59.25	\$60.71
Average Rate (\$/kWh)	\$0.0677	\$0.0709	\$0.0749
Average Rate Change		4.8%	5.6%

			Current	2017		2018		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
Metals	249,171,176	40%	\$1,420,736	\$1,508,828	6.2%	\$1,591,969	5.5%	128,081,425	121,089,751	829,440	11,520
Waste Treatment	51,311,895	45%	\$288,372	\$302,440	4.9%	\$319,557	5.7%	28,792,070	22,519,825	118,282	5,155
Cement	74,080,811	66%	\$409,624	\$427,779	4.4%	\$452,208	5.7%	40,483,314	33,597,497	145,354	634
Education	288,929,690	67%	\$1,622,786	\$1,690,693	4.2%	\$1,787,785	5.7%	174,733,886	114,195,804	517,259	-
Glass	89,547,592	88%	\$490,917	\$509,686	3.8%	\$539,152	5.8%	50,324,032	39,223,560	135,287	69

Table 6.7: High Demand Tukwila (HDT) Rates and Monthly Bill Impacts

High Demand - Tukwila (HDT)

	Current Rates	2015	2016
Number of meters: 4			
Energy Peak (\$/kWh)	\$0.0756	\$0.0806	\$0.0855
Energy Off-peak(\$/kWh)	\$0.0507	\$0.0537	\$0.0569
Demand Peak(\$/kW)	\$2.08	\$3.29	\$3.37
Demand Off-Peak(\$/kW)	\$0.22	\$0.29	\$0.29
Minimum Bill (\$/day)	\$58.15	\$64.03	\$65.59
Average Rate(\$/kWh)	\$0.0718	\$0.0800	\$0.0843
Average Rate Change		11.3%	5.4%

			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	23,836,070	8%	\$204,432	\$249,212	21.9%	\$260,837	4.7%	20,682,172	3,153,898	350,819	-
Aerospace	73,782,396	68%	\$425,276	\$464,754	9.3%	\$491,473	5.7%	43,270,742	30,511,654	137,068	-
Data Center	99,169,372	70%	\$563,879	\$614,461	9.0%	\$649,956	5.8%	56,222,209	42,947,163	162,810	385

Chapter 7: Streetlight, Pedestrian and Floodlight Rates

Rate Class Description

City Light provides power to approximately 85,000 streetlights in its service area. The largest lighting customer is the City of Seattle, which accounts for roughly 85% of the streetlights served. The remaining lights are billed to other government agencies, businesses, and private citizens. Streetlights are charged flat monthly rates per light fixture for unmetered services.

The Work and Asset Management System (WAMS) is the system of record used to identify streetlight rate classes. City Light is in the process of converting most High Pressure Sodium (HPS) lights with the more energy efficient Light Emitting Diode (LED) lights over the next few years. This conversion is reflected in the streetlight inventory forecast for 2017 and 2018. The LED conversion is targeted to be completed by 2019.

Types of Lights

Streetlight rate 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). Decorative lights are typically ornate. In addition, three rate categories (City Light Maintained and Powered-LED and City Light Maintained, Powered-HPS/Other, and Energy Only) are defined to address unique situations where a differentiation is made for ownership and maintenance responsibilities between City Light and the customer. Table 7.1 shows the assumed streetlight counts for each streetlight rate category for 2016 through 2018.

Table 7.1: Streetlight Inventory

	2016	2017	2018
Residential LED	40,927	40,927	40,927
Arterial LED	14,553	26,054	30,732
Arterial HPS	17,041	6,809	3,399
Floodlight HPS	4,221	2,952	1,684
Decorative/Misc. HPS	7,049	4,908	2,771
Decorative/Misc. LED	78	2,219	4,356
Customer owned, city maintained HPS	1,071	1,071	1,071
Customer owned, city maintained LED	26	26	26
Customer owned and maintained	63	63	63
Total	85,029	85,029	85,029

Rate Design

Streetlights are unmetered due to their large quantity and the relatively low amounts of energy consumption per light. For the majority of streetlights, the rate covers the cost of the installed capital, the ongoing operations and maintenance (O&M), and the energy and distribution costs for powering the light. In general, rates are defined by the service type of the fixture and the type of lamp. While most lights in the system are owned by City Light, three rates are designed for circumstances where the customer owns and installs the lights (the last three in Table 7.2). The calculation of these rates does not include a component for capital cost recovery. O&M and Administrative & General (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.

Table 7.2: Rate Design Components

	Capital	Operations & Maintenance	Energy
Residential LED (standardized LEDs)	✓	✓	✓
Arterial LED	✓	✓	✓
Arterial HPS	✓	✓	✓
Floodlight HPS	✓	✓	✓
Decorative/Misc. HPS	✓	✓	✓
Decorative/Misc. LED	✓	✓	✓
Customer owned, city maintained HPS		✓	✓
Customer owned, city maintained LED		✓	✓
Customer owned and maintained			✓

Calculation Methodology

Streetlight revenue requirements for capital, O&M and energy are determined by the cost of service analysis. The revenue requirement component is then allocated across each streetlight rate class based on the estimated capital, O&M and energy costs it takes to serve each streetlight category. That is, the relative costs of each streetlight category are used to allocate the revenue requirement. The table below shows the total revenue requirement by category for 2016, 2017 and 2018. The estimated costs of serving each light type are discussed in the following sections.

Table 7.3: Streetlight Revenue Requirement

	2016*	2017	2017 vs. 2016	2018	2018 vs. 2017
Capital Revenue Requirement	\$5,428,260	\$7,143,095	32%	\$7,794,243	9%
O&M Revenue Requirement	\$5,114,011	\$3,873,423	-24%	\$4,106,015	6%
Energy Revenue Requirement	\$4,010,214	\$4,052,673	1%	\$4,095,973	1%
Total Revenue Requirement	\$14,552,485	\$15,069,191	4%	\$15,996,231	6%
Total Streetlight Fixtures	85,241	85,029		85,029	
Average Monthly Rate per Fixture	\$14.26	\$14.77	4%	\$15.68	6%

*from 2016 Rate Review

Capital

Capital is calculated by rate category and consists of two parts: direct and indirect 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:

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

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.

$$\text{Total Indirect Capital Costs} = \text{Unbundled Revenue Requirement for Capital} - \text{Total Direct Capital Costs}$$

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 and are typically 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 and indirect O&M. 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 $\frac{1}{4}$ 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 all other categories.

