MEMORANDUM

EUGENE WATER & ELECTRIC BOARD

Rely on us.

TO:	Commissioners Mital, Schlossberg, Helgeson, Brown, and Carlson
FROM:	Deborah Hart, CFO; Adam Rue, Fiscal Services Supervisor; and Alicia Voorhees, Senior Financial Analyst
DATE:	June 16, 2020
SUBJECT:	Electric Cost of Service Analysis for Upriver Service Territory
OBJECTIVE:	Provide General Direction

Issue

EWEB provides electric services to the City of Eugene and adjacent areas, as well as areas 30 miles outside of Eugene along the McKenzie River, between the cities of Walterville and Vida (Upriver). These two service territories are not physically contiguous and likely result in a cost difference to service. Commissioners requested that Management prepare a cost of service analysis to assess an electrical pricing rate for the Upriver Service Territory.

Background

EWEB prices electric service differently for different customer classes based on customer size thresholds and demand characteristics using an industry standard Cost of Service Analysis (COSA) methodology. The allocation of costs among customer rate classes, and recovery within classes by different billing components (e.g., basic, energy, and demand charges), is informed by the COSA. EWEB engaged EES Consulting in 2015 to develop its current COSA model.

In May 2019, the Board directed Management to analyze the cost to serve the Upriver portion of the EWEB electric service territory. In October 2019, Management presented to the Board a high-level evaluation of EWEB's cost of service for Upriver customers relative to the overall customer base. That evaluation indicated a cost differential of approximately 10-15%. The higher cost for Upriver customers was primarily due to a higher level of plant investment to support the rural customer base. Based on the results of the internal assessment and direction from the Board, staff engaged a consulting firm to modify EWEB's cost of service model to formally incorporate the different customer classes for the Upriver customers.

EES was contracted to update the COSA model to incorporate the Upriver customer class and complete the modifications based on 2020 budgeted costs and customer attributes.

Discussion

Two key interrelated issues emerged in the process of establishing an Upriver COSA: First, was the legal defensibility of establishing the customer class separate of the customers within the city limits. Staff engaged external counsel for a legal opinion. Second, there was a cost basis differential between the proposed and existing customer rate class. EES was engaged for this work.

Legal Opinion on Upriver Service Territory Pricing

Municipal utilities have broad discretion to set rates and establish rate classes, as long as customers are not charged different rates for like services. In order to avoid a claim of discriminatory rate treatment, EWEB must show the rational basis for establishing a separate customer class. However, EWEB may establish a separate rate classification based on finding that the cost to service customers in the Upriver service area are greater than the cost to service the rest of the service territory.

The legal analysis was based on a few key elements: 1) Municipal utilities have broad authority to establish reasonable and nondiscriminatory rate classifications; 2) Rate classifications based solely on political and geographic area are not lawful; and 3) Municipal utilities may establish rate classifications based on different operational costs for customers in different geographic locations. The conclusion of the legal analysis is that potentially there could be legal challenges of discriminatory rates to geographic location to the extent the rates are based only on political and geographic areas, but to the extent they are based on a material cost differential, there is a broad authority for municipal utilities.

COSA Methodology Review

Three new customer classes were created specifically for Upriver customers: Upriver Residential, Upriver Small Commercial, and Upriver Medium Commercial. The cost allocation to the Upriver customer base was established on an allocation of both direct and indirect costs. The indirect costs were allocated to the Upriver customer base using the industry standard COSA methodology.

Cost Differential Findings

The results indicate a revenue shortfall of 14%, or approximately $700,000, for the Upriver Residential customer class based on higher cost to serve and differences in load. Upriver customers represent approximately 3% of total customer base with slightly higher than average usage. The higher costs for Upriver service are generally costs recovered in the delivery charge. The delivery charge is billed on a per kilowatt hour basis. Therefore, different consumption levels are impacted differently. The bill impact of the cost differential associated with the Upriver analysis would correspond with a rate reduction of less than 0.5% for in town customers.

Requested Board Action
Management is seeking Board direction on implementation of Upriver Cost of Service results in the November Rate Proposal.

Attachment 1 – EES Memo on Upriver Service Territory Electric Pricing

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June 4, 2020

TO: Adam Rue and Alicia Voorhees

FROM: Amber Nyquist

SUBJECT: Upriver Service Territory Electric Pricing

CC: Connor Birkeland

Purpose

EWEB requested EES develop a unique electrical pricing rate for EWEB customers in the Upriver Service Territory. This memo describes the data assumptions and methodology used to create three new customer classes for the Upriver service area: Upriver Residential, Upriver Small General Service, and Upriver Medium General Service.

Overview of COSA Update

EWEB originally engaged EES to develop its cost of service model in 2015. At that time EES incorporated EWEB's customer classes, cost structure, and load profiles into the EWEB Cost of Service model, developed by EES. The analysis used the available load factors, demand, and energy usage by class to allocate EWEB's revenue requirement among the different rate classes.

