

**PACIFICORP  
COST OF SERVICE  
FUNCTIONALIZATION, CLASSIFICATION & ALLOCATION PROCEDURES**

## **INTRODUCTION**

The Class Cost of Service Study is based on PacifiCorp's normalized results of operations. It employs a three-step process referred to as functionalization, classification, and allocation. These three steps recognize the way a utility provides electrical service and assigns cost responsibility to the groups of customers for whom the costs are incurred.

### **Functionalization**

Functionalization recognizes the different roles played by the various facilities in the electric utility system. It is the process of separating expenses and rate base items to determine a separate revenue requirement for each of five major electric utility functions; Production (or Generation), Transmission, Distribution (Poles and Wires), Retail Services and Miscellaneous Services. These functions are also referred to as P, T, D (or DPW), R, and M.

The production function consists of the costs associated with power generation, including coal mining and wholesale purchases.

The transmission function includes the costs associated with the high voltage system utilized for the bulk transmission of power from the generation source and interconnected utilities to the load centers.

The distribution function includes the radial distribution system that connects the customer to the transmission system. This includes distribution substations, poles and wires, line transformers, service drops and meters.

The Retail Service function includes the retail activities associated with customer service including Meter Reading, Customer Accounting, Customer Service activities and Sales.

The Misc. Services function is a catchall for expenses that are associated with regulatory activities. These activities include franchise requirements and regulatory commission expenses.

### **Classification**

Classification identifies the component of utility service being provided. The Company provides, and customers purchase, service that includes at least three different components: demand-related, energy-related, and customer-related.

Demand-related costs are incurred by the Company to meet the maximum demand imposed on generating units, transmission lines, and distribution facilities. The maximum

demand influences the size of these facilities, and correspondingly, the amount of Company investment and related expenses.

Energy-related costs vary with the output of a kWh of electricity. Typical energy-related costs include fuel, maintenance that occurs on the generating unit due to running of the unit, purchased energy and other costs that are impacted by the decision to supply energy.

Customer-related costs are driven by the number of customers served. Once the Company makes a commitment to serve a customer, these costs continue, even if the customer uses little or no electricity. At a minimum, they consist of the costs associated with meters, service drops, meter reading, billing, and customer service related expenses.

### **Allocation**

After the costs have been functionalized and classified, the next step is to allocate them among the customer classes. Some utility plant and expenses can be identified as serving one or a small group of customers and can be directly assigned to those customers. In most cases, however, utility plant and expenses are used to serve multiple classes of customers. As such, those costs must be equitably shared among the customer classes. This is achieved by the use of allocation factors, which specify each class' share of a particular cost driver such as system peak demand, energy consumed, or number of customers. The appropriate allocation factor is then applied to the respective cost element to determine each class' share of cost. Factors with two digits (i.e. F30 - MWH) identify allocation factors that are calculated using cost driver information that is external to the cost study.

Many expense and rate base items track plant investment or some other value in the cost of service study. The allocation factors for these items are internally generated within the cost of service model. Internally identified factors are identified with three digits (i.e. F102 – Gross Plant). Many plant related allocation factors are identified by function and are so identified (F102G – Generation Plant, F102T – Transmission Plant, F102D – Distribution Plant and so on).

## **FUNCTIONALIZATION PROCEDURES**

For regulatory reporting purposes costs are collected into the Jurisdictional Allocation Reporting System (JARS). Each account balance in the JARS database is assigned a functional identification or FUNC Factor. Account balances captured in the JARS database that are directly related to one of the primary business functions: P, T, D (or DPW), R, or M are so designated. The functional designation is generally driven by the location code associated with an asset or transaction. In some cases, the customer service system for example, the business purpose of the asset or transaction is used rather than the physical location. Assets and expenses that support more than one of the five (for example administrative and general expenses and general office rate base) are apportioned between the functions. Those items that are considered plant related are split

between functions in the same proportion as generation, transmission, and distribution plant (PTD FUNC factor). Those items that are considered directly related to employee compensation are split in the same proportion as company labor (LABOR FUNC factor).