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.

$$\text{Total Indirect O\&M Costs} = \text{Unbundled Revenue Requirement for O\&M} - \text{Total Direct O\&M Costs}$$

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 estimated hours of operation by the lamp wattage (adjusted for ballast requirements where applicable). Table 7.4 lists the forecast of total streetlight energy consumption. The conversion to LED lights leads to a decline in total expected streetlight energy use. The energy charge is set at the value necessary for collection of the revenue requirement, adjusted for capital and maintenance charges. That is,

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

Table 7.4: Streetlight Energy Consumption Forecast

	2016	2017	2017 vs. 2016	2018	2018 vs. 2017
Forecast of Total kWh	67,203,551	57,149,480	-15%	52,445,658	-8%
Total Streetlight Fixtures	85,029	85,029	0%	85,029	0%
Total kWh per Fixture	790.36	672.12	-15%	616.80	-8%

Rates and Customer Bill Impacts

The streetlight rates consist of the sum of the respective calculations for capital, O&M, and energy by rate category. The table below lists current and 2017-2018 monthly rates.

Table 7.5: Streetlight and Floodlight Rates

	2016	2017		2018	
		Rate	% Change	Rate	% Change
Residential LED (Schedule R)	\$9.22	\$10.52	14%	\$11.81	12%
Arterial LED (Schedule A)	\$12.74	\$14.63	15%	\$16.34	12%
Arterial HPS (Schedule A)	\$23.36	\$25.48	9%	\$29.44	16%
Floodlight HPS (Schedule F)	\$20.10	\$22.93	14%	\$26.22	14%
Decorative/Misc. HPS (Schedule D)	\$27.26	\$29.86	10%	\$34.96	17%
Decorative/Misc. LED (Schedule D)	\$23.26	\$16.42	-29%	\$18.04	10%
Customer owned, city maintained HPS (Schedule M)	\$15.93	\$18.15	14%	\$21.83	20%
Customer owned, city maintained LED (Schedule M)	\$4.88	\$6.58	35%	\$7.54	15%
Customer owned and maintained (Schedule E)	\$4.45	\$5.52	24%	\$6.08	5%

Monthly rate impacts for lights in 2017, compared to 2016, range from -29% to +35%. However, the larger percentage increases are for little used light types. The largest percentage increase (35%) amounts to only \$1.70 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, resulting in average bill impacts that are much lower than the rate increases. Traditionally, the Decorative LED rates have been more in line with their HPS counterparts, however, the newest Decorative LEDs have a significantly lower wattage, which decreases energy consumption and associated rates. As a result, in 2017 and 2018 decorative LED rates are much lower than decorative/misc. HPS lights.

Since many of the issues related to significant changes in costs are addressed in the 2017 rates, the range of rate impacts in 2018 is much more compressed: +5% to +20%. This increase is largely due to increasing capital and O&M costs, while energy costs remains relatively flat.

Chapter 8: Other Fees and Discounts

This chapter discusses other rates, 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

The Power Factor (PF) Rate is a charge added 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:

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

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. As shown in Table 8.1, there is no change in the Power Factor Rate for 2017-2018.

Table 8.1: Power Factor Rate – (Schedule PF)

	Current	2017	2018
Power Factor Rate (cents / kVarh)	0.15	0.15	0.15

Previously, the power factor rate had its own rate schedule, schedule PF. However, starting in 2017, it will be a component in each general service rate schedule.

Revenue from power factor charges in 2015 was \$2,525,537. Table 8.2 below shows the number of customers by rate class with at least one month of power factor charges in 2015. Of the customers with at least one month of power factor below the Departments standard of 0.97, 54% had twelve months of power factor charges.

Table 8.2: Customers with Power Factor Charges in 2015 by Rate Class

Rate Class	Power Factor Customer Count	Percent Of Total
Small General Service - City	2583	46.22%
Small General Service - Shoreline & Tukwila	172	3.08%
Small General Service - Burien and other Suburbs	181	3.24%
Medium General Service - City	1625	29.07%
Medium General Service - City Network	539	9.64%
Medium General Service - Shoreline & Tukwila	173	3.10%
Medium General Service - Burien and other Suburbs	137	2.45%
Large General Service - City	89	1.59%
Large General Service - City Network	60	1.07%
Large General Service - Shoreline & Tukwila	13	0.23%
Large General Service - Burien and other Suburbs	4	0.07%
High Demand General Service - City	7	0.13%
High Demand General Service - Tukwila	6	0.11%
Total Number of Meters	6,235	100%

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 of transformation. The calculation of the credit takes into account the annualized capital cost and annual operation and maintenance costs of avoided 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 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.

The total estimated annual capital and O&M costs of customer-owned transformers were then divided by the average total 2015 billing kilowatts (the sum of monthly maximum demands) 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	\$2,209	\$432	\$2,165	\$4,852	12	\$58,224
	75	\$4,506	\$544	\$2,165	\$7,303	30	\$219,091
	100	\$5,799	\$542	\$2,572	\$9,024	18	\$162,435
	167	\$8,753	\$1,020	\$2,816	\$12,760	27	\$344,511
	750	\$101,695	\$1,569	\$11,247	\$116,317	5	\$581,587
Lg	1,500	\$69,619	\$1,533	\$11,247	\$83,644	2	\$167,288
	2,000	\$83,951	\$1,533	\$11,247	\$98,227	2	\$196,453
	5,000	\$140,482	\$16,406	\$50,556	\$210,190	2	\$420,380
HD	15,000	\$434,502	\$16,087	\$40,720	\$499,195	9	\$4,492,751
Total Transformer Capital Cost							\$6,642,720

\$ in thousands	2017	2018
Capital Cost for Transformers	\$6,643	\$6,643
Inflation factor (2014=1.0)	x 1.058	x 1.084
Inflated Capital Cost	\$7,028	\$7,201
Effective Tax Rate = 10.9550%	x 1.10955	x 1.10955
Total Capital Cost with Taxes	\$7,798	\$7,990
Annualization Factor = 0.04905	x 0.04905	x 0.04905
Annualized Capital Cost	\$382	\$392
Percent capital cost subject to O&M = 88.19%	x 88.19%	x 88.19%
Capital Cost Subject to O&M	\$337	\$346
O&M % of Annual Capital Cost = 21.11%	x 21.11%	x 21.11%
Annualized O&M Cost	\$71	\$73
Total = Annualized Capital Cost + Annualized O&M Cost	\$454	\$465
Total Annual Billing kW (2015)	1,697,989	1,697,989
Transformer Discount (\$/kW)	\$0.27	\$0.27

The resulting transformer investment discount increases by 23 percent from \$0.22 in 2016 to \$0.27 in 2017 and 2018 because of increased transformer capital cost.

