



# Board of Commissioners Special Meeting



## Rate Setting Fundamentals

Presented by:  
Sergey Tarasov, Project Manager  
Angie Sanchez, Principal

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# Presentation Overview

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- ◆ **Overview**
- ◆ **Key rate study steps:**
  - Revenue Requirement
  - Cost of Service
  - Rate Design
- ◆ **Questions/discussion**



# Glossary of Terms

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- ◆ **A&G – administrative and general**
- ◆ **BPA – Bonneville Power Administration**
- ◆ **CIP – capital improvement program**
- ◆ **COSA – cost-of-service analysis**
- ◆ **DSC – debt service coverage**
- ◆ **kWh – kilowatt hours**
- ◆ **kW – kilowatt**
- ◆ **O&M – operating & maintenance**
- ◆ **PUD – public utility district**
- ◆ **R&R – renewal and replacement**
- ◆ **TIER – time interest earned ratio**



# Legal Authority for Rate Setting

- ◆ **RCW 54.24.080**
- ◆ (1) The commission of each district which shall have revenue obligations outstanding shall have the power and shall be required to establish, maintain, and collect rates or charges for electric energy and water and other services, facilities, and commodities sold, furnished, or supplied by the district. The rates and charges shall be fair and, except as authorized by RCW 74.38.070 and by subsections (2) and (3) of this section, nondiscriminatory, and shall be adequate to provide revenues sufficient for the payment of the principal of and interest on such revenue obligations for which the payment has not otherwise been provided and all payments which the district is obligated to set aside in any special fund or funds created for such purpose, and for the proper operation and maintenance of the public utility and all necessary repairs, replacements, and renewals thereof.
- ◆ (3) In establishing rates or charges for water service, commissioners may in their discretion consider the achievement of water conservation goals and the discouragement of wasteful water use practices.



# Role of Rate Studies

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Maintain the long-term health and integrity of utility system



Quantify policies, priorities, and initiatives



Tell the “true” cost of providing service



Track cost information



Evaluate equity between customer groups



Communicate financial decisions and their impact



Management tool



# A Successful Rate Study is...

Finance

Engineering

Commissioners

Administration

Customer Service



Not simply just a financial exercise



# Overview of Rate Setting Process

## Fiscal Policies – Set the Management Foundation

**Step 1:**  
**Revenue**  
**Requirement**  
(defining overall needs)

Revenue

Debt

Reserves

O&M

Capital

**Step 2:**  
**Cost of Service**  
(equity evaluation)

Define Customer Classes

Allocate Costs

**Step 3:**  
**Design Rates**  
(collect target revenue)

Fixed Charge

Variable Charge



Step 1:

# Revenue Requirement

(define overall needs)





# Revenue Requirement Objectives

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- ◆ **Determine the amount of annual revenue necessary to fund all financial obligations on a standalone basis**
  - Operating expenses
  - Debt service (principal & interest)
  - Capital costs and funding approach
- ◆ **Meet financial parameters and targets**
  - Target debt service coverage ratios
  - Maintain target reserve balances
- ◆ **Evaluate revenue sufficiency over a multi-year period**
- ◆ **Develop rate plan to balance financial needs and minimize customer impacts**



# Role of Financial Policies

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- ◆ **Basis for financial performance and budgeting**
- ◆ **Plan for weathering financial disruptions**
- ◆ **Foundation for consistent financial/rate decisions**
- ◆ **Documentation of management philosophy**
  - To customers and outside financial community

**Documentation of Policies Ideal**



# Existing Policies

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## ◆ 3.01 Rate setting policy

- Rates should:
  - Recover cost of providing services
  - Be set as low as is responsible
  - Be fair, and developed so as to minimize the subsidization of one rate class by another
  - Be stable and understandable
  - Be the product of deliberate effort involving input from management, consultants and customers
- ...established separately for each of the District divisions – Water (including Sewer services) and Electric (including broadband services)...cannot be used to subsidize operating costs of the other division



# Existing Policies (continued)

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## ◆ 4.02 Reserve policy

- General fund operating reserve: 90 days of O&M
- Capital improvement reserve: \$100,000 for all divisions starting 2020
  - Can be built up to a minimum of 50% of estimated CIP

## ◆ 4.03 Debt policy

- ...maintain a sound debt position and protect the credit quality of its obligations...



# Board Discussion: Standalone Utilities

- ◆ Sewer utility is currently within the Water division
- ◆ Based on historical data and 2020 budget the Water utility is subsidizing the sewer utility:

Description	2020 Budget Sewer
Rate revenue	\$ 117,706
Operating expenses	\$ 330,736

**Notes:**

1. Does not include non rate revenues, debt service or capital expenses.
2. Next meeting will include multi-year forecast for each utility.

- ◆ **Question: transition utilities to self sufficiency on standalone basis?**
  - Standalone year one (2021)?
  - Standalone over 3-5-year period? Other?
  - Continue to subsidize sewer utility?



