



MEMORANDUM

EUGENE WATER & ELECTRIC BOARD

Rely on us.

TO: Commissioners Schlossberg, Brown, Carlson, Barofsky, and McRae
FROM: Deborah Hart, Chief Financial Officer; Adam Rue, Fiscal Services Supervisor
DATE: September 7, 2021
SUBJECT: Cost of Service Analysis (COSA) Discussion
OBJECTIVE: Information/Board Feedback

Issue

EWEB prepares an annual cost of service analysis for both water and electric utilities. The cost of service is a cost-based analysis that allocates costs among the classes and provides a unit cost output for use in the rate design process.

In order to better align with organizational strategic priorities and workflows, a three-year cost of service analysis is being prepared. This overview of the COSA is a follow up to the discussion of ratemaking principles in April 2021.

Background

Overall Rate Making Process

There are three main activities associated with establishing customer rates (i.e., ratemaking); establishing a revenue requirement, allocating costs, and rate design. Each of these activities is described below. The Board has exclusive authority to set rates for its service territory and is able to establish rates and customer classes, to the extent the rates are just, reasonable, and do not discriminate between similarly situated persons. For differential rate treatment, there must be a rational basis.

Revenue Requirement (How much?)

EWEB uses the budgeting process to establish its revenue requirement and provide 10-year projections to the Board in its Financial Plans for both utilities. The revenue requirement includes the annual operating expenses, such as production, transmission and distribution of water and electricity, customer service costs; non-operating expenses, such as Contribution in Lieu of Tax; and capital investment and financing costs, such as principal and interest payments and rate funded capital. These costs are net of wholesale revenue, interest earnings, customer contributions in aid of construction, and other revenue available to offset costs.

Investor-owned utilities governed by public utility commissions, or other regulatory agencies, establish revenue requirements using annual operating expenses but include a return on rate base (net plant) that includes a weighted average cost of capital including both interest expense and a return on equity. As a municipal utility EWEB does not include a return on equity to provide a cushion for risk

and uncertainty, but instead relies on a combination of reserves and conservative budget assumptions to manage its finances and to balance affordability to its customer owners while maintaining strong financial metrics to allow access to financial markets to fund its capital investment needs.

Cost Allocation Modeling (Who Pays?)

The goal of the cost of service is that every customer pay a fair share of costs. The cost-of-service analysis (COSA) segments each cost into different functions based on how the cost was incurred in order to most appropriately allocate among the classes. The costs incurred do not directly align with benefit or value for the individual customer. Examples such as conservation expense, school grants, contributions in lieu of tax, uncollectible expense, etc. are real utility costs that are allocated to the respective classes, but do not directly correspond to the beneficiary of the expense. As the focus of this memo, cost allocation modeling, or COSA, is discussed in more detail below.

Rate Design and Pricing Proposal (How is it collected?)

The final step in the rate making process is the actual rate design, which incorporates elements of the embedded cost of service analysis along with strategic direction, values, principles, and short- and long-term marginal costs. The goal of rate design is to develop rates that align these elements and provide customers with a fair and reasonable price for utility services that allows individual customer choice to consume, conserve, or make investment decisions without impacting other customers.

Discussion

Utility costs must be allocated to different customer classes to ensure the customer pricing structure aligns with utility costs. EWEB's COSA model is the mechanism by which the utility allocates its costs amongst customer classes. The cost allocation process also informs pricing design decisions of utilities. The series of steps below provide an overview of key inputs and methods for completing the cost-of-service analysis.

I. Financial Goals (reflected in 10-year financial plan)

The Board Financial Plan updates in July and October provide a snapshot of the projected revenue requirement and rate trajectory into the future. These plans are informed by projected sales and customers, capital plans, forecasted labor and non-labor costs, and other expenses of the utility. The plans are also informed by financial metrics related to maintaining a strong credit rating and access to capital markets to fund the highly capital-intensive utility operations.

The key financial goals, or metrics, are debt service coverage, days cash, reserves balances, and operating ratio. The Board establishes financial metrics through the adoption of financial policies. Meeting the financial metrics must be balanced with other strategic goals of affordability to limit rate increases as much as possible. These financial goals inform many areas of establishing the revenue requirement including use of reserves and funding capital investments.