Table 8.4: Transformer Investment Discount

	Current	2017	% Change	2018	% Change
Transformer Investment Discount	\$0.22	\$0.27	23%	\$0.27	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, but 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

In 2015 there were approximately 89 customers with around 79,000 direct pole attachments, producing revenues of \$2.6 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 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 pay for the cost of performing the inventory.

Pole attachment rates are based on capital costs, carrying charges and space allocation. 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. 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.

2017 and 2018 rates for pole attachments and duct and vault rentals were derived by inflating the 2016 rates. Table 8.5 shows these rates. The derivation of the 2016 rates can be found in the *Rate Design Report 2015-2016*.

Table 8.5: Pole Attachment Rental and Duct/Vault Rates

Facility	2016	2017	2018
CPI Inflation Rate	1.0000	1.0243	1.0495
Pole Attachments (per pole)			
Within the Communication Space			
Poles owned solely by City Light	\$29.97	\$ 30.70	\$ 31.45
Poles owned jointly by City Light and one other	\$14.99	\$ 15.35	\$ 15.73
Poles owned jointly by City Light and two others	\$9.99	\$ 10.23	\$ 10.48
Below the Communication Space			
Poles owned solely by City Light	\$56.94	\$ 58.33	\$ 59.76
Poles owned jointly by City Light and one other	\$28.47	\$ 29.16	\$ 29.88
Poles owned jointly by City Light and two others	\$18.98	\$ 19.44	\$ 19.92
Ducts (per duct-foot)	\$10.47	\$10.72	\$10.99
Vaults (per square foot)			
Wall space	\$26.16	\$26.80	\$27.45
Ceiling space	\$10.47	\$10.72	\$10.99

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.

The 2017 and 2018 RDC charge was derived by inflating the 2016 charge. Table 8.6 below shows these calculations. The 2016 derivation can be found in the *Rate Design Report 2015-2016*.

Table 8.6: 2017 and 2018 Reserved Distribution Capacity Charge

	2016	2017	2018
CPI Inflation	1.0000	1.0243	1.0495
RDC Charge per kW	\$0.37	\$0.38	\$0.39

Appendix A: Rate Schedules³

Residential					
	City (RSC)	Shoreline (RSH) & SeaTac (RSE)	Tukwila (RST)	Burien (RSB) & Lake Forest Park (RSL)	Suburban (RSS)
2016					
First Block per kWh	\$0.0596	\$0.0664	\$0.0585	\$0.0623	\$0.0623
End-Block per kWh	\$0.1257	\$0.1320	\$0.1337	\$0.1292	\$0.1292
Base Service Charge per day	\$0.1483	\$0.1483	\$0.1483	\$0.1483	\$0.1483
2017					
First Block per kWh	\$0.0701	\$0.0722	\$0.0719	\$0.0708	\$0.0701
End-Block per kWh	\$0.1288	\$0.1376	\$0.1370	\$0.1351	\$0.1288
Base Service Charge per day	\$0.1621	\$0.1751	\$0.1743	\$0.1718	\$0.1621
2018					
First Block per kWh	\$0.0782	\$0.0825	\$0.0821	\$0.0810	\$0.0782
End-Block per kWh	\$0.1320	\$0.1410	\$0.1403	\$0.1384	\$0.1320
Base Service Charge per day	\$0.1661	\$0.1794	\$0.1785	\$0.1761	\$0.1661
Average Rate (cents/kWh)					
2016	\$0.0970	\$0.1084	\$0.1056	\$0.1057	\$0.1066
2017	\$0.1052	\$0.1151	\$0.1144	\$0.1136	\$0.1052
2018	\$0.1111	\$0.1217	\$0.1210	\$0.1200	\$0.1111
Average Rate Change (%)					
2017	8.5%	6.2%	8.3%	7.5%	-1.3%
2018	5.6%	5.7%	5.8%	5.6%	5.7%

³ Suburban undergrounding charges are not shown in these tables

Small General Service					
	City/ Downtown Network (SMC/SMD)	Shoreline/ SeaTac (SMH/SME)	Tukwila (SMT)	Burien/Lake Forest Park (SMB/SML)	Suburban (SMS)
2016					
Energy (\$/kWh)	\$0.0848	\$0.0887	\$0.0882	\$0.0871	\$0.0871
Minimum Bill (\$/Day)	\$0.26	\$0.26	\$0.26	\$0.26	\$0.26
Transformer Investment (\$/kW)	\$0.22	\$0.22	\$0.22	\$0.22	\$0.22
2017					
Energy (\$/kWh)	\$0.0910	\$0.0955	\$0.0953	\$0.0937	\$0.0910
Minimum Bill (\$/Day)	\$0.31	\$0.33	\$0.33	\$0.33	\$0.31
Transformer Investment (\$/kW)	\$0.27	\$0.27	\$0.27	\$0.27	\$0.27
2018					
Energy (\$/kWh)	\$0.0960	\$0.1007	\$0.1004	\$0.988	\$0.0960
Minimum Bill (\$/Day)	\$0.32	\$0.34	\$0.34	\$0.33	\$0.32
Transformer Investment (\$/kW)	\$0.27	\$0.27	\$0.27	\$0.27	\$0.27
Average Rate (cents/kWh)					
2016	\$0.0848	\$0.0887	\$0.0882	\$0.0871	\$0.0871
2017	\$0.0910	\$0.0955	\$0.0953	\$0.0937	\$0.0910
2018	\$0.0960	\$0.1007	\$0.1004	\$0.0988	\$0.0960
Average Rate Change (%)					
2017	7.3%	7.7%	8.0%	7.6%	4.5%
2018	5.5%	5.4%	5.4%	5.4%	5.5%