In the Results of Operations Model (Jurisdictional Allocation Model or JAM), account balances from JARS are aggregated by FERC account and by Protocol jurisdictional allocation factor and roll up to a single line item. Each of these line items is also assigned or allocated to one or more of the functions using a series of functionalization factors (FUNC Factors). When all, or essentially all, of the account balance associated with one FERC account and Protocol factor have the same functional designation that FUNC factor is used. For example any item allocated to a jurisdiction using the SE factor is generally fuel related and assigned to the generation function using the "P" FUNC factor.

When the various account balances from JARS that roll up to one line in the JAM have more than one functional designation, a new FUNC factor is developed. An example of this is the SCHMAT-SO FUNC factor. Of the Schedule M Additions Temporary account balances allocated on the SO Protocol factor, some are labor related, some are directly associated with generation and some are overall plant related. Each of these account balances is assigned or apportioned to the appropriate function. The SCHMAT-SO FUNC factor is derived from the summation of the account balances by function. The Schedule M Additions Temporary allocated to a state using the SO Protocol factor are then assigned to functions using the SCHMAT-SO FUNC factor.

Some FUNC factors, such as the Production, Transmission and Distribution (PTD) factor or the Cash Working Capital (CWC) factor are calculated from data inside the JAM model.

#### **Operation Revenues:**

**General Business Revenue:** Account 440-445. Residential Revenues, and Account 442, Retail - Commercial and Industrial Revenues, are not functionalized. The dollar amounts assigned to PTDRM for retail revenues have been derived to produce the jurisdictional normalized ROE.

**Interdepartmental:** Account 448. Interdepartmental Sales, is allocated to Distribution Poles & Conductor (DPW)

**Special Sales:** Account 447. Firm Wholesale Sales (sometime referred to as Sales for Resale), are allocated on the Wholesale Sales Factor, "WSF". This factor is developed by identifying the production / transmission components of wholesale sales.

**Other Operating Revenue:** Accounts 450 to 456. Other Revenues, is functionalized on the "OTHREV" factors. The vast majority of revenue in this line item are associated with account 456 and have been functionalized using the "OTHSE" factor. These factors are developed by identifying each specific revenue item as PTDRM.

#### **Operating Expenses:**

**Production:** Accounts 500-557. Production expense includes all generation maintenance expenses as well as fuel and purchased power expenses. All of these costs are assigned to P.

**Transmission:** Accounts 560-573. Transmission costs, including wheeling expenses, are assigned to T.

**Distribution:** Accounts 580-598. Maintenance and operation expenses are assigned to D.

**Customer Accounts & Sales:** Accounts 901-916. Customer Accounts and Sales are assigned to R.

**Administrative & General:** Accounts 920-935. Most A&G expenses are functionalized on the "PTD" functionalization factor. The "PTD" factor used here is based on the ratio of total company plant investment between P, T & D. Costs that have been identified as supporting customer systems are considered part of the retail function. Account 926, Pension Benefits and Account 929 Duplicate Charges are functionalized on the "LABOR" functionalization factor. The "LABOR" factor is based on the FERC Form 1 breakdown of labor expenses between P, T D & R (As shown above, Customer Accounting, Service and Sales are considered part of the R function). Account 927, Franchise Requirements, and Account 928, Regulatory Commission Expense are assigned to M. Account 928, FERC annual charge is functionalized on the "FERC" factor with the balance going to M. Account 935 is functionalized on the General Plant "G" factor

**Depreciation:** Account 403. The functionalization of depreciation matches the functionalization of rate base. For example, the functionalization of General Plant Depreciation expense matches the functionalization of General Plant rate base.