II. Developing the Revenue Requirement

The annual budgets and the three-year COSA projections provide a more detailed revenue requirement calculation for the development of retail customer rates. The revenue requirement is developed using FERC account structure and allows for segmenting costs by functions to reasonably allocate the costs among the different customer classes.

The revenue requirement is the sum of all funding needs from retail customers to support utility operations. This provides the basis for setting retail customer rates.

Revenue Requirement (EWEB)
Purchase Power Costs (Electric Only)
Other O&M Costs (Production, Transmission, Distribution)
Administrative & General Costs
Taxes
Interest & Debt
Rate Funded Capital
Reserves Transfers
Less Wholesale & Other Revenue

III. Allocation Framework (marginal cost or embedded cost)

The two industry standard approaches to cost allocation are marginal cost studies or embedded cost. The COSA is an embedded cost study and takes EWEB budgeted costs to allocate among the customer classes. Most municipal utilities utilize embedded cost studies for cost allocation among the customer classes. Some utility commissions or other jurisdictions rely on marginal cost studies for cost allocation and others use embedded cost studies for cost allocation but prepare marginal cost studies to inform rate design.

EWEB uses marginal costs to review longer term implications in its rate design analysis. Accurate estimates of marginal costs are essential for determining:

- Appropriate retail cost allocation to customers within a class, or across classes
- How costs change in a growing or declining consumption scenario
- Benefits of consumption management and conservation programs
- Design of special contracts for individual customers or a group of customers
- The level of cost shifting associated with installation of distributed energy (or water) resources
- Pricing for potential rate offers such as time of use

The marginal cost study calculates the cost of serving a marginal customer in terms of customer costs, marginal demand impacts on the transmission and distribution system, and marginal energy (electric) and capacity costs. The marginal cost provides the most efficient price signal to ensure the decisions of one customer don't impact other customers. For example, if energy rates are set at average cost, or at level higher than marginal cost, then the reduced energy by one customer installing solar panels, efficiency investments, or conservation efforts will not result in corresponding cost reductions and

will result in costs shifting to other customers.

IV. Basis (Cash or Utility Basis)

The revenue requirement can be developed using a cash basis or utility basis. The cash basis is typically used in municipal agencies and investor-owned utilities more commonly use the utility basis. EWEB uses the Cash Basis, with the exception of wholesale water customers.

Utility Basis	Cash Basis
Operating Expenses	Operating Expenses
Taxes / In Lieu of Tax	Taxes / In Lieu of Tax
Depreciation Expense	Rate Funded Capital
Return on Rate Base (*)	Annual Debt Service Payments
Revenue Requirement	Revenue Requirement

(*) *The return on rate base reflects a rate of return (weighted average cost of capital) x rate base (plant investments less accumulated depreciation and contributions in aid of construction)*

V. Test Period

The period is the time for the calculation of the revenue requirement. The test period can be historical or forward looking. However, prior year test periods require a higher rate of return for utility basis, or higher reserves, for cash basis revenue requirements since they do not reflect changes in operating costs.

EWEB uses a forward-looking test period. The test period is being increased from one to three years. The Board will review a three-year test period in the 2022 – 2024 rate proposal, as a part of the three-year COSA. In the fall the Board will be asked to vote on the first year of the rate proposal, however the projections in the second and third year will inform the rate trajectory and provide a heightened level of certainty for the overall revenue requirement, the cost allocation among the classes, and the rates within the classes.

VI. Financial Data

The detailed organization budget is the basis for the revenue requirement. The current process is being extended to a multi-year period by incorporating changes in headcount (FTE trajectory), baseline and service level increases, projected capital budget, debt, and detailed power cost and wholesale water contract revenue projections.

In addition to direct costs of providing utility services there are also shared services, or overhead, required to operate the utility. Functions such as finance, accounting, workforce management, and purchasing are also included in the revenue requirement for both utilities.

The financial data includes costs that roll into the revenue requirement, as well as revenues, that offset the revenue requirement. Both utilities collect revenue from a variety of sources other than retail customers and those revenues can make significant offsets to retail rates.