Medium General Service						
	City (MDC)	Downtown Network (MDD)	Shoreline/ SeaTac (MDH/MDE)	Tukwila (MDT)	Burien/Lake Forest Park (MDB/MDL)	Suburban (MDS)
2016						
Energy (\$/kWh)	\$0.0675	\$0.0832	\$0.0739	\$0.737	\$0.0714	\$0.0714
Demand (\$/kW)	\$2.32	\$4.54	\$2.32	\$2.32	\$2.32	\$2.32
Minimum Bill (\$/Day)	\$0.65	\$0.65	\$0.65	\$0.65	\$0.65	\$0.65
Transformer Investment (\$/kW)	\$0.22	\$0.22	\$0.22	\$0.22	\$0.22	\$0.22
2017						
Energy (\$/kWh)	\$0.0698	\$0.0797	\$0.0754	\$0.0753	\$0.0740	\$0.0698
Demand (\$/kW)	\$3.36	\$7.48	\$3.63	\$3.63	\$3.56	\$3.36
Minimum Bill (\$/Day)	\$0.78	\$0.78	\$0.84	\$0.84	\$0.83	\$0.78
Transformer Investment (\$/kW)	\$0.27	\$0.27	\$0.27	\$0.27	\$0.27	\$0.27
2018						
Energy (\$/kWh)	\$0.0740	\$0.0852	\$0.0799	\$0.0798	\$0.0784	\$0.0740
Demand (\$/kW)	\$3.44	\$7.67	\$3.72	\$3.71	\$3.65	\$3.44
Minimum Bill (\$/Day)	\$0.80	\$0.80	\$0.86	\$0.86	\$0.85	\$0.80
Transformer Investment (\$/kW)	\$0.27	\$0.27	\$0.27	\$0.27	\$0.27	\$0.27
Average Rate (cents/kWh)						
2016	\$0.0734	\$0.0944	\$0.0803	\$0.0790	\$0.0773	\$0.0789
2017	\$0.0785	\$0.0981	\$0.0854	\$0.0836	\$0.0830	\$0.0785
2018	\$0.0828	\$0.1040	\$0.0901	\$0.0883	\$0.0876	\$0.0828
Average Rate Change (%)						
2017	6.8%	4.0%	6.4%	5.8%	7.4%	-0.5%
2018	5.6%	6.0%	5.5%	5.5%	5.5%	5.6%

Large General Service						
	City (LGC)	Downtown Network (LGD)	Shoreline/ SeaTac (LGH/LGE)	Tukwila (LGT)	Burien/Lake Forest Park (LGB/LGL)	Suburban (LGS)
2016						
kWh Peak (\$/kWh)	\$0.0767	\$0.0914	\$0.0852	\$0.0851	\$0.0845	\$0.0845
kWh Off-peak (\$/kWh)	\$0.0514	\$0.0612	\$0.0570	\$0.0570	\$0.0566	\$0.0566
kW Peak (\$/kW)	\$2.08	\$4.05	\$2.08	\$2.08	\$2.08	\$2.08
kW Off-Peak (\$/kW)	\$0.22	\$0.22	\$0.22	\$0.22	\$0.22	\$0.22
Minimum bill (\$/meter/day)	\$18.98	\$18.98	\$18.98	\$18.98	\$18.98	\$18.98
Transformer Investment (\$/kW)	\$0.22	\$0.22	\$0.22	\$0.22	\$0.22	\$0.22
2017						
kWh Peak (\$/kWh)	\$0.0801	\$0.0875	\$0.0865	\$0.0865	\$0.0849	\$0.0801
kWh Off-peak (\$/kWh)	\$0.0533	\$0.0583	\$0.0576	\$0.0575	\$0.0565	\$0.0533
kW Peak (\$/kW)	\$3.05	\$7.62	\$3.29	\$3.29	\$3.23	\$3.05
kW Off-Peak (\$/kW)	\$0.27	\$0.27	\$0.29	\$0.29	\$0.29	\$0.27
Minimum bill (\$/meter/day)	\$27.69	\$27.69	\$29.91	\$29.89	\$29.35	\$27.69
Transformer Investment (\$/kW)	\$0.27	\$0.27	\$0.27	\$0.27	\$0.27	\$0.27
2018						
kWh Peak (\$/kWh)	\$0.0848	\$0.0935	\$0.0916	\$0.0915	\$0.0899	\$0.0848
kWh Off-peak (\$/kWh)	\$0.0565	\$0.0624	\$0.0610	\$0.0610	\$0.0599	\$0.0565
kW Peak (\$/kW)	\$3.12	\$7.81	\$3.37	\$3.37	\$3.31	\$3.12
kW Off-Peak (\$/kW)	\$0.27	\$0.27	\$0.29	\$0.29	\$0.29	\$0.27
Minimum bill (\$/meter/day)	\$28.37	\$28.37	\$30.64	\$30.62	\$30.07	\$28.37
Transformer Investment (\$/kW)	\$0.27	\$0.27	\$0.27	\$0.27	\$0.27	\$0.27
Average Rate (cents/kWh)						
2016	\$0.0721	\$0.0892	\$0.0781	\$0.0782	\$0.0773	\$0.0773
2017	\$0.0773	\$0.0940	\$0.0813	\$0.0815	\$0.0795	\$0.0773
2018	\$0.0816	\$0.0996	\$0.0858	\$0.0861	\$0.0840	\$0.0816
Average Rate Change (%)						
2017	7.2%	5.4%	4.1%	4.2%	2.8%	0.0%
2018	5.5%	6.0%	5.6%	5.6%	5.7%	5.5%

High Demand General Service		
	City (HDC)	Tukwila (HDT)
2016		
kWh Peak (\$/kWh)	\$0.0732	\$0.0756
kWh Off-peak (\$/kWh)	\$0.0491	\$0.0507
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
2017		
kWh Peak (\$/kWh)	\$0.0746	\$0.0806
kWh Off-peak (\$/kWh)	\$0.0497	\$0.0537
kW Peak (\$/kW)	\$3.05	\$3.29
kW Off-Peak (\$/kW)	\$0.27	\$0.29
Minimum bill (\$/meter/day)	\$59.25	\$64.03
Transformer Investment (\$/kW)	\$0.27	\$0.27
2018		
kWh Peak (\$/kWh)	\$0.0791	\$0.0855
kWh Off-peak (\$/kWh)	\$0.0527	\$0.0569
kW Peak (\$/kW)	\$3.12	\$3.37
kW Off-Peak (\$/kW)	\$0.27	\$0.29
Minimum bill (\$/meter/day)	\$60.71	\$65.59
Transformer Investment (\$/kW)	\$0.27	\$0.27
Average Rate (cents/kWh)		
2016	\$0.0677	\$0.0718
2017	\$0.0709	\$0.0800
2018	\$0.0749	\$0.0843
Average Rate Change (%)		
2017	4.8%	11.3%
2018	5.6%	5.4%

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 rates 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 1.1% decrease in BPA power rates and was passed through to customers. 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 eliminated 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.

