

[Draft Report for Review Panel Consideration]

Review of Electric Utility Rate Design Options

Prepared for
Seattle City Light Review Panel

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Seattle City Light Review Panel

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Seattle City Light Review Panel

Review of Electric Utility Rate Design Options

Introduction

As part of its efforts to develop recommendations on an updated rate design for Seattle City Light (SCL), the Seattle City Light Review Panel (Review Panel) along with SCL staff requested a review of the rate designs of general interest to the Review Panel and also of the main rate designs used by a sample of similarly sized electric utilities and other electric utilities in the Pacific Northwest region. This review was expanded to include several electric utilities with innovative alternative rate designs to compare with the typical rate designs used by electric utilities in the United States (U.S.).

SCL engaged Cuthbert Consulting Inc. to work with the Review Panel to prepare a review that would examine the rate designs used by eight (8) large municipal electric utilities, four (4) large Pacific Northwest investor owned utilities (IOUs), and three (3) other municipal utilities that have alternative innovative rate designs. These 15 utilities are as follows:

Large Municipal Utilities

- City of Austin, Texas (Austin)
- British Columbia Hydroelectric Power (BC Electric)
- Los Angeles Department of Water and Power (LADWP)
- Salt River Project, Phoenix, Arizona (SRP)
- Sacramento Municipal Utility District (SMUD)
- CPS Energy, San Antonio, Texas (CPS Energy)
- South Carolina Public Service Authority (Santee Cooper)
- Tacoma Power (Tacoma)

Other Municipal Utilities

- Burbank (CA) Water and Power (Burbank)
- City of Colorado Springs (Colorado Springs)
- Glendale (CA) Water and Power (Glendale)

Pacific Northwest Investor Owned Utilities

- Avista Energy (Avista)
- Idaho Power Company (Idaho Power)

- Portland General Electric (PGE)
- Puget Sound Energy (PSE)

The focus of this review was on the predominant residential class electric rates as well as the rates for general service/commercial and high demand/industrial rate classes, although information on several alternative, experimental or pilot project rate design options were also obtained. The review also examined a number of other rate design options that were of interest to the Review Panel.

This report summarizes the results of this rate design review. It is organized into three main sections: A first section discusses 12 rate design structures that were specifically requested to be reviewed by the Review Panel. A second section provides a summary of the residential class rate designs, general service/commercial class rate designs, and high demand/industrial class rate designs for the 15 utilities listed above. This information focuses more on rate designs used rather than on the specific level of rates and charges at these utilities. Given a high interest in residential rate options, information on the specific residential class rate structures used by the 15 utilities is provided in Appendix A to the report along with summaries of the non-residential rate designs for these utilities.

Rate Designs of Interest to the Review Panel

As part of their discussions, the Review Panel requested that a number of less traditional and more innovative rate design options be reviewed. The following paragraph provides a brief review of each of these rate designs.

- **Inverted Block Rates** charge a different price for energy at different usage levels. Typically a lower price is charged for energy usage up to some monthly threshold level and one or more higher energy prices are charged for energy usage above this threshold level. Inverted block rates either can be seasonal or year-round. This rate design has been used by electric utilities in the U.S. for more than 30 years for their residential customer classes and less commonly for small general service customer classes. Among the 15 utilities reviewed in this survey, two had an annual inverted block rate structure and five had a seasonal inverted block rate structure for their residential customer classes. Only two of the 15 utilities surveyed had an inverted block rate structure for their small general service customer classes.

Inverted block rates were implemented by an increasing number of electric utilities in the 1970's and 1980's as part of their moving away from declining-block rates to help promote higher energy conservation levels. The incidence of inverted block rate structures has seen less prevalence during the last 10 to 15 years as concerns for revenue stability in the face of flat or declining energy usage overshadow the prior focus on energy conservation. At the same time many electric utilities have reduced the number of inverted block rates or changed to uniform (flat) rates as part of this change, in part to simplify rates and to improve revenue stability. Examples of utilities

in this review with inverted block rates are discussed below and detailed in the rate design discussions provided in Appendix A.

- **Time-of-Use (TOU) Rates** have different charges for energy based on the various time of day or seasonal periods. A higher price is charged during on-peak hours or seasons when utility costs are highest. Off-peak time periods have lower charges that reflect the lower costs associated with lower cost resources and lower demands for energy. TOU rates can provide more accurate price signals to customers than uniform rates, are more consistent with the utility's cost of service, and better reflect the costs of supplying and delivering electricity. Research has shown that TOU rates are most effective at helping utilities lower their costs when on-peak rates are set very high for short periods of time.

Examples of utilities included in this review that have TOU rates include SMUD which has had optional residential and small general service seasonal, three period TOU rate structures along with mandatory TOU rates for medium general service and higher demand customer classes and is planning to make TOU rate its default rates in the near future, and (2) SRP which has a two standard TOU rate options along with two experimental TOU rate options for its residential customer class, optional three season, three period TOU energy and demand rate options for all general service customers, and similar mandatory TOU rates for large general service (i.e. high demand) customer classes. TOU rates are common in large general service and high demand/industrial class rate structures. Real-time pricing is another TOU option that is mandatory for the largest customer classes in New York and New Jersey. Other examples of utilities in this review with TOU rates are discussed below and detailed in the rate design discussions provided in Appendix A.

- **Unbundled Rates** are simply a rate design that separate out various cost of service elements associated with a utility's providing service to its customers into the rates it charges to them. For example, the separated costs for the customer, delivery, transmission, generation, fuel, purchased power and other items can be used as a basis for developing customer class rates and charges. Austin, Burbank, LADWP, SMUD and PGE are all examples of utilities in this review that have increased the degree to which rates are unbundled as part of their rate designs. More information on these unbundled charges is provided in the customer class discussions below and detailed in the rate design discussion provided in Appendix A.
- **Delivery or Access Charges** are rates that unbundle the costs associated with delivering power from the utility's secondary distribution system into separate rates or charges to its customers. These delivery costs are largely fixed cost in nature, varying more by the size of the customer's connection to the utility grid than by the amount of energy or demand the customer actually takes. Delivery or access charges are typically established as either a fixed charge (e.g. \$/month) or a separate energy rate (\$/kWh) for residential and small general service customer, and as a separate demand charge (\$/kW) for larger general service and high demand customers. Several

examples of utilities with separate unbundled delivery or access charge are discussed above and detailed in the rate design discussion provided in Appendix A.

- **Demand Charges** are rates that charge for the maximum usage measured in kilowatts of each customer measured in kilowatts over a month period. Demand rates are charged on a dollar-per-kilowatt basis (\$/kW) and are common as part of large general service and high demand/industrial customer class rates, but until recently have been seldom used for residential and small general service customer class rates. Demand charge rates can provide a pricing signal for customers to reduce their peak demand and better reflect the utility's cost of service. When the charge is based on demands that are not coincident with the utility's peak demand, this is often viewed to be a fair way to recover distribution costs that reflect the utility's cost of service. Alternatively these demand charges are often viewed to be a less fair way to recover transmission and generation costs which vary more by the utility's peak demand level which may or may not be at the same time as the customer's peak demand level. A two-part demand charge (with both coincident and non-coincident peak demand elements) can be viewed to better reflect the cost of service and thus be fairer, but also results in more complex and less understandable rates for many utility customers.

As an example, SMUD has two demand charges, one for non-coincident peak demand and one based on coincident demand during a short super peak demand period of the customer for its large customer class rates. SRP has an experimental demand rate option available for its residential customer class and mandatory three-season, three-period unbundled energy and demand charges for all of its larger general service customer classes. Most recently SRP and the State of Massachusetts both have adopted mandatory demand charges for the customers with solar PV systems.

- **Critical Peak Pricing** rates are a variation of time-of-use rate design with customers charged higher energy rates for several hours during a limited number of days each year when the utility's costs are highest. The price is predetermined along with the allowable time periods, but the actual peak time events are determined and communicated to customers only a few hours or days in advance. The critical peak price is typically 5 to 10 times higher than the typical energy price with a limited implementation of up to 15 to 20 days per year. Typically this price differential reflects a higher short-term cost of power for generation or wholesale purchases of the utility, often purchased from a wholesale energy provider. Several IOUs in the eastern U.S. as well as municipal utilities in Colorado have successfully used this rate design as an option for their large general service and high demand/industrial class rates, and as an option for residential customers electing time-of-use rates. It is most appropriate for utilities with short periods (e.g., less than 50 hours per year) of very high peak demand generation costs or wholesale power costs.
- **Coincident Peak Pricing** rates charge customers demand charges (\$/kW) based on their peak demand at the time of the utility peak demand each month (i.e. customers' coincident peak demands) as opposed to each customer's actual monthly peak demand

level. This rate structure is most appropriate for utilities with significant monthly demand charges from their wholesale power providers or those with short periods of very high generation costs. Typically adopted for large general service and/or high demand customer classes, this rate design provides cost-of-service based pricing signals to customers that encourage them to shift their peak demand to times when lower cost power is available. This rate structure has been adopted by both the Fort Collins (CO) Utilities and Loveland (CO) Water and Power for their large general service and industrial customer classes and reflects each utility's wholesale provider peak demand charges to these utilities.