VII. Rate Base

The Rate Base is the net plant in service and is used as a cost allocation factor as well as a determinant in the revenue requirement for utility basis rate setting.

Revenue Requirement
Original Cost of Plant in Service
Less: Accumulated Depreciation
Plus: Working Cash
Less: Contribution in Aid of Construction
Total Rate Base

VIII. Forecasted sales and revenue

Forecasted sales and revenue are important to establish the billing determinants. The sales are used to establish the revenues at current rates and also to provide allocation factors to allocate costs within the COSA.

The annual sales forecast is important for various utility functions. It provides a basis for the revenue forecast in the 10-year financial plan as well as providing revenue expectations for the annual budget process. Retail sales is also a key driver in our trading operations to establish if EWEB needs to purchase power to meet customer demand or sell surplus power. It also is a key input in the cost-of-service analysis. The sales forecast is included in the COSA for each customer class. The forecast is used to allocate costs among the classes.

IX. Allocation Factors

There are many factors that provide a basis for allocating costs. These include customer costs (customer service, meter reading, etc.), demand (peaking plant, water storage facilities, transmission infrastructure) and commodity (water treatment, base load and intermittent energy purchases) based costs. Demand, energy, and customer allocations are broad categories but there are many sub-categories that are used to allocate costs.

A) Customer

The customer allocation factors include customer counts; customer count weighted for services, transformers, or customer facilities; customers weighted for meter reading or customer accounting, or direct assignment. For example, meter costs are allocated on a customer basis, but large industrial customer meters are more expensive to procure and install than residential meters. Therefore, weighted by metering costs is a factor to allocate such costs and not simply customer count but it is a customer-driven allocation.

The customer allocation factors are applied to costs such as meter reading, customer service and customer accounting, collections, and meter maintenance.

B) Demand (peak day or hour demand)

Peak demand is a planning criteria or billing determinant for utility costs and is therefore the basis to allocate different costs. There are several types of demand allocation factors include coincident peak, non-coincident peak, monthly coincident or non-coincident peak, or annual peaks.

The demand allocation factors are applied to costs such as generation capacity, transmission wheeling, transmission system investments and operations and maintenance costs, water storage facilities, and distribution system costs.

C) Commodity Volume (kgal or kilowatt hours)

Commodity volumetric allocation factors are allocated based on sales by customer or customer class. If we purchase or produce energy or water many of the costs the purchased power or treatment to produce water are volume-based and therefore we allocate them to customer based on the volumetric consumption of the respective classes.

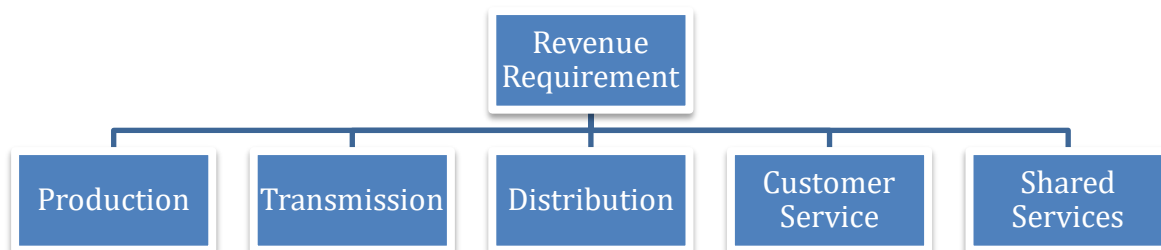
The commodity allocation factors are applied to costs such as purchase power agreements, fuel costs, variable water production costs, such as treatment and power for pumping.

X. Allocation Process

The revenue requirement is developed using FERC accounts that are categorized by different functions. Reviewing the budgets and actuals to ensure appropriate categorization of costs is a fundamental aspect of the cost-of-service modelling.

A) Functionalization

Functionalization of costs is the process of dividing the total revenue requirements into the functional activities performed in the operations of the utility such as production, transmission, distribution, and customer related costs.