Increases of 4.4% for 2013 and 5.6% for 2014 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-through. 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%

In October 2014, the City Council approved rate increases of 4.2% in 2015 and 4.9% in 2016, consistent with the 2015-2020 Strategic Plan Update.

In June 2016, the RSA balance fell below \$90 million, automatically triggering a 1.5% surcharge effective August 1, 2016, the first imposition of a surcharge since the RSA began operation, in 2011.

In 2016, the City Council approved rate increases of 6.8% in 2017 and 5.6% in 2018, consistent with the 2017-2012 Strategic Plan Update⁴

Table B.1 summarizes average annual rate changes since 1971.

⁴The 6.8% 2017 increase is slightly higher than the 5.6% estimated in the Strategic Plan. The difference is a result of changes in consumption patterns identified in 2015 billing data, which required a higher rate increase to achieve the revenue requirement.

**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	5.1%
2016	4.9%
2017	6.8%
2018	5.6%

City Light's rate increases and decreases have produced the following changes in average system rates from 1982 through 2015, as displayed in Table B.2.

**Table B.2
Average System Rates 1982 to 2015**

Year	System Average Revenue in ¢/kWh¹	Seattle Consumer Price Index (2015=1.00)²	Real Cost in ¢/kWh (Adjusted for Inflation)
1982	1.78	0.404600	4.40
1983	2.11	0.403784	5.23
1984	2.51	0.416849	6.02
1985	2.73	0.425422	6.42
1986	2.96	0.428689	6.90
1987	3.03	0.438487	6.91
1988	3.12	0.452777	6.89
1989	3.23	0.474415	6.81
1990	3.16	0.508302	6.22
1991	3.18	0.536065	5.93
1992	3.34	0.555254	6.02
1993	3.59	0.571585	6.28
1994	3.75	0.592407	6.33
1995	3.75	0.609554	6.15
1996	3.88	0.629968	6.16
1997	3.93	0.649157	6.05
1998	3.85	0.666305	5.78
1999	3.89	0.687127	5.66
2000	4.06	0.712848	5.70
2001	5.58	0.738161	7.56
2002	6.30	0.751226	8.39
2003	6.20	0.762249	8.13
2004	6.39	0.774089	8.25
2005	6.14	0.797361	7.70
2006	6.17	0.827165	7.46
2007	5.65	0.858463	6.58
2008	5.64	0.896947	6.29
2009	5.62	0.900891	6.24
2010	6.66	0.907938	7.34
2011	6.83	0.936726	7.29
2012	7.02	0.960512	7.31
2013	7.34	0.972221	7.55
2014	7.72	0.991014	7.79
2015	8.04	1.000000	8.04

¹Average revenue figures are taken from City Light's Annual Financial Statement Reports

²The 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 2015 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 B.3 shows the 2015 average system rate for the 25 largest cities in the U.S. Seattle rates are the lowest amongst the 25 largest cities.

**Table B.3
2015 Average System Rates (¢/kWh) of 25 Largest U.S. Cities**

Rank	City	Population	Rate
1	Seattle	684,451	7.9
2	Charlotte	827,097	8.5
3	Indianapolis	853,173	8.8
4	Houston*	2,296,224	9.0
5	Dallas*	1,300,092	9.0
6	Fort Worth*	833,319	9.0
7	Memphis	655,770	9.1
8	El Paso	681,124	9.5
9	Austin	931,830	9.5
10	Denver	682,545	9.5
11	San Antonio	1,469,845	9.6
12	Nashville-Davidson	654,610	10.2
13	Jacksonville	868,031	10.3
14	Detroit	677,116	10.8
15	Chicago	2,720,546	11.4
16	Phoenix	1,563,025	11.8
17	Columbus	850,106	11.8
18	Washington DC	672,228	12.6
19	Philadelphia	1,567,442	13.2
20	Los Angeles	3,971,883	14.7
21	San Jose	1,026,908	15.4
22	San Francisco	864,816	15.4
23	Boston	667,137	19.7
24	San Diego	1,394,928	20.4
25	New York City	8,550,405	23.5

Sources: EEI Winter 2016 Report or directly from each utility
 *Texas utilities assigned "total for all utilities (IOUs, munis, co-ops, etc.)"
 from EEI report, due to deregulation

Table B.4 compares the 2015 average rate for Seattle City Light with neighboring utilities.

Table B.4
Average System Rates - Neighboring Utilities

Utility	2015 Rate (¢/kWh)
Tacoma Power	6.86
Seattle City Light	7.93
Snohomish PUD	8.74
Avista	8.87
Portland General	9.63
Puget Sound Energy	10.06

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 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 2017 and 2018 for each individual rate class. Note that, for rate design purposes, the billing determinants for the franchise cities are grouped. However, rates are legislated for the eight customer groups separately.