- **Green Power Rates** are charges that provide a means for customers to participate in the development and support of renewable energy resources of a utility. Typically a customer will elect to have some or all of their electricity needs to be provided from the utility's renewable power resource options (e.g., solar, wind, etc.) and will purchase this electricity at a premium rate (e.g. a 2 to 5 cent per kWh premium) above the utility's normal energy rates. This helps the utility to defray some of the higher costs for renewable energy resources and thereby assists the utility in the development of additional renewable resources. Offering customers the option of purchasing green power provides a mean for residential and other customers to participate in renewable energy developments without needing to make significant upfront investments in renewable resources themselves. Over 850 utilities in the U.S. have green power options, including Austin, SMUD, PGE and PSE.
- **Low Income Program Rates** are typically separate charges that provide funds to help facilitate the utility discounted electricity rates for qualifying low-income customers. Separating this rate from other energy rates helps to lower energy rates and also provides greater transparency to utility customers of the cost of service. More information on utilities in this review with low income program rates is provided in the utility discussions below and detailed in the rate design discussion provided in Appendix A.
- **Decoupling Charges** are rate adjustment mechanisms that modify a utility's energy rates periodically based on fluctuations between actual energy usage and projected energy usage so that rates recover no more and no less than the utility's approved revenue requirement. The decoupling charge is reviewed on a regular basis (e.g. monthly, quarterly, etc.) and adjusted based on unanticipated changes in customer energy usage levels. Most of these adjustments are small (typically within a +/- 3 percent range) and are viewed as a means to provide greater revenue stability and eliminate possible incentives the utility might have to increase energy sales as a means to increase revenues. Decoupling charges have been adopted by at least 29 investor owned utilities in 14 states as part of their rate designs and have also been adopted by LADWP and Glendale to address revenue recovery risks and to remove possible disincentives for promoting energy efficiency and for actions to increased energy sales.

- **Distributed Energy Resource Rates** are rates that provide cost-based pricing signals to distributed energy resource (DER) providers and recognize the value and benefits that DER generation provides. DERs can include generation provided by a broad array of resources, including solar PV, combined heat and power, wind, energy storage, demand response, electric vehicles, and energy efficiency. The challenge of developing DER rates involve both fairly valuing the DER energy (including possible environmental, capital, operational and fuel savings) and also providing a means to fairly charge DER generators for the use of the utility facilities they use. Rate designs with greater transparency but more complexity may be needed to accomplish this, separating customer, delivery, generation and fuel cost components as part of the DER rate design, with consideration of both coincident and non-coincident demand charges along with time-of-use rates.

As examples of DER rates, Austin Energy and utilities in Maine and Minnesota have adopted Value of Solar rates that vary by class and provide pricing signals to solar PV generators that are used to determine a credit to a customer's electricity bill, with that bill based on the energy purchases priced at the utilities regular tariff rates and charges. To help minimize revenue recovery shifting to non-DER customers, utilities in California and Massachusetts have adopted minimum electric bills to DER customers to ensure all customers are paying some portion off utility fixed costs necessary for each customer to be interconnected with the utility.

- **Performance-based Rates** are an element of performance-based regulation (PBR) which is a new approach to utility regulation with the goal of strengthening performance incentives for electric utilities. Two of the most common forms of PBR are award-or-penalty mechanisms and multi-year rate plans, both with mathematical formulas that can lower regulatory costs while encouraging better utility performance. PBRs have been reviewed in several states and legislation adopting a PBR framework for Hawaii electric utilities was adopted in 2018 as a first in the U.S. with an implementation date of 2020 for specific utility proposals on how such a mechanism can be effectively implemented in Hawaii.

Summary of Residential Rate Designs Reviewed

The following paragraphs summarize the key features of the residential rate designs for the 15 electric utilities included in the review.

Key Residential Rate Design Features:

- **Fixed Cost Charges:** All 15 utilities have some form of fixed cost charges for their residential customer classes. These charges have a variety of names, including Basic Charge, Customer Charge, Access Charge and Minimum Charge, and can be charged on a daily, monthly or bimonthly basis. For the large municipal utilities these charges range on a monthly basis from a low of \$5.75 (BC Hydro) to a high of \$20.30 (SMUD), and an average fixed charge of \$13.85 per month. The three other municipal utilities

all have fixed cost charges within this same range and a similar average fixed cost charge level. For the four Pacific Northwest IOUs, the range of fixed cost charges is between a low of \$5.00 (Idaho Power) and a high of \$11.00 (PGE), and an average fixed charge of \$7.87 per month.

- **Energy Charges:** Four types of energy charges are seen among the 15 utilities in the review of their residential customer classes. Two utilities have Uniform (Flat) Energy Rates (a single \$/kWh energy charge applicable throughout the year), two have Seasonal Uniform Energy Rates (two or more different \$/kWh energy charges varying for peak and non-peak seasons), four have Inverted-block Energy Rates (multiple \$/kWh energy charges that increase with the amount of energy a customer requires each month), and seven have Seasonal Inverted-block Energy Rates (multiple \$/kWh energy charges that increase with the amount of energy a customer uses and also vary between two or more seasonal periods during the year). The four utilities with Uniform or Seasonal rate structures are seen at municipal utilities; all four of the investor-owned utilities along with seven municipal utilities have either Inverted-block or Seasonal Inverted-block rate structures. Generally these utilities have 2- or 3-block inverted rate structures, although Austin has a 5-block inverted rate structure.
- **Demand Charges:** None of the 15 utilities in the review have mandatory demand charges (\$/kW) for their residential class rates. One utility (SRP) has an optional experimental residential demand charge rate available for residential customers.
- **Time-of-Use Rates:** None of the 15 utilities in the review have mandatory time-of-use rates for their residential class rates. Eight of the utilities have optional, experimental, or pilot project time-of-use rates for their residential customer classes, including seven municipal utilities and one IOU.
- **Unbundled Charges:** Only three of the 15 utilities in the review have an unbundled Energy Delivery or Access Charge for their other Energy Charges. All three separate the delivery or access charge (priced on a \$/kWh basis) from the other Energy Charges for their residential class rates.
- **Separate Power Supply Adjustment (PSA) Charges:** Seven municipal utilities and all four (4) IOUs have a separate charge that adjusts for periodic fluctuations in fuel and purchased power costs. These charges are adjusted periodically (e.g. monthly, quarterly, etc.) based on fluctuations in the utility's fuel and/or purchased power costs and help ensure the utility does not under recover or over recover these costs.

Other Less Typical Rate Structure Elements:

- **Decoupling Charges:** Five of the 15 utilities have a decoupling charge that helps assure the utility collects its revenue requirement. This charge fluctuates with changes in actual energy sales compared with projected energy sales and can be a charge or a

credit depending on fluctuations in the level of energy sales. The utilities in the review that have a decoupling charge include two municipal utilities and three IOUs.

- **Regulatory Charges:** Four of the 15 utilities have a separate charge that collects the costs associated with regulation of the utility by its state regulatory commission, board, or city council. This includes three municipal utilities and one IOU.
- **Community Benefit Charges:** Four of the 15 utilities have one or more separate charges that collect various costs associated with providing a benefit to the service area community. This includes two municipal utilities and two IOUs. Among the items that these charges collect funds for are street lighting expense, low income assistance program costs, and energy efficiency program costs.
- **Low Income Charges:** Four of the 15 utilities have a separate charge that collects the costs associated with providing assistance to low income customers. This includes one municipal utility and three IOUs.
- **Green Energy Charges:** Three of the 15 utilities have an option available to their customers to pay an extra charge to participate in renewable energy projects developed by the utility and that cost more than the utility's standard energy resources. This includes one municipal utility and two IOUs.
- **Electric Vehicle Charges:** Three of the 15 utilities have an option available to their customers to recognize environmental benefits to the community of having an electric vehicle. This includes one municipal utility and two IOUs and includes availability of lower cost energy in off-peak periods.
- **Service Size Charges:** One of the 15 utilities reviewed (Burbank) has two separate charges that vary by the panel size of customer (i.e., greater or lesser than 200-amp service) and recognizes the higher delivery costs associated with a larger service size.

Summary of General Service Rate Designs Reviewed

The following paragraphs summarize the key features of the general service or commercial rate structures for the 15 electric utilities included in the review. All 15 of these utilities have at least two General Service classes (e.g. small and large) and four have three General Service Rates. The divisions between small and other general service classes occurs at different demand or energy levels, and for the sample typically range between 10 kW and 65 kW demand levels. Given the significant differences between Small General Service (which are generally similar to residential class rates) and Medium/Large General Service rate structures, this discussion is separated into these two groupings.

