## **NATURAL GAS COST OF SERVICE STUDY**

A cost of service study is an engineering-economic study, which apportions the revenue, expenses, and rate base associated with providing natural gas service to designated groups of customers. It indicates whether the revenue provided by the customer group recovers the cost to serve those customers. The study results are used as a guide in determining the appropriate rate spread among the groups of customers.

There are three basic steps involved in a cost of service study: functionalization, classification, and allocation. See the flow chart below.

First, the expenses and rate base associated with the natural gas system under study are assigned to functional categories. The uniform system of accounts provides the basic segregation into production, underground storage, and distribution. Traditionally, customer accounting, customer information, and sales expenses are included in the distribution function and administrative and general expenses and general plant rate base are allocated to all functions. In this study I have created a separate functional category for common costs. Administrative and general costs that cannot be directly assigned to the other functions have been placed in this category.

Second, the expenses and rate base items are classified into three primary cost components: demand, commodity or customer related. Demand (capacity) related costs are allocated to rate schedules on the basis of each schedule’s contribution to system peak demand. Commodity (energy) related costs are allocated based on each rate schedule’s share of commodity consumption. Customer related items are allocated to rate schedules based on the number of customers within each schedule. The number of customers may be weighted by appropriate factors such as relative cost of metering equipment. In addition to these three cost components, any revenue related expense is allocated based on the proportion of revenues by rate schedule.

The final step is allocation of the costs to the various rate schedules utilizing the allocation factors selected for each specific cost item. These factors are derived from usage and customer information associated with the test period results of operations.

**BASE CASE COST OF SERVICE STUDY**

**Production - Purchased Natural Gas Costs**

The Company owns no natural gas production facilities serving the Washington jurisdiction. In addition, the revenue and expenses associated with the natural gas purchased to serve sales customers and pipeline transportation to get it to our system have been removed from the Company’s filing. The natural gas costs included in the production function include the expenses of the gas supply department.

The expenses of the gas supply department recorded in account 813 are classified as commodity related costs. The gas scheduling process includes transportation customers, so estimated scheduling dispatch labor expenses are allocated by throughput. The remaining gas supply department expenses are allocated 95% by sales volumes and 5% on total throughput.

**Underground Storage**

Underground storage rate base, operating and maintenance expenses are classified as commodity related. Thirteen percent of underground storage costs are allocated to customer groups by annual throughput, the remaining eighty-seven percent are allocated by sales therms.

**Distribution Facilities Classification (Peak and Average)**

Distribution mains and regulator station equipment (both general use and city gate stations) are classified as demand and commodity related using the peak and average ratio for the distribution system. Peak demand is defined as the average of the five-day sustained peaks from the most recent three years. Average daily load is calculated by dividing annual throughput by 365 (days in the year). The average daily load is divided by peak load to arrive at the system load factor of 39.78%. This proportion is classified as commodity related. The remaining 60.22% is classified as demand related. Meters, services and industrial measuring & regulating equipment are classified as customer related distribution plant. Distribution operating and maintenance expenses are classified (and allocated) in relation to the plant accounts they are associated with.

**Customer Relations Distribution Cost Classification**

Customer service, customer information and sales expenses are the core of the customer relations functional unit which is included with the distribution cost category. For the most part these costs are classified as customer related. Exceptions include uncollectible accounts expense, which is considered separately as a revenue conversion item, and Demand Side Management amortization expense recorded in Account 908. The demand side management investment costs and amortization expense are included with the distribution function and classified to demand and commodity by the peak and average ratio.

**Distribution Cost Allocation**

Demand related distribution costs are allocated to customer groups (rate schedules) by each group’s contribution to the three year average five-day sustained peak. Commodity related distribution costs are allocated to customer groups by annual throughput. The throughput allocation for distribution main investment has been segregated into small, medium and large mains. Small mains are defined as less than two inches, medium mains are 2 and 3 inches, and large mains being four inches or greater. Large usage customers (Schedules 131/132 and 146) receive zero allocation of small main and a 33.3% of medium main.

Most customer related costs are allocated by the annualized number of customers billed during the test period. Meter investment costs are allocated using the number of customers weighted by the relative current cost of meters in service at September 30, 2015. Services investment costs are allocated using the number of customers weighted by the relative current cost of typical service installations. Industrial measuring and regulating equipment investment costs are allocated by number of customers weighted by industrial meters at current cost.

**Administrative and General Costs**

General and intangible rate base items are allocated by the Company’s blended 4-part factor allocator (4-factor). Administrative and general expenses are segregated into plant related, labor related, revenue related and other. The plant related items are allocated based on total plant in service. Labor related items are allocated by operating and maintenance labor expense. Revenue related items are allocated by pro forma revenue. Other administrative and general expenses are allocated by the Company's 4-factor. Whenever costs are allocated by sums of other items within the study, classifications are imputed from the relationship embedded in the summed items.

**Special Contract Customer Revenue**

Several special contract customers receive transportation service from the Company. Rates for these customers were individually negotiated to cover any incremental costs and retain some contribution to margin. The rates for these customers are not being adjusted in this case. The revenue from these special contract customers has been segregated from general rate revenue and allocated back to all the other rate classes by relative rate base. In treating these revenues like other operating revenues their system contribution reduces costs for all rate schedules.

**Revenue Conversion Items**

In this study uncollectible accounts, state excise tax, and commission fees have been classified as revenue related and are allocated by pro forma revenue. These items vary with revenue and are included in the calculation of the revenue conversion factor. Income tax expense items are allocated to schedules by net income before income tax adjusted by interest expense.

For the functional summaries on pages 2 and 3 of the cost of service study, these items are assigned to the component cost categories. The revenue related expense items have been reduced to a percent of all other costs and loaded onto each cost category by that ratio. Similarly, income tax items have been assigned to cost categories by relative rate base (as is net income).

The following matrix outlines the methodology applied in the Company’s Base Case natural gas cost of service study.