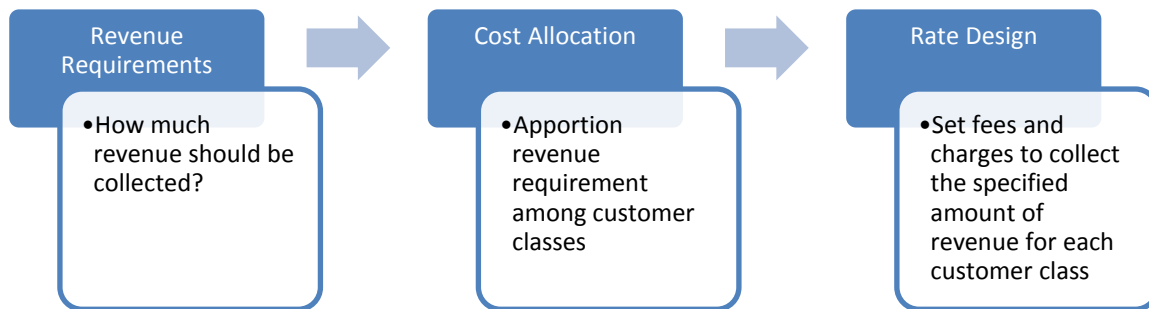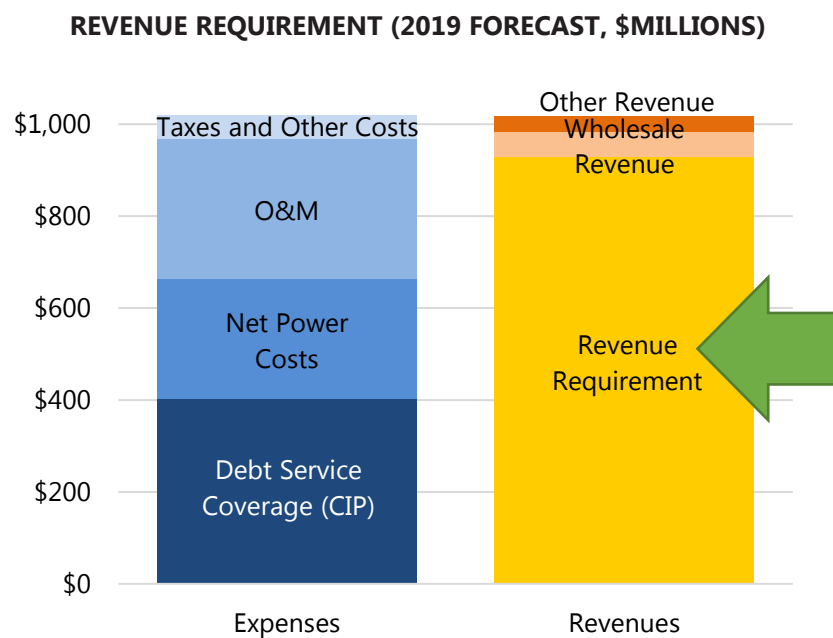# RATE SETTING 101 (DRAFT 07.17.18)

The utility rate setting process involves three distinct (and sequenced) steps and uses terms of art for each of the steps to facilitate discussion. The steps, their names, and the order in which they logically occur are:

Revenue Requirements
- How much revenue should be collected?

→

Cost Allocation
- Apportion revenue requirement among customer classes

→

Rate Design
- Set fees and charges to collect the specified amount of revenue for each customer class

REVENUE REQUIREMENTS

In this step the utility determines the cost to operate the utility over the period of interest. From this, it deducts any revenue from other sources it anticipates receiving (e.g., sales of surplus energy on the wholesale market). What is left is the Revenue Requirement, that is, the amount of revenue it will need to collect from *retail* customers. City Light's strategic plan is a statement (among other things) of its Revenue Requirements for the next six years.

REVENUE REQUIREMENT (2019 FORECAST, $MILLIONS)

Chart showing Expenses (Taxes and Other Costs, O&M, Net Power Costs, Debt Service Coverage (CIP)) and Revenues (Other Revenue, Wholesale Revenue, Revenue Requirement) with a vertical axis from $0 to $1,000.

From this number, the utility calculates the Average System Rate by dividing the total amount of money it will collect from retail customers by the total number of kilowatt hours it will sell to its retail customers.

$$average\ rate\ \left(\frac{\$}{kwh}\right) = \frac{revenue\ requirement\ (\$)}{retail\ sales\ (kwh)}$$

The Average System Rate is useful for comparing the cost of electricity from one year to the next. So, when City Light talks about a 4.5% increase in "rates", it means a 4.5% increase in the Average System Rate over the previous year. But no customer actually pays the Average System Rate. Instead, customers pay a rate based on the share of the total costs attributable to the rate class they are in. This leads to the next step.

COST ALLOCATION

Although ratepayers see just one bill and might think of electricity as the product they consume, what City Light actually provides is electric *service*. This service integrates three lines of business: the acquisition of electrical power, the delivery of that power to its customers over its transmission and distribution system, and the management of the business processes (such as metering, billing, and IT) necessary to make the other two functions possible. The chart below shows how a 9¢/kWh average system rate can be separated into costs for different services. Typically, conservation is included with power, and the costs for UDP and taxes are spread across the three main service categories: power, power delivery, and customer service.