An area that wasn't addressed in the prior COSA was the addition of new customer classes. A utility may define a new customer class when the cost to serve, or usage profile, for a group of customers differs significantly from other customers. EWEB engaged EES to incorporate the Upriver Service Territory into its COSA model to facilitate the fair and equitable costs to these customers separately, and to develop rate proposals for the new customer classes.

What Constitutes a Rate Class?

A rate class is generally defined by class of service (usage type, load profile information, or grandfathering rates). The cost to serve a customer is inherent in rate class definition. A utility may define a new customer class when the cost to serve, or usage profile, for a group of customers differs significantly from other customers. Examples for situations that may warrant a new rate class include:

- Usage profile changes within current classes or for new customer classes (load factors, load size, average use).
- Regulatory obligations such as net energy metering thresholds.
- Large difference in the marginal cost to serve a new customer (new large loads).
- Jurisdictional or taxing boundaries that influence cost to serve via taxes or other programs. Boundaries such as county, city, or state are often observed in electric utilities.

- Geographical boundaries creating a difference in the cost to serve customers located in different regions. For example, customers on the mainland will have a lower cost to serve than similar customers located on an island served by a submarine cable.
- Utility incentives offered through rate class self-selection such as time of use, critical peak pricing, or demand response, electric vehicle charging, economic development, fuel type (i.e. all electric), or others.

In this case, EWEB wants to know if the geographical boundary distinguishing Upriver customers from in-town counter parts is cause for different rates. In order to determine if a new rate class is warranted, customers are separated and evaluated in a cost of service analysis.

Revenue Requirement Results

Revenue requirement analysis compares the overall utility revenues to its expenses to determine if an overall rate adjustment it required. In 2020, the projected revenue requirement analysis did not require an overall rate adjustment. The following assumptions were used in the base case assumption.

- 2020 Board approved budget for operating expenses and capital costs
- Forecasted 2020 sales and revenue projections by class

A summary of the draft revenue requirement is shown below.

Table 1 Summary of the Revenue Requirement CY: 2020	
Revenues	
Present Rate Revenues	$215,132,661
Other Income (REC sales and misc.)	50,400,029
Total Revenues	**$265,532,690**
Expenses	
Generation	$140,010,801
Transmission	19,193,902
Distribution	19,600,731
Depreciation	-523,340
Taxes	12,443,550
Interest and Debt Service	15,186,939
Return	27,239,205
Other Contributions	-116,556
Total Expenses	**$265,770,128**
Surplus (Deficiency) in Funds	($237,438)
Total Required Revenue Increase (Decrease)	0.09%
Present Rate Revenues	$215,132,661
Rev Req (Expenses less Other Income)	$215,370,099
Surplus (Deficiency) in Funds	($237,438)
Required Retail Rate Increase (Decrease)	0.11%

Cost of Service Study

A COSA study is used to equitably allocate the revenue requirement among the various customer classes. The industry standard process for allocating costs in a COSA study is to functionalize, classify and allocate costs to the different customer classes.

Functionalization separates costs into major categories that reflect the utility's plant investment and different services provided to customers. The primary functional categories are production, transmission, distribution, and general.

Classification determines the portion of the cost that is related to specific cost-causal factors, such as those that are demand-related, energy-related, or customer-related. Production costs are related to supplying and transporting power to customers on the system. Transmission costs are related to the bulk transfer of power throughout the system, which is designed to meet the peak demand requirement. The distribution system is designed to extend service to all customers attached to the system and to meet the peak load capacity requirement of each customer. Additionally, costs can be classified based on system revenues or directly assigned to a customer or group of customers.

Allocation of costs to specific customer classes is based on the customer's contribution to the specific classifier selected. For instance, demand-related costs are allocated to a customer group using that customer group's contribution to the particular measurement of system demand, whether coincident peak, non-coincident peak or some variation determined to be appropriate for the particular cost item. An analysis of unique customer requirements, loads, and usage characteristics is completed to develop allocation factors reflecting each of the classifiers employed within the COSA. The analysis may include an evaluation of the system design and operations, its accounting and physical asset records, customer load data, and special studies.

A COSA study can be performed using embedded costs or marginal costs. Embedded costs generally reflect the actual costs incurred by the utility and closely track the costs kept in its accounting records. Alternatively, marginal costs reflect the cost associated with adding a new customer and are based on costs of facilities and services if incurred at the present time. While marginal costs can be valuable for designing rates in some cases (such as new large customers), marginal costs can be higher or lower than embedded costs. Therefore, the use of a marginal COSA study would require that all costs be adjusted to a level equal to the revenue requirement. The EWEB study uses an embedded COSA as its standard methodology.

Distribution Cost Allocation Methodologies

Most distribution costs are split between demand and customer components. The demand component is the cost of facilities built to serve a particular load, such as distribution substations. The customer component is the cost of facilities that varies with the number of customers, such as meters. Generally there are two methodologies that can be used to classify distribution costs: 100 percent demand and minimum system. The 100 percent demand methodology assumes that the distribution system is built to meet the non-coincident peak. Therefore, distribution costs using this method are classified as 100 percent demand-related.