**Amortization:** Accounts 404-407. Account 404, Amortization of Limited Term Electric Plant is functionalized based on analysis of the items being amortized to this account with the vast majority of the money being functionalized by PTD or CUST. Account 405, Other Electric Plant Amortization is allocated on the "GP" factor. Account 406, Plant Acquisition Adjustment Amortization and Account 407, Amortization of un-recovered Plant are assigned to P

**Taxes Other Than Income:** Account 408. Property tax, Excise and Super-fund taxes are functionalized to P, T D & R using the "GP" factor. The "GP" factor is different than the "PTD" factor in that the "GP" includes General and Intangible plant balances in the calculation. Generation Taxes and Idaho kWh tax are assigned to P. The Washington Business Tax, Regulatory Commission fees for Wyoming and Idaho and other situs taxes are assigned to R.

**Income Taxes - Federal:** The federal income tax calculations for PTDRM are based on the functionalized breakdown of revenues and expenses as described above. In addition

to the above expense deductions, Account 427, Interest Expense, is functionalized to PTDRM using the "GP" factor and deducted from PTDRM revenue. Schedule M Additions and Deductions are functionalized and netted against PTDRM operating revenues to arrive at total taxable income before state income tax.

Schedule M items that can be specifically identified with P, T, D or R are so assigned. Those items that are salary or benefit related are functionalized using the "LABOR" factor. Items associated with bond refinancing are functionalized using the "PTD" factor. The reversal of book depreciation is functionalized according to book depreciation.

**Income Taxes - State:** Account 409.11. The total income before state taxes is calculated for PTDRM in the same manner as done for Federal income taxes. This amount is multiplied by the composite state tax rate to arrive at functionalized state income taxes for each function.

**Income Taxes Deferred - Net:** Accounts 410 & 411. The Tax Department determines whether the plant deferred income taxes are production, transmission, distribution or general plant related. These items are functionalized into PTDRM accordingly, using the "DITEXP" factor. Deferred taxes associated with employee benefits are functionalized using the "LABOR" factor. Items associated with property taxes are functionalized using the "GP" factor. Items that can be directly associated with a function are directly functionalized using "P" or "PT" factors

**Investment Tax Credit Adjustment:** Accounts 411.40 & 411.41. The Federal deferred investment tax credit was functionalized on the "PTD" factor.

**Miscellaneous Revenue & Expense:** Accounts 411.8, 421 & 431.1 The gains and losses arising from the sale of utility property are identified and assigned to P, T, or D. Emission allowances are assigned to P. The interest expense associated with customer deposits in Account 431.1 is assigned to R.

**Rate Base:**

**Electric Plant in Service:** Production plant rate base, Accounts 310 - 346, are assigned to P. Likewise, transmission plant accounts are assigned to T. Distribution plant accounts are split between D and R based upon asset utilization.

**General and Intangible Plant:** General plant rate base accounts, except coal mine plant, which is assigned to P, are functionalized using functionalization factors. The General Plant factors were developed using the functional identification in the Jurisdictional Allocation Reporting System (JARS) reports of general plant. JARS identifies investments by accounting location, as steam, hydro, transmission, distribution, general office, or the customer service system. The identified generation items are assigned to P and known transmission items are assigned to T. General plant items that are assigned situs because they are associated with distribution property are assigned to that function. The general office items within the JARS listing were functionalized on the "PTD" factor and those items

associated with the customer service system were functionalized to R. A separate General Plant functionalization factor was developed to correspond to each PITA allocation factor.

Intangible plant was functionalized in the same manner.

**Plant Held for Future Use:** JARS tracks Account 105 transactions to production, transmission, general and mining totals. Production and mining are assigned to P, and transmission to T. The general amount is functionalized using the “G” factor.

**Deferred Debits:** The JARS system tracks and collects deferred debits that are related to production. These costs are assigned to P directly. Situs and system overhead debits are functionalized using the “DEFSG”, “DDSO2” and “DDSO6” functionalization factors. These three factors were developed by generating a detailed listing of JARS debits to situs and system overhead (see page 20).