Billing Determinants as of June 10, 2016		2017 Billing Determinants				
		Seattle & Suburban	Downtown Network	Shoreline & SeaTac	Tukwila	Burien & Lake Forest Park
Residential Standard						
Total Energy	kWh	2,379,002,209		223,269,706	48,515,960	213,930,215
First Block Energy	kWh	1,292,890,115		99,529,829	22,713,093	93,739,624
Second Block Energy	kWh	1,086,112,094		123,739,876	25,802,867	120,190,591
Meters	Count	321,837		23,059	5,434	21,645
Residential Assisted						
Total Energy	kWh	195,433,608		21,954,523	9,522,585	25,971,183
First Block Energy	kWh	91,521,248		9,321,366	3,527,760	9,948,091
Second Block Energy	kWh	103,912,360		12,633,157	5,994,825	16,023,093
Meters	Count	22,686		2,159	844	2,312
Small General Service						
Energy	kWh	1,067,009,209		49,133,244	28,089,702	54,567,007
Meters	Count	39,387		1,698	934	2,397
Medium General Service						
Energy	kWh	1,667,795,148	507,328,466	79,154,255	102,632,903	54,843,836
Demand	kW	4,295,205	1,250,312	217,934	235,747	139,084
Meters	Count	2,311	546	142	103	100
Large General Service						
Peak Energy	kWh	477,247,156	388,073,782	20,704,693	67,140,817	5,976,022
Off-Peak Energy	kWh	298,646,510	242,844,570	12,956,356	42,014,647	3,739,610
Peak Billing Demand	kW	1,913,245	1,467,290	60,315	204,650	16,587
Off-Peak Billing Demand	kW	20,333	2,436	0	104	0
Meters	Count	81	60	4	9	1
High Demand General Service						
Peak Energy	kWh	506,536,750			118,999,614	
Off-Peak Energy	kWh	372,477,749			87,505,414	
Peak Billing Demand	kW	1,974,711			674,929	
Off-Peak Billing Demand	kW	11,488			1,054	
Meters	Count	7			5	

**Table C.2
2018 Billing Determinants**

Billing Determinants as of June 10, 2016		Seattle & Non-Franchise Suburban	Seattle Downtown Network	Shoreline & SeaTac	Tukwila	Burien & Lake Forest Park
Residential Standard						
Total Energy	kWh	2,373,139,210		222,711,234	48,383,783	213,383,866
First Block Energy	kWh	1,292,942,831		99,534,141	22,713,093	93,743,912
Second Block Energy	kWh	1,080,196,380		123,177,093	25,670,690	119,639,954
Meters	Count	321,850		23,060	5,434	21,646
Residential Assisted						
Total Energy	kWh	195,433,608		21,954,523	9,522,585	25,971,183
First Block Energy	kWh	91,521,248		9,321,366	3,527,760	9,948,091
Second Block Energy	kWh	103,912,360		12,633,157	5,994,825	16,023,093
Meters	Count	22,686		2,159	844	2,312
Small General Service						
Energy	kWh	1,072,278,961		49,375,904	28,228,432	54,836,503
Meters	Count	39,582		1,706	938	2,409
Medium General Service						
Energy	kWh	1,676,279,317	509,909,274	79,556,917	103,155,002	55,122,830
Demand	kW	4,295,205	1,250,312	217,934	235,747	139,084
Meters	Count	2,323	549	143	104	101
Large General Service						
Peak Energy	kWh	480,179,607	390,458,306	20,831,913	67,553,365	6,012,741
Off-Peak Energy	kWh	299,804,900	243,786,516	13,006,611	42,177,613	3,754,115
Peak Billing Demand	kW	1,913,245	1,467,290	60,315	204,650	16,587
Off-Peak Billing Demand	kW	20,333	2,436	0	104	0
Meters	Count	81	61	4	9	1
High Demand General Service						
Peak Energy	MWh	509,365,717			119,664,217	
Off-Peak Energy	MWh	375,531,746			88,222,884	
Peak Billing Demand	kW	1,974,711			674,929	
Off-Peak Billing Demand	kW	11,488			1,054	
Meters	Count	7			5	

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 (RR) and marginal costs of energy, distribution and customer service. Tables D.1 and D.2 report the revenue requirements for non-network City of Seattle, network and franchise cities as well as the target franchise payments and total franchise cities target revenue. Tables D.3 and D.5 report the total marginal costs by rate class for 2017 and 2018, and Tables D.4 and D.6 report the marginal costs per MWh for 2017 and 2018.

Table D.1
2017 Revenue Requirements by Rate Class

RR net of Franchise Adjustments	Total	Residential	Small	Medium	Large	High Demand	Lights
All areas	\$860,100,378	\$328,749,691	\$108,743,458	\$199,135,981	\$130,862,136	\$77,539,920	\$15,069,191
City of Seattle	\$636,271,756	\$270,725,044	\$97,088,433	\$130,797,834	\$59,802,228	\$62,789,026	\$15,069,191
Downtown Network	\$109,083,669			\$49,780,219	\$59,303,450		
Franchise Cities	\$114,744,953	\$58,024,647	\$11,655,026	\$18,557,927	\$11,756,459	\$14,750,894	\$0
Additional Information	Total	Residential	Small	Medium	Large	High Demand	Lights
Franchise Adjustments	\$8,437,965	\$4,100,638	\$830,217	\$1,394,235	\$922,474	\$1,190,401	
Franchise Cities Total	\$123,182,918	\$62,125,285	\$12,485,243	\$19,952,163	\$12,678,933	\$15,941,295	
Total RR Target	\$868,538,343	\$332,850,329	\$109,573,676	\$200,530,216	\$131,784,610	\$78,730,322	\$15,069,191

Table D.2
2018 Revenue Requirements by Rate Class

RR net of Franchise Adjustments	Total	Residential	Small	Medium	Large	High Demand	Lights
All areas	\$910,867,839	\$346,680,221	\$115,243,834	\$211,408,409	\$139,064,891	\$82,474,253	\$15,996,231
City of Seattle	\$673,287,871	\$285,503,505	\$102,900,658	\$138,692,203	\$63,410,604	\$66,784,670	\$15,996,231
Downtown Network	\$116,226,667			\$53,038,206	\$63,188,461		
Franchise Cities	\$121,353,301	\$61,176,716	\$12,343,176	\$19,678,001	\$12,465,826	\$15,689,582	
Additional Information	Total	Residential	Small	Medium	Large	High Demand	Lights
Franchise Adjustments	\$8,907,402	\$4,320,334	\$878,058	\$1,474,682	\$974,383	\$1,259,946	
Franchise Cities Total	\$130,260,703	\$65,497,050	\$13,221,234	\$21,152,682	\$13,440,209	\$16,949,528	
Total RR Target	\$919,775,241	\$351,000,554	\$116,121,892	\$212,883,091	\$140,039,274	\$83,734,199	\$15,996,231

