

Seattle City Light's Policies and Practices on Cost Allocation and Customer Payment for Installations and Services

Summary:

A question has arisen in connection with the discussion of the proposed new North Downtown Substation—is it appropriate for the costs of this substation to be borne by all ratepayers in the service territory? Our examination of past City Light practice and that of neighboring utilities indicate that such treatment is appropriate—costs that benefit a broad range of customers are paid by all ratepayers, while costs incurred to serve one or a very limited number of customers (such as service connections), or costs to serve those customers at a different standard of service (network service) are charged to those customers. Even when a different standard of service is provided at a differential cost, we must consider whether the benefits accrue only to the direct electrical customer or whether there are significant benefits to a wider public before charging (all) the differential cost to the direct customer.

The following paper describes City Light's treatment of common and customer specific costs, and also provides some examples of how peer utilities treat such costs. In general, other utilities treat substations, in particular, as shared assets and allocate their costs over all customers. Some of those utilities, though, have specific large customers using all or a large fraction of a dedicated substation, and in these cases, some utilities have provisions for charging some substation costs to specific customers. That situation, though, does not characterize Seattle.

Background

City Light's general policy for at least the last 30 or more years for customer payment of costs is that costs are shared where facilities are shared, but that individual customers or groups of a very limited number of customers pay for service which they request or from which they receive essentially all of the specific benefits. The following detailed table provides a summary of how that policy is applied in practice.

Table 1
Cost Allocation for Various Services

System/Revenue Requirement Category	Who Pays	Reason for Who Pays
Total Energy		
Power	All	Provided for all, no provision for specific customer(s)
Conservation	All	Reduces need for power, so all customers benefit
Transmission-Long Distance	All	Provided for all, no provision for specific customer(s)
Total Retail Services		
Total Distribution		
<i>Transmission-In Service Area</i>	All	Provided for all, no provision for specific customer(s)
<i>Stations</i>	All	Provided for all, no provision for specific customer(s)
<i>Wires and Related Equipment</i>		
<i>non-network</i>	Non-network	Equipment just for non-network customers
<i>network</i>	Network	Equipment just for network customers
<i>Transformers</i>		
<i>non-network</i>	Non-network	Equipment just for non-network customers
<i>network</i>	Network	Equipment just for network customers
<i>Streetlights/Floodlights</i>	Streetlights	Equipment and power just for streetlights
<i>Meters</i>	By Class	Equipment varies by customer class
Customer Accounts & Services	All but Stlts.	All classes but streetlights receive these services
Low-Income Assistance	All	Social policy that all classes support this program

Table 1 – continued

Special Services	Who Pays	Reason for Who Pays
Reserved Distribution Capacity	Customer	SMC 21.49.085
Building new feeder to serve one customer	Customer	customer pays capital cost because customer benefits
Installation Charges - new service (service drop)	Customer	SMC 21.49.110, Section T & DPP III, 417
Network Distribution Delivery	Customer	SMC 21.49.055 rate MDD & SMC 21.49.057 rate LGD
New Large Customers Deposit for Transformers	Customer	SMC 21.49.110, Section X

Examples of Other Services whose costs are covered by Department Policies and Procedures

Topic or Issue	Who Pays	Reason for Who Pays
Alley Lighting	Customer	DPP III 401, Schedule 117
Customer Service	Customer	DPP III, 407
Trouble Call	Customer	DPP III, 407, Schedule 100
Engineering Design Work	Customer	DPP III, 401, Schedule 116
Specialized Electrical Service & Equipment	Customer	DPP III, 401
Installation Charges, Permanent Service	Customer	DPP III, 417, Schedule 100
Installation Charges, Temporary Service	Customer	DPP III, 417, Schedule 101
Final Cost for Contractor-Installed Connection	Customer	DPP III, 422
Final Cost for Perm.or Enlarged Svc. Connection	Customer	DPP III, 422, Schedule 100
Construction Installed by Contractors	Customer	DPP III, 422, Schedule 101
Voluntary to Underground Svc. Conversion	Customer	DPP III 421
Decorative Lighting	Customer	DPP III 401, Schedule 108
Electric Service Equipment Charges	Customer	DPP III, 401
Rental of Utility Space for Communication Equip.	Customer	DPP III, 804
Floodlights, Customer Owned & Rental	Customer	DPP III 401, Schedule 103