**Electric Plant Acquisition Adjustments:** Account 114. All Electric Plant Acquisition Adjustments are assigned to P.

**Prepayments:** Account 165. Situs prepayments for franchise taxes and regulatory commission fees are assigned to R. Fuel related prepayments are assigned to P. Property insurance was functionalized using “PTD”. Other prepayments are functionalized using the “PT” functionalization factor.

**Fuel Stock:** Account 151 assigned to P.

**Materials & Supplies:** Accounts 154, 163 & 253.18. Materials and Supplies are functionalized using the “MSS” factor. This functionalization factor was developed using FERC form 1 data.

**Working Capital:** Accounts CWC, 131, 135, 143, 232 & 253. Cash Working Capital is calculated by subtracting the expense lag days from the revenue lead days and multiplying this difference times the daily cost of service. The daily cost of service is calculated within the model by adding 12 months of O&M, Taxes Other than Income, and State and Federal Income Taxes and dividing by 365. This amount is functionalized using the “CWC” factor. The “CWC” factor is internally calculated by adding the O&M, Taxes Other than Income, and State and Federal Income Taxes, for each of the three functions and dividing by the functional total, (Production/Total, Transmission/Total, Distribution/Total).

**Weatherization:** Accounts 124, 182, 186. Weatherization loans and other deferred debits related to conservation and DSM programs are assigned to M.

**Other Miscellaneous Rate Base:** Accounts 182.22 & 141 Other misc. rate base includes the deferred debits related to the Trojan Nuclear Plant which are assigned to P.

**Accumulated Provision for Depreciation & Amortization:** Accounts 108 & 111 The functionalization of the accumulated depreciation matches the functionalization of rate base. For example, accumulated depreciation for production plant is assigned to P, and the accumulated depreciation for general plant is functionalized in the same manner as described in line 37.

**Accumulated Deferred Income Taxes:** Accounts 190, 281-283. The largest component of accumulated deferred income taxes is due to timing differences between book depreciation and tax depreciation. This timing difference is functionalized on the “ACCMDIT” factor. Detail to develop this factor is supplied by the Tax Department, see page 9. The percentage for P in the “ACCMDIT” factor, for example, is developed by taking the total of production items as determined by the Tax Department and dividing it by the total of all PTDRM items. This includes the accumulated deferred income taxes arising from general plant which are functionalized using the “G” factor for the purposes of developing the “ACCMDIT” factor.

**Unamortized Investment Tax Credits:** Account 255. The accumulated investment tax credits are functionalized using the “PTD” factor.

**Customer Advances for Construction:** Account 252. State situs customer advances for construction are assigned to D. System allocated advances are assigned to T.

**Customer Service Deposits:** Account 253. Customer service deposits are assigned to R.

**Other Miscellaneous Rate Base Deductions:** Account 228. All items are functionalized using the “PTD” factor.

## **CLASSIFICATION AND ALLOCATION PROCEDURES**

### **Generation and Transmission Costs**

The methodology used in this study for the classification and allocation of generation and transmission costs is consistent with the MSP Protocol method filed with the Utah Commission on June 28, 2004. The MSP Protocol identifies four categories of Resources: Seasonal Resources, Regional Resources, State Resources, and System Resources. Fuel costs are classified as 100% energy related. Production and transmission plant and non-fuel related expenses for all resources are classified as 75% demand related and 25% energy related. The costs of Seasonal Resources are allocated using seasonal factors because they are designed to be used more intensively at certain times of the year. All other resources are allocated using non-seasonal factors.

The non-seasonal energy related costs are allocated using each class’ share of annual MWH (F30).

Demand-related costs of non-seasonal resources are allocated using each class’

contribution to the 12 monthly peaks coincident with the PacifiCorp system firm peak. Non-seasonal demand costs are allocated in this manner because capacity is important to the Company each month for meeting peak loads, load following, and accommodating plant maintenance. For these reasons, the Company supports the use of all twelve monthly peak loads in the non-seasonal capacity allocation factor (F12). The energy portion is allocated using class MWH adjusted for losses to generation level (F30). The fixed costs composite factor is (F10).