Key Small General Service Rate Design Features:

- **Customer Class Definitions:** The distinction of small general service classes from medium and/or large general service classes at all 15 utilities represents the point at which the transition between not having a demand (\$/kW) charge and having a demand charge is established. Small general service classes typically only have one or more fixed charges (e.g. Basic Charge) and one or more energy charges (e.g. Energy Charge, Delivery Charge, etc.) but have no demand charges. The small general service customer classes have a wide range of demand levels, including customers with less than 5 kW/month to as high as 65 kW/month. Most of the utilities set their small general service class level at between 20 kW/month and 30 kW/month, with general service customer classes above this level having demand charges.
- **Fixed Cost Charges:** All 15 utilities have some form of fixed cost charges for their small general service customer classes. Like residential rate structures, these charges have a variety of names, including Basic Charge, Customer Charge, Access Charge and Minimum Charge, and can be charged on a daily, monthly or bimonthly basis. For the large municipal utilities these charges range on a monthly basis from a low of \$7.00 (LADWP) to a high of \$46.35 (SRP), and an average fixed charge of \$19.77 per month. The three other municipal utilities all have fixed cost charges within this same range and a similar average fixed cost charge level. For the four Pacific Northwest IOUs, the range of fixed cost charges is between a low of \$5.00 (Idaho Power) and a high of \$20.00 (Avista), with an average fixed charge of \$12.95 per month.
- **Energy Charges:** Six types of energy charges are seen among the 15 utilities in the review of their small general service customer classes. Four utilities have Uniform (Flat) Energy Rates (a single \$/kWh energy charge applicable throughout the year), two have Seasonal Uniform Energy Rates (two or more different \$/kWh energy charges varying for peak and non-peak seasons), three have Declining Block Energy Rates (two \$/kWh energy charges where there is a lower rate for higher amounts of energy usage), two have Inverted-block Energy Rates (with two \$/kWh energy charges that vary by the amount of energy a customer requires each month), two have Seasonal Inverted-block Energy Rates (two \$/kWh energy charges that vary by the amount of energy a customer uses and also between two or more seasonal periods during the year), and two have one set of time-of-use energy rates throughout the year.
- **Demand Charges:** None of the 15 utilities in the review have mandatory demand charges (\$/kW) for their small general service class rates. However, one utility (LADWP) has a \$/kW facility charge for its small general service class which operates similar to a demand charge and collects the facility costs for energy delivered to customers (transformers, wires, etc.).
- **Time-of-Use Rates:** Two of the 15 utilities in the review have mandatory time-of-use rates for their small general service class rates. Four of the utilities have optional,

experimental, or pilot project demand rates for their small general service customer classes, including three municipal utilities and one IOU.

- **Unbundled Charges:** Only one of the 15 utilities in the review (Tacoma) has an unbundled Energy Delivery or Access Charge for their other Energy Charges. It separates the delivery charge (priced on a \$/kWh basis) from the other Energy Charges for their small general service class rates.
- **Separate Power Supply Adjustment (PCA) Charges:** Seven municipal utilities and all four IOUs have a separate charge that adjusts for periodic fluctuations in fuel and purchased power costs. These charges are adjusted periodically (e.g. monthly, quarterly, etc.) based on fluctuations in the utility's fuel and/or purchased power costs and help ensure the utility does not under recover or over recover these costs.

Key Larger General Service Class Rate Design Features:

- **Fixed Cost Charges:** Fourteen of the 15 utilities have some form of fixed cost charges for their large general service customer classes. Like residential and small general service rate structures, these charges have a variety of names, including Basic Charge, Customer Charge, Access Charge and Minimum Charge, and can be charged on a daily, monthly or bimonthly basis. For the large municipal utilities these charges range on a monthly basis from a low of \$7.61 (BC Hydro) to a high of \$285.00 (SRP), with an average fixed charge of \$94.44 per month. The three other municipal utilities all have fixed cost charges within this same range and a similar average fixed cost charge level. For the four Pacific Northwest IOUs, the range of fixed cost charges is between a low of \$5.00 (Idaho Power) and a high of \$5,200.00 (PGE), with an average fixed charge of \$1,526.19 per month.
- **Energy Charges:** Five types of energy charges are seen among the 15 utilities in the review for their larger general service customer classes. Five utilities have Uniform (Flat) Energy Rates (a single \$/kWh energy charge applicable throughout the year), two have Seasonal Uniform Energy Rates (two or more different \$/kWh energy charges varying for peak and non-peak seasons), three have Declining-block Energy Rates (with two or more \$/kWh energy charges where there is a lower rate for higher amounts of energy usage), two have non-seasonal time-of-use energy charges year round, and two have seasonal, time-of-use energy charges.
- **Demand Charges:** Fourteen of the 15 utilities in the review have demand charges (\$/kW) as part of the rate design for their larger general service class rates. Seven have a uniform demand charge, four have demand charges that vary by season, and three have seasonal, time-of-use demand charges for their larger general service classes.
- **Time-of-Use Rates:** Five of the 15 utilities in the review have mandatory time-of-use rates for their larger general service class rates. Another four of the utilities have optional time-of-use rates for their large general service customer classes.

- **Unbundled Charges:** Seven of the 15 utilities in the review have a separate unbundled Energy Delivery or Access Charge as part of their Demand Charges. It separates the delivery charge (priced on a \$/kW basis) from the other Demand Charges for their larger general service class rates.
- **Separate Power Supply Adjustment (PSA) Charges:** Eight municipal utilities and all four IOUs have a separate charge that adjusts for periodic fluctuations in fuel and purchased power costs. These charges are adjusted periodically (e.g. monthly, quarterly, etc.) based on fluctuations in the utility's fuel and/or purchased power costs and help ensure the utility does not under recover or over recover these costs.

Other Rate Design Elements of General Service Customer Classes:

- **Decoupling Charges:** The same five of the 15 utilities that have a decoupling charge for residential customer classes also have a general service decoupling charge for larger customer to help assure the utility collects its revenue requirement. The utilities in the review that have a decoupling charge include two municipal utility and three investor owned utilities.
- **Regulatory Charges:** Four of the 15 utilities have a separate charge that collects the costs associated with regulation of the utility. This includes three municipal utilities and one investor owned utility.
- **Community Benefit Charges:** Four of the 15 utilities have one or more separate charges that collect various costs associated with providing a benefit to the service area community. This includes two municipal utilities and two investor owned utilities. Among the costs that these charges collect are street lighting expense, low income assistance program costs, and energy efficiency program costs).
- **Low Income Program Charges:** Four of the 15 utilities have a separate charge that collects the costs associated with providing assistance to low income customers. This includes one municipal utility and three investor owned utilities.
- **Green Energy Charges:** Three of the 15 utilities have an option available to their customers to pay an extra charge to participate in renewable energy projects that cost more than the utility's standard energy resources. This includes one municipal utility and two investor owned utilities.
- **Electric Vehicle Charges:** Three of the 15 utilities have an option available to their customers to recognize environmental benefits to the community of having an electric vehicle. This includes one municipal utility and two investor owned utilities and includes availability of lower cost energy in off-peak periods.

Summary of High Demand/Industrial Rate Designs Reviewed

The definitions of high demand or industrial rate classes vary significantly among the 15 utilities surveyed, typically varying by maximum demand levels, by monthly energy usage, or by delivery voltage level. Some have only one high demand class while others have several separate classes, often separated by delivery voltage level. The following paragraphs summarize the key features of the high demand or industrial rate structures for the 15 electric utilities included in the review.

Key High Demand/Industrial Service Class Rate Design Features:

- **Fixed Cost Charges:** Twelve of the 15 utilities reviewed have some form of fixed cost charges for their high demand or industrial service classes. Like residential and general service rate structures, these charges have a variety of names, including Basic Charge, Customer Charge, Access Charge, Minimum Demand and Minimum Charge, and can be charged on a daily, monthly, bimonthly or annual basis. For the large municipal utilities these charges range from a low of \$20.00 per month (LADWP) to a high of \$5,200.00 per month (PGE). The three (3) other municipal utilities all have fixed cost charges within this same range. For the four Pacific Northwest IOUs, the range of fixed cost charges is between a low of \$299.00 (Idaho Power) and a high of \$5,200.00 (PGE) but neither Avista nor PSE have a single basic charge for their high demand customer classes.
- **Energy Charges:** Five types of energy charges are seen among the 15 utilities in the review for their high demand or industrial service classes. Four utilities have Uniform (Flat) Energy Rates (a single \$/kWh energy charge applicable throughout the year), six have seasonal, time-of-use energy charges, one has a Seasonal Uniform Energy Rate (two or more different \$/kWh energy charges varying by season), two have Declining-block Energy Rates (with two or more \$/kWh energy charges where there is a lower rate for higher amounts of energy usage), and two have time-of-use energy charges.
- **Demand Charges:** All 15 utilities in the review have demand charges (\$/kW) as part of the rate design for their high demand or industrial service classes. Seven have a uniform demand charge, four have seasonal, time-of-use demand charges, two have seasonal demand charges, and two have non-seasonal time-of-use demand charges.
- **Time-of-Use Rates:** Six of the 15 utilities in the review have mandatory time-of-use rates for their high demand or industrial service classes.
- **Unbundled Charges:** Seven of the 15 utilities in the review have a separate unbundled Energy Delivery or Access Charge as part of their Demand Charges. It separates the delivery charge (priced on a \$/kW basis) from the other Demand Charges for their high demand or industrial service classes.