The City of Seattle’s Comprehensive Plan has evolved over time and includes a section on Utility Policies that guides all utilities (not just electrical) operating in the City of Seattle. Policy U2 states: *Consider financial mechanisms to recover from new growth, the costs of new City facilities and, where appropriate, new utility resources necessitated by such service.* (Emphasis supplied.) This City policy recognizes that costs can be assigned to growth in some, but not all, cases. As Table 1 indicates, there are many specific electrical services provided by City Light whose costs are assigned directly to the customers requesting the services. At the same time, there are many costs associated with the entire system that are shared by all customers. In total, these City Light policies are consistent with the City Of Seattle’s Comprehensive Plan.

Note on Substations:

Substations are required to transform high voltage transmission service down to a lower voltage appropriate for distribution wires. Substations typically contain a number of large individual transformers that, together, constitute the maximum capacity of the station. Seattle’s 26 kV substations (14 in number) range in size from 150 to 250 MW (peak capability). Typically, a substation serves multiple customers and is operated to keep in reserve, as a minimum, transformer capacity sufficient to allow continued operation in the event the largest single unit could not operate. Some of the excess reserve capacity is used to hook-up new customers.

Over time, the specific customers served by a substation can change. For instance, the Broad substation currently serves the north downtown area but developments in that area are expected soon to exceed its capability and will prevent that substation from extending service desired by cruise ships that dock in Elliot Bay. Assistance may be provided to the north downtown area by extending lines from the Canal and University substations, but even with that assistance, a new substation will be required. That new substation, though, in addition to serving the expanded

load in the immediate area will then be able to provide potentially to other areas including First Hill and in the north downtown area. Also the NODO substation provides system flexibility for supporting operation and maintenance activities at several critical, but aging, substations in the North-Central Seattle Area. With the advent of a new NODO substation, the Broad substation may then be in a position to extend service to the cruise ships. All this indicates how it is difficult, in Seattle's already densely developed service territory that sometimes significantly changes load characteristics in particular locations, to identify in perpetuity the specific customers associated with a substation. It also points to the practical constraints that would be faced if one attempted to attribute the costs of the substation to specific customers—there are too many, and they change over time. Overall, the North Downtown substation will benefit a broad range of customers, and is appropriately treated as a system cost.

Some history related to substations in Seattle:

In 1962, City Light began reconfiguring its entire distribution infrastructure to a 26 kV system served by larger, more centrally-located substations. The Utility has since decommissioned 34 smaller substations (4 kV) that had served specific neighborhood loads, and is in the process of decommissioning the three remaining 4 kV substations still in operation. This strategy has resulted in fewer substations being built over time with the last substation constructed more than three decades ago. City Light currently operates 14 substations to provide energy to the entire distribution service area.

As a result, City Light substations, with one partial exception noted below, have always been considered to support the entire distribution system and are considered a shared facility under City Light policy for cost allocation and customer payment purposes. As such, substation costs are normally allocated to all customer classes based on their load at the time of system peak (i.e., coincident peak).

Exceptions to City Light's Substation Policy

An exception to this policy occurred in 1995, when Nucor Steel's predecessor, Birmingham Steel, was required to pay some of the costs associated with installing two new transformers in the South Substation. Birmingham had just installed a new arc furnace (used to melt steel) and in order to accommodate the higher load of the new furnace, City Light had to install two new 60 MVA transformers and upgrade Birmingham's plant switchyard. However, Birmingham paid only labor costs; City Light paid for the transformers themselves under a contract that required compensation to the utility in the event that Birmingham should leave the City Light system. City Light's cost was \$1,432,840. Birmingham's was \$842,865 (just over 1/3 of the cost).