**Table D.3
2017 Total Marginal Costs, \$ with Tax**

Total Service Territory	Total	Residential	Small	Medium	Large	High Demand	Lights
Energy	\$342,863,350	\$113,493,938	\$43,727,086	\$88,001,281	\$56,569,100	\$38,998,860	\$2,073,087
Distribution	\$534,750,121	\$200,769,498	\$73,552,132	\$128,889,118	\$93,944,827	\$35,745,412	\$1,849,134
ISA Transmission	\$58,472,910	\$22,216,690	\$8,476,108	\$13,804,600	\$8,784,665	\$4,938,227	\$252,620
Stations	\$53,572,441	\$20,146,864	\$7,750,326	\$12,731,662	\$8,248,216	\$4,466,867	\$228,507
Wires & Related Equip.	\$403,031,017	\$154,407,376	\$54,937,759	\$93,543,028	\$73,131,247	\$25,705,687	\$1,305,919
Transformers	\$19,673,752	\$3,998,567	\$2,387,940	\$8,809,827	\$3,780,700	\$634,631	\$62,087
Streetlights							
Customer Costs	\$55,080,080	\$47,339,520	\$4,997,486	\$917,173	\$1,566,366	\$259,536	
Load, MWh	9,432,200	3,117,600	1,198,799	2,411,755	1,559,344	1,085,520	59,183
Non-network	Total	Residential	Small	Medium	Large	High Demand	Lights
Energy	\$293,236,133	\$110,316,258	\$38,677,334	\$69,489,632	\$33,680,962	\$38,998,860	\$2,073,087
Distribution	\$404,845,778	\$189,177,712	\$57,895,267	\$82,133,134	\$38,045,119	\$35,745,412	\$1,849,134
ISA Transmission	\$50,373,803	\$21,612,538	\$7,485,514	\$10,893,397	\$5,191,507	\$4,938,227	\$252,620
Stations	\$45,565,552	\$19,549,591	\$6,771,011	\$9,853,607	\$4,695,970	\$4,466,867	\$228,507
Wires & Related Equip.	\$298,056,951	\$144,600,981	\$42,176,980	\$57,076,064	\$27,191,319	\$25,705,687	\$1,305,919
Transformers	\$10,849,472	\$3,414,602	\$1,461,762	\$4,310,066	\$966,323	\$634,631	\$62,087
Streetlights							
Customer Costs	\$51,294,553	\$44,737,452	\$4,572,553	\$765,101	\$959,912	\$259,536	
Load, MWh	8,068,223	3,030,311	1,060,358	1,904,426	928,426	1,085,520	59,183
Network	Total	Residential	Small	Medium	Large	High Demand	Lights
Energy	\$49,627,217	\$3,177,679	\$5,049,752	\$18,511,649	\$22,888,137		
Distribution	\$129,904,343	\$11,591,785	\$15,656,865	\$46,755,984	\$55,899,709		
ISA Transmission	\$8,099,108	\$604,152	\$990,594	\$2,911,203	\$3,593,158		
Stations	\$8,006,889	\$597,273	\$979,315	\$2,878,056	\$3,552,246		
Wires & Related Equip.	\$104,974,067	\$9,806,395	\$12,760,779	\$36,466,964	\$45,939,928		
Transformers	\$8,824,280	\$583,964	\$926,178	\$4,499,761	\$2,814,376		
Streetlights	\$0	\$0	\$0	\$0	\$0		
Customer Costs	\$3,785,526	\$2,602,067	\$424,933	\$152,072	\$606,454		
Load, MWh	1,363,977	87,289	138,441	507,328	630,918		

ISA Transmission = In Service Area Transmission

**Table D.4
2017 Total Marginal Costs, \$/MWh with Tax**

Total Service Territory	Total	Residential	Small	Medium	Large	High Demand	Lights
Energy	\$36.35	\$36.40	\$36.48	\$36.49	\$36.28	\$35.93	\$35.03
Distribution	\$56.69	\$64.40	\$61.35	\$53.44	\$60.25	\$32.93	\$31.24
ISA Transmission	\$6.20	\$7.13	\$7.07	\$5.72	\$5.63	\$4.55	\$4.27
Stations	\$5.68	\$6.46	\$6.47	\$5.28	\$5.29	\$4.11	\$3.86
Wires & Related Eq.	\$42.73	\$49.53	\$45.83	\$38.79	\$46.90	\$23.68	\$22.07
Transformers	\$2.09	\$1.28	\$1.99	\$3.65	\$2.42	\$0.58	\$1.05
Streetlights							
Customer Costs	\$5.84	\$15.18	\$4.17	\$0.38	\$1.00	\$0.24	
Non-network	Total	Residential	Small	Medium	Large	High Demand	Lights
Energy	\$36.34	\$36.40	\$36.48	\$36.49	\$36.28	\$35.93	\$35.03
Distribution	\$50.18	\$62.43	\$54.60	\$43.13	\$40.98	\$32.93	\$31.24
ISA Transmission	\$6.24	\$7.13	\$7.06	\$5.72	\$5.59	\$4.55	\$4.27
Stations	\$5.65	\$6.45	\$6.39	\$5.17	\$5.06	\$4.11	\$3.86
Wires & Related Eq.	\$36.94	\$47.72	\$39.78	\$29.97	\$29.29	\$23.68	\$22.07
Transformers	\$1.34	\$1.13	\$1.38	\$2.26	\$1.04	\$0.58	\$1.05
Streetlights							
Customer Costs	\$6.36	\$14.76	\$4.31	\$0.40	\$1.03	\$0.24	
Network	Total	Residential	Small	Medium	Large	High Demand	Lights
Energy	\$36.38	\$36.40	\$36.48	\$36.49	\$36.28		
Distribution	\$95.24	\$132.80	\$113.09	\$92.16	\$88.60		
ISA Transmission	\$5.94	\$6.92	\$7.16	\$5.74	\$5.70		
Stations	\$5.87	\$6.84	\$7.07	\$5.67	\$5.63		
Wires & Related Eq.	\$76.96	\$112.34	\$92.17	\$71.88	\$72.81		
Transformers	\$6.47	\$6.69	\$6.69	\$8.87	\$4.46		
Streetlights							
Customer Costs	\$2.78	\$29.81	\$3.07	\$0.30	\$0.96		