There are three types of Seasonal Resources, simple-cycle combustion turbines, seasonal contracts and the Cholla Unit IV (adjusted for megawatt hours delivered to and received from APS). The cost of each type of Seasonal Resource is allocated using a set of seasonal allocation factors that reflect the monthly portion of the total annual energy generated by the Seasonal Resource. Prior to summing each class' monthly energy usage or contribution to the twelve monthly Coincident Peaks, each monthly energy or CP measurement is weighted by the monthly portion of the total annual energy generated or delivered to PacifiCorp by the Seasonal Resource. For example, if 30 percent of the annual generation of a particular Seasonal Resource occurs in July, the monthly Coincident Peak for July would be weighted by 30 percent in the calculation of the allocation factor. This, in essence, allocates 30 percent of the demand related cost for that resource among classes based upon their contribution to the July Coincident Peak and 30 percent of the energy related costs based on each class' July energy usage.

The demand costs associated with seasonal simple cycle combustion turbines, SCCT's, are allocated on factor (F13) and the energy portion is allocated on (F32). The fixed costs composite factor for the SCCT's is (F14). The demand costs associated with Seasonal Contracts are allocated on factor (F17) and the energy portion is allocated on (F34). The fixed costs composite factor for the Seasonal Contracts is (F18). The demand costs associated with Cholla IV are allocated on factor (F15) and the energy portion are allocated on (F33). The fixed costs composite factor for the Cholla IV is (F16).

The Embedded Cost Differentials are allocated using the generation fixed costs composite factor (F10).

Transmission plant is classified and allocated using the same methods described for non-seasonal generation resources.



## **Distribution Costs**

All distribution costs are classified as either demand related or customer related. There are no significant energy related costs associated with the distribution system. In this study only meters and services are considered customer related with all other costs considered demand related.

To understand how demand related costs are treated it is first necessary to understand the concept of diversity. Diversity is the characteristic whereby individual customer peak demands usually occur at different times. Because of this, a piece of equipment, such as a power plant or a substation, that is used by many customers does not need to be large enough to meet the sum of the individual customer peak demands (non-coincident or billing demands). Rather it needs to be just large enough to meet the coincident peak demand (demand that occurs at the same time) of those customers.

The demand related costs fall into two subclassifications: those that vary with changes in overall system load (system costs) and those that are established at the time customers are connected to the distribution network and seldom vary after that time (facilities costs). PacifiCorp's distribution system is primarily a set of radial lines extending from substations connected to the transmission system. As you move through these radial branches, from the substation to the meter, the number of customers using each piece of equipment declines and, with that decline, the amount of diversity in the load on each piece of equipment also declines. While the transition between system costs and facilities costs occurs gradually over the distribution system, it becomes necessary in a cost study to draw a line between equipment which is judged to fit best into each of the categories.

### **Substations and Primary Lines**

Distribution substations and primary lines fall into the system costs category. Because many customers use substations and primary lines, an allocation methodology that recognizes the diversity of load among the customers is used. Distribution substations and primary lines are allocated using the weighted monthly coincident distribution peaks (F20). The coincident distribution peak is the simultaneous combined demand of all distribution voltage customers at the hour of the distribution system peak. These monthly values are weighted by the percent of substations that achieve their annual peak in each month of the year.

### **Line Transformers**

Distribution line transformers are used either by only one or by a small number of customers. As such, they are considered part of the facilities category. Since the cost responsibility for line transformers is incurred at the time a load is added to the system, that cost responsibility should be assigned on the basis of individual customer installed capacity. Assignment of cost based on installed capacity cannot be done directly because of a lack of detailed property records. As a surrogate for installed capacity, we use the maximum monthly class NCP estimates from load research data.