B) Classification

The next step is to take the functionalized costs and classify them by customer, energy, and demand related costs. In other words, the process of separating functionalized costs by the primary driver for that cost. These different cost classifications create a mapping from EWEB driven costs as reflected in FERC accounts to customer driven attributes. The classification in this manner provides a basis for using cost allocation for rate design. EWEB currently does not include a residential demand charge for electric customers and those costs are recovered in an energy-based delivery charge. The water capacity-based costs are recovered by fixed monthly charge based on meter (capacity) size.

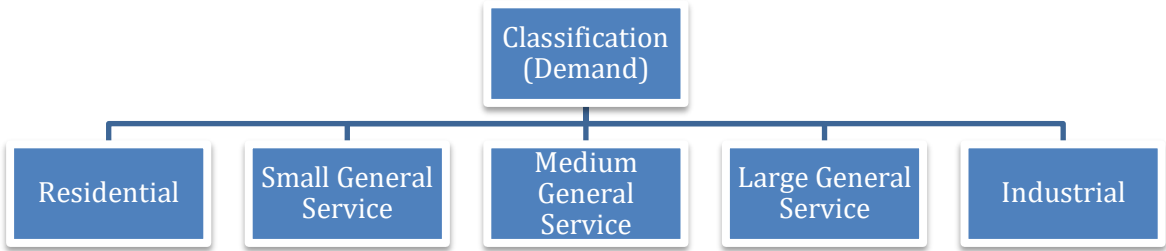
Cost Components
Energy/Water Costs (variable)
Power Generation Facilities (fixed, shared)

Transmission & Distribution Costs (fixed, shared)
Customer Costs (fixed, dedicated)

- Commodity (energy/water) costs are variable and are included in a variable, consumption-based allocation factor. So the cost of a power purchase and water production are allocated among the classes on a volumetric sales basis. The specific commodity cost is then typically recovered in a commodity (kwh/kgal) unit charge in the rate design process.
- Fixed generating capacity costs are allocated on a peak demand basis. Generation capacity is sized and invested to meet peak demand and therefore is allocated based on the class contribution to peak demand.
- Grid access, or transmission and distribution costs, are allocated on peak hour demand for electric and peak day demand for water. Commercial electric customer classes would recover demand allocated costs in a demand charge but historically demand charges haven't been levied to residential electric customers. However, in recent years this practice has been challenged, particularly in the Western US in states with significant rooftop solar panels and variable winter and summer peaks. EWEB does not currently have a residential electric demand charge, however with data available from advanced metering, this will become a future proposal for Board consideration. The residential and commercial demand for water is differentiated for capacity based on meter size.
- Customer specific costs are allocated on a customer basis.

- ***C) Allocation to Customer Classes***

The last step allocates the functionalized and classified revenue requirements to the different customer classes. Once costs are allocated, the unit cost by customer is used to recover the revenue requirement through fair and equitable pricing design.



XI. Calculate Revenue at Current Rates

A key input into the rate proposal and cost allocation is the revenue at current rates. The revenue at current rates provides an input to the cost-of-service allocation and demonstrates revenue shortfall or surpluses among the customer classes.

XII. Revenue Surplus / Shortfall and Revenue Reconciliation

The revenue shortfall or surplus becomes the basis for the recommendation to adjust customer's rates. An overall shortfall requires additional revenue (or a reduction in the revenue requirement) to meet financial metrics and organizational goals. The shortfalls or surplus within each respective customer class provides the basis for fair and equitable rate among the classes. The COSA results demonstrate the different customer classes share, or allocation of costs.

Conclusion

The COSA provides a basis to reasonably set rates that are fair, non-discriminatory and meet all legal and statutory requirements. Existing retail power supply contracts and wholesale water contracts reference the analysis for pricing, and it has been the basis for setting rates at EWEB for decades.

The shift from a single year to multi-year analysis provides management and the Board insight into estimated costs for a longer time period that is better aligned with the time frame of strategic initiatives. The multi-year approach is also well aligned with EWEB financial and rate setting principles and potential customer impacts, particularly the principle of gradualism in making rate design changes.

Requested Board Action

Management is not requesting Board action at the September 7th Board meeting but is requesting feedback on the multi-year COSA.