**Table D.5
2018 Total Marginal Costs, \$ with Tax**

Total Service Territory	Total	Residential	Small	Medium	Large	High Demand	Lights
Energy	\$414,581,997	\$135,955,616	\$52,898,777	\$106,888,513	\$68,778,774	\$47,674,089	\$2,386,228
Distribution	\$548,002,551	\$205,725,461	\$75,402,221	\$132,124,153	\$96,301,860	\$36,635,093	\$1,813,763
ISA Transmission	\$59,909,311	\$22,766,362	\$8,685,908	\$14,146,444	\$9,002,405	\$5,060,390	\$247,803
Stations	\$54,888,659	\$20,645,331	\$7,942,170	\$13,046,960	\$8,452,680	\$4,577,369	\$224,150
Wires & Related Equip.	\$412,976,971	\$158,226,306	\$56,315,460	\$95,858,590	\$74,952,778	\$26,342,762	\$1,281,075
Transformers	\$20,227,611	\$4,087,462	\$2,458,684	\$9,072,160	\$3,893,997	\$654,573	\$60,736
Streetlights							
Customer Costs	\$56,475,838	\$48,504,237	\$5,145,503	\$944,987	\$1,615,200	\$265,911	
Load, MWh	9,456,100	3,110,500	1,204,720	2,424,023	1,567,566	1,092,785	56,507
Non-network	Total	Residential	Small	Medium	Large	High Demand	Lights
Energy	\$354,353,556	\$132,149,040	\$46,789,847	\$84,403,810	\$40,950,542	\$47,674,089	\$2,386,228
Distribution	\$414,838,313	\$193,849,934	\$59,353,400	\$84,193,590	\$38,992,532	\$36,635,093	\$1,813,763
ISA Transmission	\$51,608,891	\$22,147,192	\$7,670,692	\$11,162,879	\$5,319,935	\$5,060,390	\$247,803
Stations	\$46,682,750	\$20,033,212	\$6,938,513	\$10,097,367	\$4,812,140	\$4,577,369	\$224,150
Wires & Related Equip.	\$305,402,091	\$148,179,015	\$43,239,128	\$58,494,935	\$27,865,176	\$26,342,762	\$1,281,075
Transformers	\$11,144,581	\$3,490,515	\$1,505,067	\$4,438,408	\$995,281	\$654,573	\$60,736
Meters	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Streetlights	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Customer Costs	\$52,583,922	\$45,838,250	\$4,707,946	\$788,323	\$983,493	\$265,911	\$0
Load, MWh	8,085,731	3,023,410	1,065,595	1,914,114	933,321	1,092,785	56,507
Network	Total	Residential	Small	Medium	Large	High Demand	Lights
Energy	\$60,228,441	\$3,806,577	\$6,108,930	\$22,484,703	\$27,828,232		
Distribution	\$133,164,239	\$11,875,527	\$16,048,821	\$47,930,563	\$57,309,328		
ISA Transmission	\$8,300,420	\$619,169	\$1,015,216	\$2,983,564	\$3,682,470		
Stations	\$8,205,909	\$612,119	\$1,003,657	\$2,949,593	\$3,640,541		
Wires & Related Equip.	\$107,574,879	\$10,047,291	\$13,076,332	\$37,363,654	\$47,087,602		
Transformers	\$9,083,030	\$596,947	\$953,617	\$4,633,751	\$2,898,715		
Meters	\$0	\$0	\$0	\$0	\$0		
Streetlights							
Customer Costs	\$3,891,916	\$2,665,988	\$437,557	\$156,664	\$631,707		
Load, MWh	1,370,369	87,090	139,125	509,909	634,245		

**Table D.6
2018 Total Marginal Costs, \$/MWh with Tax**

Total Service Territory	Total	Residential	Small	Medium	Large	High Demand	Lights
Energy	\$43.84	\$43.71	\$43.91	\$44.10	\$43.88	\$43.63	\$42.23
Distribution	\$57.95	\$66.14	\$62.59	\$54.51	\$61.43	\$33.52	\$32.10
ISA Transmission	\$6.34	\$7.32	\$7.21	\$5.84	\$5.74	\$4.63	\$4.39
Stations	\$5.80	\$6.64	\$6.59	\$5.38	\$5.39	\$4.19	\$3.97
Wires & Related Eq.	\$43.67	\$50.87	\$46.75	\$39.55	\$47.81	\$24.11	\$22.67
Transformers	\$2.14	\$1.31	\$2.04	\$3.74	\$2.48	\$0.60	\$1.07
Meters	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Streetlights							
Customer Costs	\$5.97	\$15.59	\$4.27	\$0.39	\$1.03	\$0.24	
Non-network	Total	Residential	Small	Medium	Large	High Demand	Lights
Energy	\$43.82	\$43.71	\$43.91	\$44.10	\$43.88	\$43.63	\$42.23
Distribution	\$51.30	\$64.12	\$55.70	\$43.99	\$41.78	\$33.52	\$32.10
ISA Transmission	\$6.38	\$7.33	\$7.20	\$5.83	\$5.70	\$4.63	\$4.39
Stations	\$5.77	\$6.63	\$6.51	\$5.28	\$5.16	\$4.19	\$3.97
Wires & Related Eq.	\$37.77	\$49.01	\$40.58	\$30.56	\$29.86	\$24.11	\$22.67
Transformers	\$1.38	\$1.15	\$1.41	\$2.32	\$1.07	\$0.60	\$1.07
Meters	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Streetlights							
Customer Costs	\$6.50	\$15.16	\$4.42	\$0.41	\$1.05	\$0.24	
Network	Total	Residential	Small	Medium	Large	High Demand	Lights
Energy	\$43.95	\$43.71	\$43.91	\$44.10	\$43.88		
Distribution	\$97.17	\$136.36	\$115.36	\$94.00	\$90.36		
ISA Transmission	\$6.06	\$7.11	\$7.30	\$5.85	\$5.81		
Stations	\$5.99	\$7.03	\$7.21	\$5.78	\$5.74		
Wires & Related Eq.	\$78.50	\$115.37	\$93.99	\$73.28	\$74.24		
Transformers	\$6.63	\$6.85	\$6.85	\$9.09	\$4.57		
Meters	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		
Streetlights	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		
Customer Costs	\$2.84	\$30.61	\$3.15	\$0.31	\$1.00		