- **Separate Power Supply Adjustment (PCA) Charges:** Eight municipal utilities and all four IOUs have a separate charge that adjusts for periodic fluctuations in fuel and purchased power costs. These charges are adjusted periodically (e.g. monthly, quarterly, etc.) based on fluctuations in the utility's fuel and/or purchased power costs and help ensure the utility does not under recover or over recover these costs.

Other Less Typical Rate Structure Elements:

- **Decoupling Charges:** The same five of the 15 utilities that have a decoupling charge for residential and general service customer classes also a decoupling charge for their high demand customer classes. The utilities in the review that have a decoupling charge include two municipal utilities and three investor owned utilities.
- **Regulatory Charges:** Four of the 15 utilities have a separate charge that collects the costs associated with regulation of the utility. This includes three municipal utilities and one investor owned utility.
- **Community Benefit Charges:** Four of the 15 utilities have one or more separate charges that collect various costs associated with providing a benefit to the service area community. This includes two municipal utilities and two investor owned utilities. Among the costs that these charges collect are street lighting expense, low income assistance program costs, and energy efficiency program costs).
- **Low Income Charges:** Four of the 15 utilities have a separate charge that collects the costs associated with providing assistance to low income customers. This includes one municipal utility and three investor owned utilities.
- **Green Energy Charges:** Three of the 15 utilities have an option available to their customers to pay an extra charge to participate in renewable energy projects that cost more than the utility's standard energy resources. This includes one municipal utility and two investor owned utilities.
- **Electric Vehicle Charges:** Three of the 15 utilities have an option available to their customers to recognize environmental benefits to the community of having an electric vehicle. This includes one municipal utility and two investor owned utilities and includes availability of lower cost energy in off-peak periods.

General Observations from Survey Review

In all rate design options, there are trade-offs involved in selecting an appropriate rate design for each of a utility's customer classes. Many pros and cons are associated with varying levels of complexity and unbundling of rates that reflect a utility's cost of service to its customers. The following discussion is provided as a tool to assist the Review Panel with the evaluation of possible residential and non-residential rate design options for SCL. It is in no way a complete or exhaustive discussion of the rate design options that would best meet SCL and its customers interests and needs.

Residential Rate Design:

- **Unbundled Rates:** SCL currently does not unbundle its energy charges to separate out many of the necessary costs associated with providing electricity to its customers. Greater unbundling of residential rates and charges could provide greater transparency and better reflect SCL's cost-of-service to its customers. Increased rate unbundling of the rate design potentially also could provide more choice of services to customers, especially to customers with DER generation. These advantages would need to be evaluated against the reduction in rate simplicity and customer understanding of rates and charges.
- **Fixed Cost Charges:** With a residential Basic Charge of \$5.00 per month, SCL's fixed cost recovery is at the low end of the range of fixed cost recovery charges for the 15 utilities included in the review and is lower than any other municipal utilities. In recent years, many electric utilities have increased their fixed cost charges to be more in line with cost-of-service estimates and to help promote revenue stability. Increasing SCL's Basic Charge or instituting a Minimum Charge to be within a range of \$10.00 to \$15.00 per month would be more consistent with the fixed charges of other municipal utilities but may be viewed by some as reducing the incentive for customers to conserve energy.
- **Energy Charges:** SCL's seasonal, 2-block inverted rate structure for its residential customers is consistent with the rate design used by most of the 15 utilities in the review. SMUD and Tacoma are examples of large municipal utilities that have moved to more uniform energy charges from inverted block rate structures. Changing to seasonal uniform energy rates would be more in line with cost-of-service estimates and would help promote revenue stability but could be viewed by some as weakening pricing signals that promote conservation.
- **Unbundled Delivery, Access and Demand Charges:** SCL does not currently unbundle its energy charges to separate out the more fixed costs associated with both investment and maintenance costs for facilities necessary for customers to connect with the SCL distribution system. Four of the surveyed municipal utilities do unbundle a portion of these costs and provide better pricing signals to customers regarding costs that are necessary independent of the amount and timing of the energy they use. An unbundled fixed delivery charge would be more in line with SCL's cost-of-service information and would help promote revenue stability. It also could be a transitional step towards eventually establishing greater unbundling of SCL's rates, including possible demand charges and/or time-of-use rates for residential customers.
- **Time-of-Use (TOU) Rates:** About half of the utilities reviewed have some form of TOU rate option available for residential customers, and none have mandatory TOU residential rates. Generally the utilities that offer TOU rates are summer peaking utilities that have significant air conditioning loads and very high peaking costs during short periods of time in the summer period, and these costs are reflected in high on-

peak charges. Given the significant flexibility that SCL has with its largely hydroelectric based resources, TOU rates could provide better pricing signals to customers but with much greater complexity of the rate structure. Offering TOU rates as an option might be a worthwhile first step in this direction to help SCL better judge customer interest and acceptance of TOU rate structures.

- **Complexity of Rate Structure:** Currently SCL has one of the least complex residential rate structures among the 15 utilities reviewed. Many utilities unbundle and separate out charges for power supply costs, community benefit services, regulatory costs, low income assistance programs, and other costs. Although these unbundled charges add to the complexity of the utilities' rates, this unbundling of rates would lower energy rates, would provide greater transparency to customers of SCL's costs to provide service, and may be worth considering.

Non-Residential Rate Design:

- **Number of Customer Classes:** Currently SCL has four general service classes separated by customer demand levels, with network rates for customer located in areas served predominantly by the underground network system. This level of separation of the customer classes is consistent with the number of customer classes seen at most other utilities included in this review. These customer and rate classes have increasingly complex rates at the higher demand levels which is appropriate. Increasing the number of customer classes might have value as part of a strategy to increase rate unbundling and instituting more time-of-use rates.
- **Fixed Cost Charges:** SCL's fixed cost recovery is predominately accomplished with minimum charges for each of its general service classes along with demand charges for customer in the Medium General Service and larger classes. Generally these minimum charges are at the low end of the range of fixed cost recovery charges for the 15 utilities included in the review and is lower than most of the municipal utilities. Similar to residential rate design changes, many electric utilities have increased their fixed cost charges in recent years to be more in line with cost-of-service estimates and to help promote revenue stability. Increasing SCL's Minimum Charges for its non-residential classes would be more consistent with the fixed charge recovery of most other municipal utilities but may be viewed by some as reducing the incentive for customers to conserve energy.
- **Energy Charges:** SCL's uniform rate structure for its small and medium general service customer classes is consistent with the rate design used by most of the 15 utilities in the review. Similarly charging time-of-use rates for its large and high demand general service classes is consistent with the rate design of other utilities in the review. The one energy charge rate design change that may be valuable for SCL to consider for its general service classes would be to increase the use of time-of-use energy rates for small and medium general service customer classes.

- **Unbundled Delivery, Access and Demand Charges:** Currently SCL does not explicitly unbundle its energy and demand charges to separate out the more fixed costs associated with both investment and maintenance costs for facilities necessary for customers to connect with the SCL distribution system. Seven of the surveyed municipal utilities do unbundle a portion of these costs and provide a better pricing signal to customers regarding necessary costs that are independent of the amount and timing of the energy they use. A specific unbundled fixed delivery charge on either a fixed monthly charge or a \$/kW charge based on non-coincident customer demand level would be more in line with SCL's cost-of-service information and would help promote revenue stability. The separation of the demand charge for large and high demand general service customers into non-coincident and coincident charge components may also have value for greater transparency and better reflecting cost-of-service information.
- **Time-of-Use (TOU) Rates:** Nine of the 15 utilities reviewed have some form of TOU rate option available for non-residential customer classes, and about half have mandatory TOU as part of their large general service and high demand rate designs. As discussed previously, most of the utilities that offer TOU rates are summer peaking utilities that have significant air conditioning loads and very high peaking costs during short periods of time in the summer period, and these costs are reflected in high on-peak charges. Given the significant flexibility that SCL has with its largely hydroelectric based resources, TOU rates could provide better pricing signals to customers but with much greater complexity of the rate structure. Offering TOU rates as an option for small and/or medium general service customer might be a worthwhile first step in this direction to help SCL better judge customer interest and acceptance of TOU rate structures.
- **Complexity of Rate Structure:** Currently SCL has one of the less complex general service rate structures among the 15 utilities reviewed. Many utilities unbundle and separate out charges for power supply costs, community benefit services, regulatory costs, low income assistance programs, and other costs. Although these unbundled charges add to the complexity of the utilities' rates, this unbundling of rates would lower energy rates, would provide greater transparency to customers of SCL's costs to provide service, and may be worth considering.