Only customers taking service at secondary voltage are allocated distribution line transformer costs. The allocation factor (F21) is based on the maximum monthly class NCP. This may be a different month for each class. For classes of customers where transformers are shared by more than one customer, the NCP is weighted by the appropriate coincidence factor from the Company's Job Designer's Manual to recognize the diversity of load at the transformer.

### **Secondary Lines**

Distribution secondary lines operate as an extension of the line transformer. They are also allocated using the weighted NCP method. Only customer classes where transformers are shared by more than one customer are allocated the costs of distribution secondary lines. (F22)

### **Services and Meters**

Services costs are allocated to secondary voltage delivery customers only. The allocation factor is developed using the installed cost of newly installed services for different types of customers. (F70)

Meter costs are allocated to all customers. The meter allocation factor is developed using the installed costs of new metering equipment for different types of customers. (F60)

### **Customer Accounting, Customer Services & Sales**

Customer accounting, customer service, and sales expenses are considered customer-related costs. They are allocated to customers using weighted customer factors. The weightings reflect the resources required to perform such activities as meter reading, billing, and collections for different types of customers.

The customer weightings for Meter Reading expenses, Account 902, are determined by the typical time, including travel time between meters, to read meters for different classes of customers. Typical meter reading time is calculated from the elapsed time between meter reads captured by the itron meter reading system. (F47)

The customer weighting for Customer Accounting and Records expenses, Account 903, are a composite of several factors such as number of customers receiving manual bills, number of billing adjustments, and average account balances 90 days delinquent. (F48)

Uncollectible Accounts expense is allocated based on class net write off history. (F80)

Customer service expenses are allocated on number of customers (F40).

### **General & Intangible Plant, Administrative & General Expenses**

Most general plant, intangible plant, and administrative and general expenses are functionalized and allocated to classes based on generation, transmission, and distribution plant (F102). Employee Pensions and Benefits costs have been assigned to functions and classes on the basis of labor (F138). Costs that have been identified as supporting

customer systems are considered part of the retail function and have been allocated using customer factors (F42). Regulatory Commission Expense is allocated on Revenue (F141).

### **Taxes**

State and Federal Income Taxes are allocated on Rate Base (F101). An embedded cost of service study is designed to determine the revenues needed to provide an equal rate of return for all classes. At full cost of service, allocating income taxes on rate base produces the same result as allocating on income. This simplifies and reduces the size of the cost model by eliminating the need to allocate all of the taxable income adjustments.

Deferred Income Taxes are allocated primarily on Net Plant (F104). Most deferred taxes are a result of plant investment. Deferred Income Taxes associated with bad debt are allocated using customer factors (F42). Deferred Income Taxes associated with employee benefits are allocated using labor (F138).

Taxes Other Than Income Taxes are allocated on Plant (F101). The bulk of taxes other than Income Taxes are property taxes. Property Taxes are assessed on plant investment.

### **Rate Base Additions and Deductions**

Additions and deductions that relate to Generation and Transmission plant are allocated accordingly (F10). Items that are associated with Distribution plant are allocated in a similar manner (F20). Items directly relating to fuel or coal mining are allocated on energy (F30). Weatherization, Energy Efficiency and DSM investments are allocated on 50% demand and 50% energy (F11). Accumulated Deferred Income Taxes are allocated consistent with Deferred Income Tax Expense (F104). Customer advances for Construction are allocated based on recent history for Contributions in Aid of Construction (F50). Where applicable, Customer Deposits are allocated on recent deposit history (F51). All other additions and deductions are allocated on Plant (F102).

### **Revenue Credits**

In the class COS study, no costs are assigned to wholesale transactions. The revenue from these types of sales are treated as a revenue credit and are allocated to customer groups using appropriate allocation factors. Other electric revenues are also treated as revenue credits. Revenue credits reduce the revenue requirement that is to be collected from firm retail customers.

Sales for Resale revenues are classified between demand-related (F10) and energy-related (F30) and allocated consistent with the treatment of purchased power. Other Electric Operating Revenues are assigned as closely as possible to the specific customer classes providing the revenue.