How Other Utilities Deal with the Cost of Substations

Research on several other similar size and local utilities indicates that City Light's policy is consistent with how other utilities deal with large capital infrastructure costs, including new substations—generally, they are paid for by cost allocations to all customers, but individual large customers that require all or most of a dedicated new substation are required to pay for it. City

Light Financial Planning Staff made inquiries of several Large Public Power Council utilities, as well as neighboring utilities.

JEA (Florida)

JEA recently completed a new gas generating station that only serves the south side of the city. This project cost several hundred million dollars and was bond funded. The interest and principal will be paid by all the ratepayers.

In the instance of capital infrastructure for a new housing or commercial development, JEA charges the developer for the cost, and the developer recovers his cost from his customers. Ratepayers don't pay for this, except for those that actually purchase homes or run businesses in that development. The arrangement with the developer would be fully documented in a developer agreement.

SMUD (California)

SMUD's rates are based on marginal costs. So, for example, distribution substation costs would not be allocated to customers taking service at 12kV and above. Previous embedded cost rates did provide for dedicated substations to be totally allocated to the related customer class.

In the instance where a customer requests facilities that are over and above the SMUD standard, SMUD has a special facilities charge to ensure that other customers are not burdened with the cost of those facilities.

OPPD (Nebraska)

From a rate perspective, the only time OPPD "direct assigns" specific plant items such as substations are when that specific piece of plant is used and built to serve just one customer or if the preponderance (say 98%) of the facility is used by one customer. If a substation could be used by multiple customers the cost is "socialized", i.e., paid by all customers. OPPD also does not charge new customers or new load rates that are different from those of existing customers.

OPPD has the responsibility to serve all customers in its service territory in the least cost manner and has developed written policies in its Line Extension Manual as well as other written policies that describe the rules for new construction. They also have long-standing consistent rate standards (not written) as to how to treat various facilities from a rate perspective. In terms of charging new load different rates than existing load for the same service, this is generally prohibited by state law and was clarified in a 1983 Nebraska court case.

Local Utilities

Substation costs-large customers

Avista: For large customers, Avista assigns the costs of certain substations directly to 22 large users in Washington. A large user is defined as using 3,000 kVA or more. This includes industrial facilities such as a lumber mill and a paper mill as well as colleges and other types of users.

Tacoma Power: Tacoma directly assigns a small amount of substation expenses to the High Voltage General Service (Schedule HVG) and Contract Industrial Service (Schedule CP) classes. There are six customers in the HVG class including two military facilities and four smaller facilities, all with demand of 10MW or more. There are two major industrial customers in the CP class. A contract of 8MW minimum is required for the CP class. In the past, Tacoma Power had dedicated substations for CP customers but they have since sold the substations to these customers. Today the HVG and CP customers pay for the cost of plant substations and mobile substations (even if idle) based on non-coincident peak load.

Note: These customers do not use the normal complement of distribution equipment that most customers require (they are served at transmission or primary voltage) so their rates do not include provision for such costs. Seattle has no customers served at this type of voltage; therefore, any comparison of rates or bills for large commercial or industrial loads that uses Tacoma's HVG or CP rate schedules as the comparison with Seattle's rate schedules is not a valid comparison.

SnoPUD: SnoPUD has a dedicated substation for each of their large industrial customers and the customer pays for it. SnoPUD has five such customers. This is because in 2008 SnoPUD adopted a new large load policy that requires a customers that use 20 MW or more to have a dedicated substation.

Puget Sound Energy: At PSE when an increase in load relates to a specific large customer, the customer can choose to build a substation or lease one from PSE. The substation may be built solely for one customer or shared between one large customer and to meet the increased demand of other PSE customers.

Substation costs-residential and commercial customers

SnoPUD, Tacoma, Avista, Puget, and Portland General: For an increase in residential or commercial load, the cost of a new substation is rolled into the next rate case and all classes pay for the cost proportionally based on the non-coincident peak load of each class except for Avista, which uses a 12-month average peak demand.