APPENDIX A: Rate Designs for SCL and 14 Review Utilities

Seattle City Light Rates
October 2018

Residential - In City (Monthly):

Basic Service Charge:		\$	5.00
Energy Charge (per kWh)			
Winter	0-480	\$	0.0768
	> 480	\$	0.1306
Summer	0-300	\$	0.0768
	>300	\$	0.1306
RSA Surcharge:			1.5%

Small General Service (< 50 kW) - In City (Monthly):

Minimum Charge:		\$	9.60
Energy Charge (per kWh)		\$	0.0946
Demand Charge (per kW)		\$	-
RSA Surcharge:			1.5%

Medium GS (50 to 1,000 kW) - Non-Network In City (Monthly):

Minimum Charge:		\$	24.00
Energy Charge (per kWh)		\$	0.0726
Demand Charge (per kW)		\$	3.44
RSA Surcharge:			1.5%

Large GS (1,000 - 10,000 kW) - Non-Network In City (Monthly):

Minimum Charge:		\$	851.10
Energy Charge (per kWh)			
On-peak		\$	0.0834
Off-peak		\$	0.0551
Demand Charge (per kW)			
On-peak		\$	3.12
Off-peak		\$	0.27
RSA Surcharge:			1.5%

High Demand GS (>= 10,000 kW) In City (Monthly):

Minimum Charge:		\$	1,821.30
Energy Charge (per kWh)			
On-peak		\$	0.0777
Off-peak		\$	0.0513
Demand Charge (per kW)			
On-peak		\$	3.12
Off-peak		\$	0.27
RSA Surcharge:			1.5%

Residential Rate Design:

- 1 Basic Customer Charge of \$10 per month
- 2 Inverted block energy rates structure with 5 blocks
- 3 No Demand or delivery charges
- 4 Has 2-season Power Supply Adjustment Charge to adjust for changing fuel costs
- 5 Residential Time-of-Use rate option is currently suspended
- 6 Has several Community Benefit Charges, including:
 - 7 - separate charge for Service Area Lighting
 - 8 - separate charge for Energy Efficiency Service improvements
 - 9 - separate Customer Assistance Program costs
- 10 Has a separate charge for Regulatory costs
- 11 Has separate Green Energy charge option
- 12 Has various Customer Assistance Program discounts

Residential Rates - Summer Period - Inside City - (Monthly):

Basic Customer Charge:	\$	10.00
Delivery Charge:	\$	-
Energy Charges (per kWh)		
0-500	\$	0.02801
501-1,000		0.05832
1,001-1,500		0.07814
1,501-2,500		0.09314
>2,500		0.10814
Power Supply Adjustment Charge (Summer)		0.03007
Community Benefit Charges:		
Customer Assistance Program		0.00172
Service Area Lighting		0.00138
Energy Efficiency Services		0.00251
Regulatory Charge (per kWh)		0.01362

General Service Rate Design (Secondary Service < 12.5 kVa)

- 1 Three sets of General Service rates at 10kW, 300kW, and >300kW
- 2 Basic Customer Charge of \$18/\$27.50/\$71.50 per month
- 3 Uniform energy rate structures
- 4 Delivery charges of \$0.00/\$4.50/\$4.50 per kW
- 5 Demand charges of \$0.00/\$4.19/\$6.40 per kW
- 6 Has 2-season Power Supply Adjustment Charge to adjust for changing fuel costs
- 7 Three time-of-Use rate options are currently suspended
- 8 Has several Community Benefit Charges, including:
 - 9 - separate charge for Service Area Lighting
 - 10 - separate charge for Energy Efficiency Service improvements
 - 11 - separate Customer Assistance Program costs
- 12 Has a separate charge for Regulatory costs
- 13 Has separate Green Energy charge option

Large General Service Rate Design (Primary Service > 12.5 kVa)

- 1 Three Large General Service rates at <3,000kW, 3,000-20,000-kW, and >20,000kW
 - 2 Also has a High Load Factor class with demands > 20,000kW
 - 3 All service options are at Primary Voltage levels
 - 4 Basic Customer Charge of \$2,200 per month for > 10,000 kW
 - 5 Uniform energy rate structures
 - 6 Delivery charges of \$4.50/\$4.50 per kW
 - 7 Demand charges of \$7.00/\$9.17/\$10.37 per kW
 - 8 Has 2-season Power Supply Adjustment Charge to adjust for changing fuel costs
 - 9 Has one time-of-Use rate option that is currently suspended
 - 10 Has several Community Benefit Charges (\$/kWh), including:
 - 11 - separate charge for Service Area Lighting
 - 12 - separate charge for Energy Efficiency Service improvements
 - 13 - separate Customer Assistance Program costs
- Has a separate charge for Regulatory costs (\$/kW)

Residential Rate Design:

- 1 Basic Customer Charge of 19.56 cents/day (\$5.95 per month)
- 2 Inverted block energy rates structure with 2 blocks
- 3 No Demand or delivery charges
- 4 Has 2-season Power Supply Adjustment Charge to adjust for changing fuel costs
- 5 No Time-of-Use rate option
- 6 Has two sets of rates for 2 service zones (same rate design)

Standard Residential - (Monthly):

Basic Charge:	\$	5.95
Delivery Charge:		
Energy Charges (per kWh) including Adjustments		
0 - 675 kWh	\$	0.08840
> 675 kWh		0.13260

General Service Rates (Secondary Service < 60kVa)

- 1 Three sets of General Service rates at 35kW, 150kW, and >150kW
- 2 Basic Customer Charge of \$10.38/\$7.61/\$7.61 per month
- 3 Inverted block energy rate structure for Small GS/uniform energy rate for larger
- 4 No Delivery charges
- 5 Demand charges of \$0.00/\$5.07/\$11.55 per kW
- 6 No Power Supply Adjustment Charge to adjust for changing fuel costs
- 7 No time-of-Use rate options
- 8 No other charges

Transmission Service Rate Design (Primary Service > 60kVa)

- 1 Both Standard and time-of-use rate options
- 2 Monthly minimum charge of \$8.139 per kVa of billed demand
- 3 Two step inverted rate based on Customer Baseline Load
- 4 4 season/2 time period TOU rates
- 5 No Delivery charges
- 6 Demand charge of \$8.139 per kVa
- 7 No Power Supply Adjustment Charge to adjust for changing fuel costs
- 8 No time-of-Use rate options
- 9 No other charges

Residential Rate Design:

- 1 Minimum Charge of \$10 per month plus 3 cost adjustments
- 2 Power Access Charges based on energy usage (3 levels)
- 3 Inverted block energy rates with 3 blocks
- 4 No Demand or delivery charges
- 5 Has Energy Cost Adjustment Charge to adjust for changing fuel costs
- 6 Has Residential Time-of-Use rate option, 2 seasons, three block rates
- 7 Has 7 separate cost or energy adjustments
- 8 Has Decoupling charge
- 9 Rates vary for 2 Zones of the City

Residential Service - Zone 1 - Summer Rates (Monthly):

Power Access Charge		
0-350 kWh	\$	1.75
Next 700 kWh		6.25
Greater than 1,050 kWh		18.50
Minimum Charge (\$/month plus Adjustment Factors)	\$	10.00
Energy Charge - Summer (per kWh) Including Adjustments		
0-350 kWh	\$	0.16479
Next 700 kWh		0.21312
Greater than 1,050 kWh		0.28922
Adjustments:		
Energy Cost Adjustment (per kWh)		0.05690
Electric Subsidy Adjustment (per kWh)		0.01470
Reliability Adjustment (per kWh)		0.00300
Variable Energy Adjustment (per kWh)		0.00132
Capped Renewable Portfolio Standard Energy Adjustmen		0.00472
Variable Renewable Portfolio Standard Energy Adjustmer		0.01413
Incremental Reliability Cost Adjustment		0.00496

General Service Rate Design (Secondary Service < 80 kW)

- 1 Two sets of General Service rates < 30kW and >30kW to 80kW
- 2 Service Charge of \$7.00/\$20 per month
- 3 Facilities charges of \$5.36 per kW
- 4 Demand charges of \$0.00/\$4.19/\$6.40 per kW
- 5 Uniform Energy Charge for <30kW general service
- 6 Time-of-Use rates required for > 30 kW; customer with own generation
- 7 2 season, three time period time-of-Use rates
 - Has 2-season Energy Cost Adjustment Charge to adjust for changing fuel costs
 - Has multiple other adjustments similar to residential rates above
 - Has Electric Vehicle discount option

Primary, Sub-Transmission and Transmission Service Rate Design (>30 kW)

- 1 Has Primary Service (<34.5 kVa), Sub-transmission (34.5 kVa), and Transmission (138 kVa) options
- 2 Service Charge of \$7.00/\$20 per month
- 3 Facilities charges of \$5.36/\$4.56/\$0.00 per kW
- 4 Demand charges vary by TOU, 2 season, three time periods
- 5 Time of use energy charge: 2 season, three time periods
- 6 Time-of-Use rates required for > 30 kW; customer with own generation

- 7 2 season, three time period time-of-Use rates
- 8 Has 2-season Energy Cost Adjustment Charge to adjust for changing fuel costs
- 9 Has multiple other adjustments similar to residential rates above
- 10 Has Electric Vehicle discount option
- 11 Has Experimental Real-Time Pricing option for service >250 kW
- 12 Has Experimental Contract Demand Service option for service > 334.5 kVa
- 13 Has separate rates for Customer Generation Primary Service at various delivery levels

Residential Rate Design:

- 1 Monthly Service Charge (4 components) of \$20 per month
- 2 Inverted block, 3 season energy rate structure with 3 blocks
- 3 Energy block is unbundled into 10 components (including Distribution,
- 4 Transmission, Ancillary Services, System benefits, etc.)
- 5 No Demand or delivery charges
- 6 Has 2-season Fuel/Purchased Power Charge to adjust for changing fuel costs
- 7 Has 6 Residential Time-of-Use rate options, including
- 8 - Standard time-of-use option (three season, two TOU periods)
- 9 - Time-of-use with Super Peak option
- 10 - time-of-use with Super Off-peak for Electric Vehicles
- 11 Has 4 experimental or pilot project rate options, including:
- 12 - Residential Demand charges
- 13 - Prepay service
- 14 - Customer general rate option