EXAMPLE COSTS FOR ELECTRIC SERVICE, PER KWH
Presumes average system rate = 9¢/kwh
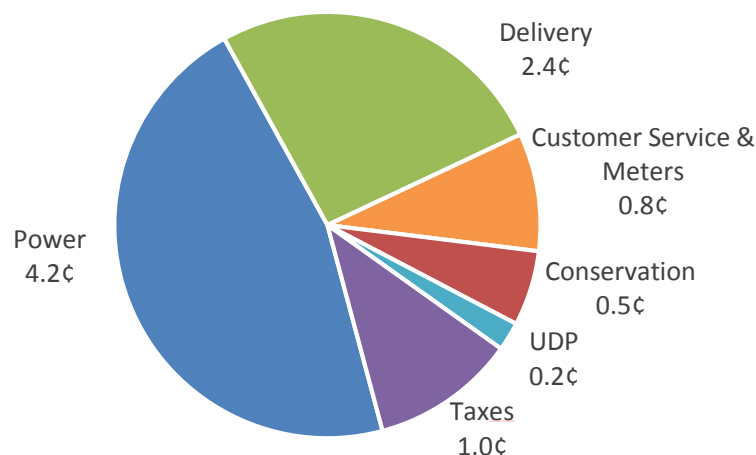
Different types of customers use more or less of these different services and hence impose different costs on the utility. Large industrial customers, for example, usually use a lot of power (i.e., kilowatt hours) but not so much of the other services. In contrast, residential customers

tend to consume a lot of the power-delivery service and customer service, and relatively little of the power service. For example, City Light has over 2,400 miles of distribution lines, 108,000 power poles, 54,000 pole-top transformers, and an entire customer call center (operated by SPU) mainly to serve residential customers. A single large industrial customer, in contrast, can be served with a single power line, a single or a few large transformers, and a portion of the time of a customer service representative.

In order to apportion costs among customers with such different cost profiles, City Light (and all other utilities) groups its customers into customer (or rate) classes. Different utilities have different classes and names for the classes. City Light's customer classes are[1]:

Class	Example	Approximate Number
Residential (and subclass UDP)	You and me!	400,000
Small General Service	Small office, car wash	37,000
Medium General Service	Large grocery store	3,000
Large General Service	Hospital, large office tower	120
High Demand General Service	Cement plant, large university	10

Non-residential customers are sorted into the General Service classes based on their peak consumption during the billing cycle.

In the cost allocation process, City Light uses customer data to estimate how much of each of its three services (power, power delivery, and customer service) each of the rate classes consumes and from that how much it costs the utility to serve each class. By state law, each class must pay the cost to serve it: "No rate shall be charged that is less than the cost of the [electricity] and service to the class of customers served" (RCW 35.92.010).[2] In general, no class can subsidize another class. The singular exception to this is the rate assistance for low income customers. City Light is allowed to designate a low-income class and to charge it less than the cost to serve it, the other classes bearing the cost of the subsidy. City Light refers to this as the Utility Discount Program (UDP).

RATE DESIGN

Once the utility determines the share of the costs each class is responsible for paying, it can establish actual charges for the members of the class that will collect that amount of money from the class as a whole. If customers in the class were identical this would be easy, but they are not. Even though the classes are meant to group similar customers together, there is still a lot of variation among the consumption profiles of customers within each class.

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[1] There is a Streetlight rate class also, and rate classes are further divided for the Downtown Network and suburban franchise cities, but for simplicity we will ignore this here.
[2] The code actually refers to water consumption because much of the code was developed around water. However, well-established case law confirms it applies to electricity and other utilities.

To make this concrete, consider two polar opposite approaches to charges for a given class:

A. charge every customer in the class the same amount (class cost divided by number of class customers); or
B. charge customers in the class based solely on the amount of power they consume, the rate for a kilowatt-hour being the class cost divided by the number of kilowatt-hours the class is expected to consume.

Between these two (very simplistic) rate designs, customers in the class who were heavy users of power would likely favor (A), while customers in the class who used little power (but perhaps lots of the other two services) would tend to favor (B).

CITY LIGHT'S CURRENT RATE DESIGN
Residential customers pay a small fixed customer charge meant to cover *some portion* of the cost of delivery and customer service City Light provides to the class as a whole. City Light recovers the balance of the class's revenue requirement through per-kilowatt hour (volumetric) rates. The residential class has two different volumetric rates: a low rate for the first block of power customers consume, and a higher rate for all power consumption beyond that block.

Small General Service rates have two charges: a minimum charge, again meant to capture some of the cost of the delivery and customer service, and a single per-kilowatt-hour rate regardless of the level of consumption.

Customers in all other classes face both a per-kilowatt-hour rate (that may vary by time of use) and a capacity (demand) charge. The capacity charge is based on the maximum consumption during any given billing period and is meant to capture some of the cost of physical infrastructure (wires, etc.) that must be in place to serve the customers regardless of the number of kilowatt hours they consume. The table below summarizes the charges for the different classes.

	RESIDENTIAL	**SMALL**	**MEDIUM**	**LARGE/HIGH DEMAND**
Fixed Charges	Base Service Charge (per day)	Minimum Charge (per day)	Minimum Charge (per day)	Minimum Charge (per day)
Volumetric Charges	First and Second Block Energy Charge (per kWh)	Energy Charge (per kWh)	Energy Charge (per kWh)	Energy Charge (time-of use: per peak & off-peak kWh)
Capacity Charges			Demand charge (per kW)	Demand Charge (time of use: per peak and off-peak kW)