Under the minimum system approach, specific distribution costs are split between demand and customer. This approach reflects the philosophy that the system is in place in part because there are

customers to serve throughout the service territory expanse, and that a minimally sized distribution system is needed to serve these customers even if they only use 1 kWh of energy per year. The concept follows that any costs associated with a system larger than this minimal size are due to the fact that customers "demand" a delivery quantity greater than the minimum unit of electricity and that therefore, those costs should be treated as demand related.

Because the residential class tends to have a higher share of the number of customers as compared to the share of non-coincident peak, the minimum system methodology tends to allocate more costs to the residential class and customer charges tend to be higher than with the 100 percent demand methodology.

EWEB has historically adopted a minimum system approach to cost allocation. This methodology places more cost in the customer charge compared with the 100% demand approach which places more of the cost in demand rates (or energy for customers who are not demand-metered). The Upriver Analysis assumes a minimum system approach.

Upriver COSA Analysis

The draft COSA utilized the data provided by EWEB staff in order to create upriver customer classes and costs for allocation to those classes.

- *EWEB Current Assets as of December 31, 2019*
- *Upriver customer billed revenue*
- *Upriver customer billed energy*
- *Tree trimming costs for Upriver Service Area*
- *Upriver Line Loss Data*

EES created three new customer classes specifically for Upriver customers: Upriver Residential, Upriver Small Commercial, and Upriver Medium Commercial. Billing determinants for these classes were estimated based on the billed revenue file and average rate class usage information. Upriver customers were also removed from the balance of EWEB customer classes. Revenues from each class are calculated using current rate schedules by class.

For ease of analysis, EES combined some of the rate classes present in the *EWEB Upriver customer billed revenue data* as follows:

- *Residential Green* + *Residential* = Residential
- *Small General Service Green* + *Small General Service* = Small General Service
- *Medium Green + Medium General Service* = Medium General Service

Upriver *Private Lighting* or *Miscellaneous* rate classes are not included in the analysis. Additional information would be needed in order to separate these Upriver customer characteristics from EWEB's broader customer base.

Cost Allocation

EWEB was able to identify and extract data related to vegetation management and meter reading costs specific to Upriver customers. These direct costs were added to the EWEB revenue requirement and subtracted from the appropriate existing line item. These costs were then directly assigned to Upriver

customers based on customers and meters weighted for meter reading. The remaining meter reading expenses for the rest of the EWEB system were allocated to all other customers.

Costs that could not be extracted and specifically attributed to the Upriver customers were allocated to the Upriver customer base using the load profiles and customer attributes in a manner consistent with other classes and the industry standard COSA methodology.

Results

Table 2 shows the results of the analysis using the Minimum System approach.

Table 2
Minimum System Methodology

Forecast Year: 2020	Residential	Small General Service	Medium General Service	Upriver Residential	Upriver Small General Service	Upriver Medium General Service
Revenues - Present Rate	$100,616,483	$19,656,013	$43,699,037	$5,178,325	$176,785	$280,244
Less Allocated Revenue Requirement	$99,245,527	$19,060,732	$44,642,829	$5,878,305	$231,901	$324,487
Difference	$1,370,955	$595,281	-$943,792	-$699,979	-$55,117	-$44,243
% Increase Retail Rates to Equal Allocated Cost	**-1.36%**	**-3.03%**	**2.16%**	**14%**	**31%**	**16%**
Unit Cost: Present Rates ($/kWh)	$0.1146	$0.1118	$0.089	$0.104	$0.154	$0.100
COSA Rates ($/kWh)	$0.1130	$0.1107	$0.0906	$0.118	$0.206	$0.115
Average Monthly Use, kWh	894	1,856	22,713	1,597	698	11,893

The above results show that Upriver customers have a revenue shortfall of 14%. The shortfall is due to a 5% higher cost to serve, or $0.0054/kWh, compared with in-town counter parts, as well as a lower average rate collection of $0.104/kWh versus $0.1146/kWh for in-town. The primary driver for the higher cost to serve is the additional cost for vegetation management in the Upriver service area. Because these costs were extracted based on EWEB's records, there is a high level of confidence in the results. Due to the rural and wooded nature of the Upriver service area, these customers have a higher cost of service based on industry practices for cost allocation.

In order to test the sensitivity of the results, vegetation management costs were adjusted upward for Upriver customers. If vegetation management costs were to increase by 20%, the additional cost to serve Upriver residential customers would increase from 5% to 8% compared with in-town residential customers.

Summary of Findings

Upriver customers contribute 2.6% of the EWEB total rate revenue and were allocated 3% ($6.4 million) of the total annual revenue requirement. The total under collection from these customers is 0.4% ($0.8 million) of the total annual revenue requirement of $215 million.