Standard Residential Service - (E-23)

Monthly Service Charge (4 elements):	\$	20.00
Delivery Charge:		
Energy Charges (per kWh) including Adjustments		
0-700	\$	0.11570
701-2,000		0.11690
> 2,000		0.13200
Adjustments		
Fuel and Purchased Power		0.02840
Energy Generation		0.05360
Distribution Delivery		0.02240
Transmission Delivery		0.01740
Environmental Program Costs		0.00550

General Service Rates

- 1 General Service rates for energy usage <= 300,000 kWh per month
- 2 Basic Customer Charge of \$46.35 per month (covers first 5 kW of demand)
- 3 Declining 4-block energy rate structures
- 5 3-Season Demand charges for all demand over 5 kW)
- 6 Has 2-season Fuel/Purchased Power Charge to adjust for changing fuel costs
- 7 Has Standard Time-of-Use rate option with:
- 8 3-Season, 3 period energy rate structures
- 9 3-Season, 2 period Demand charges for all demand over 5 kW)
- 10 Has 2 alternative or experimental rate options, including:
- 11 - Experimental Super Peak Time-of-Use rate option
- 12 - Prepay service

Large General Service Rate Design

- 1 Large General Service rates for energy usage > 300,000 kWh per month
- 2 Separated rates by Secondary, Primary, Substation, and Interruptible sub-classes
- 3 Basic Service Charge of \$523.71 per month
- 4 Uniform Facilities Charge of \$2.67/kW
- 5 3-Season, 3 period Time-of-Use energy rate structures
- 6 3-Season Demand charge based on On-Peak KW demand
- 7 2-season Fuel/Purchased Power Charge to adjust for changing fuel costs
- 8 Has Experimental Critical Peak Pricing option

Sacramento Municipal Utility District (SMUD) Electric Rates
October 2018

Residential Rate Design:

- 1 System Infrastructure Fixed Charge of \$20.30
- 2 Has 2-season uniform energy rate charges
- 3 No demand or delivery charges
- 4 Has 2-season Power Supply Adjustment Charge to adjust for changing fuel costs
- 5 Has time-of-use option (two season, three TOU periods)
- 6 Has several Community Benefit Charges, including:
 - 7 - separate charge for Service Area Lighting
 - 8 - separate charge for Energy Efficiency Service improvements
 - 9 - separate Customer Assistance Program costs
- 10 Has a Solar Surcharge charge
- 11 Has a Hydro Generation Adjustment charge
- 12 Has Energy Assistance Program discounts
- 13 Has 3 Green Pricing Options

Residential Service - Schedule R (Monthly):

System Infrastructure Fixed Charge:	\$	20.30
Delivery Charge:		
Standard Rate-Electricity Usage Charges (per kWh)		
Winter (Oct 1 - May 31)	\$	0.10310
Summer (June 1 - Sept 30)		0.16490
TOU Rate to be effective default rate January 2019 (*):		
Winter (Oct 1 - May 31)		
Peak (5- 8pm)	\$	0.13380
Off-Peak		0.09690
Summer (June 1 - Sept 30)		
Super Peak (5- 8pm)	\$	0.28350
Peak (Noon - 5pm + 8pm-midnight)		0.16110
Off-Peak		0.11660

(*) Residential Customers may elect Standard Rate

General Service Rate Design (Service <1,000 kW)

- 1 Three sets of General Service rates at <20kW, 20-300kW, 300-500kW and <1,000kW
 System Infrastructure Fixed Charge \$20.20,\$24.55, \$107.95, and \$285.00
- 2 Site Infrastructure Charge of \$0.00/\$0.00/\$7.58/\$2.85/\$2.07 per kW
- 3 Uniform energy rate structures, in Winter, 2 period TOU rates in Summer for >300kW
 Time-of-Use rates with 2 seasons, 3 time periods for >500kW
- 4 No other delivery charges
- 5 Summer Super Peak Demand Charges for secondary and primary services
- 6 Has 2-season Power Supply Adjustment Charge to adjust for changing fuel costs
- 7 Has 3 separate Green Energy charge options

Large General Service Time-of-Use Rate Design (Demands >1,000 kW)

- 1 Three levels of service (secondary, primary, and sub transmission)
- 2 All service options are at Primary Voltage levels
- 3 Basic Customer Charge of \$2,200 per month for > 10,000 kW
- 4 Uniform energy rate structures
- 5 Delivery charges of \$4.50 per kW
- 6 Demand charges of \$9.17 per kW
- 7 Has 2-season Power Supply Adjustment Charge to adjust for changing fuel costs
- 8 Has 3 separate Green Energy charge options

Residential Rate Design:

- 1 Service Availability Charge of \$8.75 per month
- 2 2 season, inverted energy rates structure with 2 blocks
- 3 No Demand or delivery charges
- 4 Has separate Fuel Adjustment charge
- 5 No time-of-use rate option
- 6 Has a separate charge for Regulatory costs

Residential Service - (Monthly):

Service Availability Charge		\$	8.75
Energy Charge (per kWh)			
Winter	0-480	\$	0.06910
Summer	0-600		0.06910
	>600		0.08890
Minimum Bill		\$	8.75
Fuel Adjustment (per kWh)			0.01840
Regulatory Adjustment (per kWh)			0.01095

General Service Rate Design (Service <1,000 kW)

- 1 Two sets of general service rate options
- 2 Service Availability Charge of \$8.75 and \$175.00 per month
- 3 Declining block energy rate structures
- 4 No separate delivery charges
- 5 2 season demand charges
- 6 Has unit fuel cost factor adjustment

Extra Large Power Service Rate Design (Demands >1,000 kW)

- 1 All service options are at Primary Voltage levels
- 2 Service Availability Charge of \$1,000.00 per month
- 3 Declining block energy rate structures
- 4 No separate delivery charges
- 5 2 season demand charges
- 6 Has unit fuel cost factor adjustment

Residential Rate Design:

- 1 Customer Charge of \$19.50 per month
- 2 2 season, uniform energy rates structure
- 3 No Demand or delivery charges
- 4 Has Fuel Adjustment Charge to adjust for changing fuel costs
- 5 2 season, 2 period time-of-Use rate option

Residential General Service (RG-17)

Customer Charge	\$	19.50
Energy Charge (per kWh)		
Winter (October to May)		
All Usage	\$	0.0997
Summer (June to September)		
All Usage		0.1197
Fuel Adjustment Charge (per kWh)		0.0364
Minimum Charge	\$	19.50

General Service Rate Design (Service <1,000 kW)

- 1 Three sets of General Service rates at 50kW, 300kW, and >300kW
- 2 Customer Charge of \$25.00/\$26.00/\$26.00 per month
- 3 2 season, uniform energy rate structures
- 4 Demand charges of \$0.00/\$23.42/\$26.60 per kW
- 5 No separate delivery charges
- 6 No time-of-Use rate options
- 7 Has Fuel Adjustment Charge to adjust for changing fuel costs

Large Light and Power Rate Design (Primary Service >1,000 kW)

- 1 All service at Primary Voltage or higher levels
- 2 Customer Charge of \$3,400 per month
- 3 2 period time-of-use uniform energy rate structure
- 4 No separate delivery charges
- 5 2 period time-of-use demand charges of \$31.26/\$19.26 per kW
- 6 Has Fuel Adjustment Charge to adjust for changing fuel costs
- 7 Requires service agreement
- 8 Transmission voltage discount available

Tacoma Power Rates
October 2018

Residential Rate Design:

- 1 Customer Charge of \$16.50 per month
- 2 Uniform energy rate
- 3 Separate uniform delivery rate
- 4 No time-of-use rate option

Residential - In City (Monthly):

Customer Charge:	\$ 16.50
Energy Charge (per kWh)	\$ 0.045351
Delivery Charge (per kWh)	\$ 0.034435

General Service Rates (Secondary Service <8,000 kW)

- 1 Two sets of General Service rates at <65kW and >65kW
- 2 Customer Charges of \$22.50/\$76.00 per month
- 3 Uniform energy rate structures
- 4 Delivery charges of \$0.034587 per kWh / \$8.35 per kW
- 5 No separate demand charges
- 6 No Power Supply Adjustment Charge
- 7 No time-of-Use rate options

High Voltage General Service Rate Design (Primary Service voltage level)

- 1 Customer Charge of \$1,175.00 per month
- 2 Uniform energy rate structure
- 3 Delivery charge of \$4.63 per kW
- 4 No separate demand charges
- 5 No Power Supply Adjustment Charge
- 6 No time-of-Use rate options
- 7 Customer > 8,000 kW must have a Power Service Agreement

Residential Rate Design:

- 1 Basic Customer Charge of \$8.61 per month
- 2 Service Size Charge varies with service panel size (<200A, >200A)
- 3 Inverted block energy rates structure with 2 blocks
- 4 No Demand or delivery charges
- 5 Has Energy Cost Adjustment Charge to adjust for changing fuel costs
- 6 Has Optional time-of-use rates for Electric Vehicle Owners
- 7 Has separate Green Energy charge option
- 8 Has Lifeline Service Rate options

Standard Residential - (Monthly):

Customer Service Charge:	\$	8.61
Service Size Charge:		
Small (2 or more meters; typically Multifamily)	\$	1.36
Medium (Panel size <= 200A)		2.73
Large (Panel size > 200A)		8.19
Energy Charges (per kWh)		
0 - 300 kWh	\$	0.0039
> 300 kWh		0.0570
Energy Cost Adjustment Charge (ECAC) (per kWh)		
0 - 300 kWh	\$	0.0731
> 300 kWh		0.1060
Minimum Charge:		
Small (2 or more meters; typically Multifamily)	\$	9.97
Medium (Panel size <= 200A)		11.34
Large (Panel size > 200A)		16.80

General Service Rate Design (Service <1,000 kVa)

- 1 Three sets of General Service rates at 20 kVa, 250kVa, and >250kVa
- 2 Basic Service Charge of \$9.78/\$11.55/\$117.51 per month
- 3 2-season, 3 period time-of-use energy charges
- 4 Distribution Demand charges of \$0.00/\$10.68/\$10.99 per kVa
- 5 Reliability Service Demand charges of \$0.00/\$0.00/\$8.18 per kVa
- 6 Has Energy Cost Adjustment Charge to adjust for changing fuel costs

Extra Large General Service (Service > 1,000 kVa)

- 1 Four different voltage level options available
- 2 Customer Service Charge of \$117.51 per month
- 3 2-season, 3 period time-of-use energy charges
- 4 Distribution Demand charges of \$10.99 per kVa
- 5 Reliability Demand charges of \$8.18 per kVa
- 6 Has Energy Cost Adjustment Charge to adjust for changing fuel costs

Residential Rate Design:

- 1 Access Charge of \$0.5103 per day (\$15.52 per month)
- 2 Uniform energy charge (Electric cost adjustment)
- 3 Delivery charge (Electric Capacity Charge)
- 4 No Demand charge
- 5 Has Energy Cost Adjustment Charge to adjust for changing fuel costs
- 6 Has 2 period uniform time-of-use rate option

Standard Residential (E1R) - (Monthly):

Access Charge (\$/month)	\$	15.52
Access Charge (per kWh)	\$	0.0777
Electric Cost Adjustment Charges (per kWh)	\$	0.0201
Electric Capacity Charges (per kWh)	\$	0.0047

Commerical Service Rate Design (Service <1,000 kWh/day and <500 kW)

- 1 Access Charges of \$0.5103/\$0.7943 per day (\$15.52/\$24.16 per month)
- 2 Access Charges of \$0.0777/\$0.0662 per kWh
- 3 Uniform energy charges (Electric cost adjustment) (per kWh)
- 4 Unbundled Electric Capacity Charges (per kWh)
- 5 No Demand charge in Standard Option
- 6 Has Energy Cost Adjustment Charge to adjust for changing fuel costs
- 7 Has 2 period TOU energy charge options (Electric Cost Adjustment)
- 8 Has 2 period TOU demand charge options

Industrial Service Rate Design (Service >1,000 kWh/day and >500 kW)

- 1 Four different levels (at 500 kW, 4,000 kW, at >75% load factor, at =>115 kV)
 - 2 Access Charges of \$3.1816/\$21.0248/\$43.00064/\$42.7178 per day)
 - 3 2 season Access Charge Option (based on \$/kWh and \$/kW)
 - 4 2 period TOU Access Charge Option (based on \$/kWh and \$/kW)
 - 5 2 period TOU energy charge options (Electric Cost Adjustment)
 - 6 2 period TOU demand charge options
- Has Energy Cost Adjustment Charge to adjust for changing fuel costs
Has Electric Capacity Adjustment Charge to adjust for demand costs
Has Primary voltage discount

Glendale (CA) Water and Power Electric Rates
October 2018

Residential Rate Design:

- 1 Customer Charge of \$0.37 per day
- 2 Seasonal, inverted block energy rates structure with 3 blocks
- 3 No Demand or delivery charges
- 4 Residential seasonal, 2-period time-of-Use rate option
- 5 Has Energy Cost Adjustment Charge to adjust for fuel and purchased power costs
- 6 Has Public Benefits Charge
- 7 Has a separate charge for Regulatory costs
- 8 Has separate Revenue Decoupling charge

Standard Residential Service Rate (L-1-A) - (Monthly):

Monthly Customer Charge:	\$	11.25
Delivery Charge:		
Energy Charges (per kWh) including Adjustments		
Summer (July through October)		
0-300	\$	0.16130
301-600		0.19990
> 600		0.23870
Winter (November through June)		
0-300	\$	0.13520
301-600		0.16520
> 600		0.20660
Adjustments included in above rates:		
Energy Cost Adjustment Charge		-
Regulatory Adjustment Charge		-
Revenue Decoupling Charge		-
Public Benefits Charge		-

Small and Medium Business Rate Design (Service <500 kW)

- 1 Two sets of rates at <5,000 kWh and 20kW and between 20 kW and 500kW
- 2 Customer Charge of \$0.62/\$4.47 per day (\$18.85/\$135.96 per month)
- 3 2 season, uniform energy rate structures
- 4 2 season Demand charges for Medium Class based on highest demand over 12-month period
- 5 No separate delivery charge
- 6 Has 2 season, 2 period time-of-use rate option
- 7 Has separate higher Customer-owned Generation rates
- 8 Has Energy Cost Adjustment Charge to adjust for fuel and purchased power costs
- 9 Has Public Benefits Charge
- 10 Has a separate charge for Regulatory costs
- 11 Has separate Revenue Decoupling charge

Large Business Rate Design (Service >500 kW)

- 1 Customer Charge of \$37.77 per day (\$1,148.84 per month)
- 2 2 season, 2 period time-of-Use rates
- 3 2 season Demand charges based on Maximum 12-month period

- 4 No separate delivery charge
- 5 Has separate higher Customer-owned Generation rates
- 6 Has Energy Cost Adjustment Charge to adjust for fuel and purchased power costs
- 7 Has Public Benefits Charge
- 8 Has a separate charge for Regulatory costs
- 9 Has separate Revenue Decoupling charge

Residential Rate Design:

- 1 Basic Charge of \$8.00 per month
- 2 Inverted block energy rates structure with 3 blocks
- 3 No Demand or delivery charges
- 4 No time-of-use rate option
- 5 Above rates adjusted for multiple factors periodically
- 6 Has Low Income Rate Assistance Program discounts

Residential Service (Schedule 1) - (Monthly):

Basic Charge:	\$	8.00
Delivery Charge:		
Energy Charges (per kWh) including adjustments:		
0-800 kWh	\$	0.08269
801-1,500 kWh		0.09501
> 1,500 kWh		0.11012
Minimum Charge:	\$	8.00
Adjustments		
Power Cost Surcharge (Sch 93)	\$	-
Residential & Farm Energy Rate (Sch 59)		(0.08100)
Renewable Energy Credit Rebate (Sch 98)		(0.03400)
Temporary Tax Cut Benefit Credit (Sch 74)		(0.00142)
Decoupling Mechanism Charge (Sch 75)		0.00445
DSM Rate Adjustment (Sch 91A)		0.00433
Low Income Rate Assistance (sch 92)		0.00115

General Service Rates (Service <3,000 kVa)

- 1 Two sets of General Service rate options
- 2 Basic Charge of \$20.00 and \$0.00 per month
- 3 2-block declining block energy rate structures
- 4 No separate delivery charges
- 5 Demand charge of \$6.50 per kW on demand greater than 20 kW
- 6 Minimum Charges of \$15.00 and \$500.00 per month
- 7 Primary Voltage discount available
- 8 Has multiple other adjustments similar to residential rates above

Extra Large General Service Rate Design (Service > 3,000 kVa)

- 1 No separate Basic Customer Charge
- 2 3-block declining block energy rate structures
- 3 No separate delivery charge
- 4 Demand charge of \$5.50 per kVa
Minimum Charge of \$829,950 per year
Three separate Primary Voltage discounts
- 5 Adjustments similar to Residential class

Residential Rate Design:

- 1 Service Charge of \$5.00 per month
- 2 2 season, inverted block energy rates structure with 3 blocks
- 3 No separate demand or delivery charges
- 4 Has 2 season, 2 period time-of-use rate option with uniform rates
- 5 Above rates adjusted for multiple factors periodically
- 6 Has Low Income Rate Assistance Program discounts

Residential Service (Schedule 1) - (Monthly):

Basic Charge:	\$	5.00
Delivery Charge:		
Energy Charges (per kWh) including adjustments:		
Summer (June 1 to August 31)	\$	0.085318
0-800 kWh	\$	0.102590
801-1,500 kWh	\$	0.121871
> 1,500 kWh		
Winter (August 31 to May 31)	\$	0.079275
0-800 kWh	\$	0.087398
801-1,500 kWh	\$	0.096792
> 1,500 kWh		
Minimum Charge:	\$	5.00
Adjustments		
Power Cost Adjustment (Sch 55)	\$	-
Residential & Farm Energy Rate (Sch 99)		
Energy Efficiency Rider (Sch 91)		
Fixed Cost Adjustment (Sch 54)		

General Service Rates (Service <1,000 kW)

- 1 Three sets of General Service rates (<2,000 kWh/mo., secondary, and primary service)
- 2 Service Charges of \$5.00/\$39.00/\$299.00 per month
- 3 Small GS has inverted block energy rate structure with 2 blocks
- 4 Larger secondary GS have 2 season, declining block energy rate structures
- 5 Larger primary GS have 1 season, 3 period time-of-use energy rate structures
- 6 No separate delivery charges
- 7 2 season, 2 period TOU demand charges, no charge for first 20 kW
- 8 Has multiple other adjustments similar to residential rates above

Large Power Service Rate Design (Service > 1,000 kW)

- 1 Three sets of Large Power Rates (at secondary, primary and transmission voltages)
- 2 Service Charges of \$39.00/\$299.00 per month
- 3 2 season, 3 time-of-use period energy rates
- 4 2 season, 2 time-of-use period demand rates
- 5 Has multiple other adjustments similar to residential rates above

Residential Rate Design:

- 1 Basic Charge of \$11.00 per month
- 2 Inverted block energy rate structure with 2 blocks
- 3 Separate Distribution and Transmission charges (\$/kWh)
- 4 Has time-of-Use Electric Vehicle rate option
- 5 Has multiple demand response pilot projects
- 6 Above rates adjusted for multiple factors periodically
- 7 Has Low Income Rate Assistance Program discounts
- 8 Has Renewable Portfolio Rate option adders
- 9 Has Decoupling charge adjustment

Residential Basic Service Rate Design (Schedule 7) - (Monthly):

Basic Charge:	\$	11.00
Delivery Charges:		
Transmission Services Charge (c/kWh)	\$	0.00209
Distribution Charge (c/kWh)		0.04311
Energy Charges (per kWh) including adjustments:		
0 - 1,000 kWh	\$	0.06510
> 1,000 kWh		0.07232
Adjustment Rate (20 including the following):	\$	(0.01600)
Regional Power Act Exchange Credit (Sch 102)		
Energy Efficiency Funding Adjustment (Sch 109)		
Low Income Assistance (Sch 115)		
Renewable Resource Adjustment (Sch 122)		
Decoupling Adjustment (Sch 123)		
Annual Power Cost Update (Sch 125)		
Demand Response Adjustment (Sch 135)		
Environment Remediation Adjustment (Sch 149)		

Nonresidential Standard Service Rate Design (Service < 4,000 kW)

- 1 Three sets of rates at 30kW, 200kW, and >200kW
- 2 Basic Charge of \$17.00/\$30.00/\$5,200.00 per month
- 3 Distribution Charges based on both Maximum Demand and On-Peak Demand
- 4 Transmission Service Charges based On-peak kW Demand
- 5 2-period TOU energy rate structure options
 System Usage Charge at uniform energy rate
 Has multiple other adjustments similar to residential rates above
- 6 No time-of-Use rate options
- 7 Has multiple other adjustments similar to residential rates above
- 8 Has separate Green Energy charge option
- 9 Has Daily Pricing Option
- 10 Has Plug-in Electric Vehicle TOU Option

Large Nonresidential Standard Service Rate Design (Service > 4,000 kW)

- 1 Basic Charge of \$5,200 per month
- 2 Distribution Charges of \$1.38/kW for first 4,000 kW, \$1.07/kW > 4,000 kW
- 3 plus \$2.60/kW of on-peak Demand
- 4 Transmission Service Charges of \$0.63/kW of On-Peak Demand
- 5 2-period TOU energy rate structure
- 6 System Usage Charge at uniform energy rate
- 7 Demand charges of \$5.48 per kVa
- 8 Has multiple other adjustments similar to residential rates above
- 9 No time-of-Use rate options
- 10 Has multiple other adjustments similar to residential rates above
- 11 Has separate Green Energy charge option
- 12 Has Daily Price Option
- 13 Has Plug-in Electric Vehicle TOU Option

Residential Rate Design:

- 1 Basic Charge of \$7.49 per month
- 2 Inverted block energy rates structure with 2 blocks
- 3 No separate demand or delivery charges
- 4 Has 2-season Power Supply Adjustment Charge to adjust for changing fuel costs
- 5 No time-of-use rate option
- 6 Above rates adjusted for multiple factors periodically
- 7 Has Low Income Rate Assistance Program discounts
- 8 Has Decoupling charge adjustment

Residential Service (Schedule 7) - (Monthly):

Basic Charge:	\$	7.49
Delivery Charge:		
Energy Charges (per kWh) including adjustments (1):		
0-600 kWh	\$	0.087336
> 600 kWh		0.106297
Energy Exchange Credit		(0.007406)
Other Charges and Credit Adjustments (2)		0.002407

Adjustments

- (1) Low Income Assistance (Sch 129)
- (1) Property Tax Tracker (Sch 140)
- (1) Expedited Rate Filing Adjustment (Sch 141)
- (1) Decoupling Adjustment Mechanism (Sch 142)
- (2) Power Cost Adjustment (Sch 95)
- (2) Federal Wind Power Credit (Sch 95A)
- (2) Electric Cons. Program Charge (Sch 120)
- (2) Merger Credit (Sch 132)
- (2) Renewable Energy Credit (Sch 137)

General Service Rate Design (Secondary Service <4,400 kW)

- 1 Three sets of General Service rates at 50kW, 350kW, and >350kW
- 2 Basic Charge of \$9.80/\$52.30/\$105.74 per month
- 3 2 season, uniform energy rate structures
- 4 No separate delivery charges
- 5 Demand charges of \$0.00/\$9.42/\$11.91 per kW in Winter Period
Demand charges of \$0.00/\$6.29/\$7.94 per kW in Summer Period
- 6 Has 2-season Power Cost Adjustment Charge to adjust for changing fuel costs
- 7 No time-of-Use rate options
- 8 Has multiple other adjustments similar to residential rates above
- 9 Has separate Green Energy charge option

High Voltage General Service Rate Design (Service > 4,400 kVa)

- 1 All service options are at Primary Voltage levels
- 2 No basic Customer Charge
- 3 Uniform energy rate structure
- 4 No separate delivery charges
- 5 Demand charges of \$5.48 per kVa
- 6 Has 2-season Power Supply Adjustment Charge to adjust for changing fuel costs
- 7 No time-of-Use rate options
- 8 Has multiple other adjustments similar to residential rates above
- 9 Has separate Green Energy charge option

APPENDIX B: Residential Rate Design Matrix

Residential Rate Structures

Fixed Charge

Line:	Basic or Customer Charge (\$/month)	Access Charge (\$/month)	Minimum Charge or Bill (\$/month)	Delivery / Service Size Charge (\$/month)	Total Fixed Cost per Month	Seasonal Rates	Uniform Energy Rates	Increasing Block Energy Rates	Number of Blocks	Delivery or Access Charge (c/kWh)	Time-of-Use Rates	Number of TOU Periods	Power Supply Adjustment (c/kWh)	Community Benefit Charges	Renewable Energy Charge	Green Pricing Option	Electric Vehicle Rate Option	Regulatory Charge	Low-Income Discount Charge	Decoupling Charge	Customer Choice of Rate Options	Number of Rate Options	Separate Multi-Family Rates	
1 Large Municipal Utilities																								
2 City of Austin	✓			\$ 10.00				✓	5		A	3	✓	✓				✓						✓
3 BC Hydro	✓			5.75				✓	2											✓				
4 Los Angeles (LADWP)	✓	✓		10.00		✓		✓	3		✓	3	✓								✓	2		
5 Phoenix (SRP)	✓	✓		20.00		✓		✓	3		✓	2	✓								✓	6		
6 Sacramento (SMUD)	✓	✓		20.30		✓		✓			✓	3	✓			✓					✓	5		
7 San Antonio (CPS Energy)	✓	✓		8.75		✓		✓	2				✓					✓						
8 South Carolina PSA	✓	✓		19.50		✓					✓	2	✓								✓	2		
9 Tacoma Power	✓			16.50						✓														
10 Average				13.85																				
Other Municipal Utilities																								
11 Burbank	✓	3	3	9.97-16.80				✓	2								✓							
12 City of Colorado Springs	✓			15.52			✓			✓	✓	2	✓								✓	2		
13 Glendale	✓			11.25		✓		✓	2		✓	3	✓								✓	4		✓
14 Average				13.39																				
Pacific NW Investor Owned																								
15 Avista Energy	✓			8.00				✓	3				✓							✓				
16 Idaho Power	✓			5.00		✓		✓	3				✓											
17 Portland General Electric	✓			11.00				✓	2	✓	✓	3	✓								✓	4		
18 Puget Sound Energy	✓			7.49				✓	2				✓								✓			✓
19 Average				7.87																				
20																								
21																								
22																								
23 Seattle City Light	✓			\$ 5.00		✓		✓	2															

Notes:
A. Suspended