# Example Financial Policies

Policy	Purpose	Target
<b>Working Capital Reserve</b>	Liquidity cushion to accommodate cyclical cash flow fluctuations	<u>90 Days O&amp;M &amp; Power</u>
<b>Capital Contingency Reserve</b>	To meet emergency repairs, unanticipated capital, and project cost overruns	<u>50% of annual CIP</u>
<b>Depreciation Funding</b>	Promote ongoing system replacement through reinvestment in the system.	Annual Depreciation Expense
<b>Debt Service Coverage (DSC) &amp; TIER</b>	Compliance with existing loan/debt covenants and maintain credit worthiness for future debt issuance.	Target 1.50-2.00; Typical Minimum Requirement 1.25 <u>TIER Target: 1.25</u>

The District's existing policies are underlined



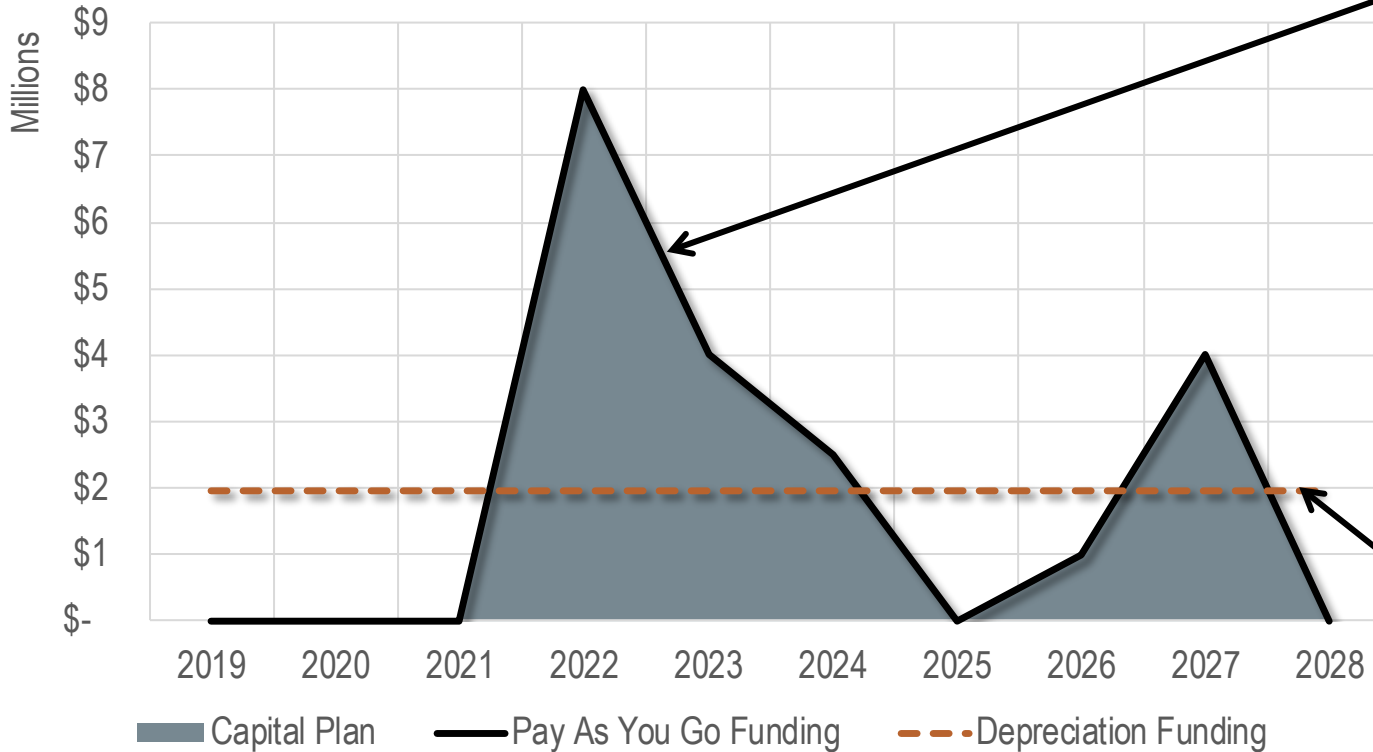
# Depreciation Funding

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- ◆ **Customers charged as they use facilities (rate equity)**
- ◆ **Provides a resource for ongoing repair, replacement and rehabilitation of the system**
  - Ensures essential services are maintained
- ◆ **Annual funding from rates held in capital account or sinking fund**
- ◆ **Funding benchmarks:**
  - Depreciation expense
  - Depreciation expense net of debt principal
  - Replacement depreciation/ asset management plan



# Depreciation Funding



◆ With pay-as-you go, rates are very volatile

◆ Depreciation funding recognizes annual CIP spending may not be uniform

◆ With annual funding, rate adjustments can be smoothed over time

Graph is example only





# Revenue Requirement Elements

Fiscal Policy  
Achievement



Forecast of  
Revenue at  
Existing Rates



Forecast of O&M  
and Power Costs

Planned Capital  
Costs



Existing & New  
Debt Service



**Annual Revenue  
Requirement**



# Two Key Cost Areas

<b>Operations &amp; Maintenance and Power Purchases</b>	<b>Capital Infrastructure</b>
<ul style="list-style-type: none"><li>◆ <b>Regular, ongoing activities</b></li><li>◆ <b>Highly time &amp; schedule sensitive</b></li><li>◆ <b>Predictable, steady spending patterns</b></li><li>◆ <b>Predictable, regular funding source</b></li></ul>	<ul style="list-style-type: none"><li>◆ <b>Large, discrete projects</b></li><li>◆ <b>Limited time, schedule sensitivity</b></li><li>◆ <b>Long-term in nature</b></li><li>◆ <b>Inconsistent, varied spending patterns</b></li><li>◆ <b>Inconsistent, varied funding sources</b></li></ul>

Separating operating, power and capital activities facilitates more accurate forecasting



# Capital Cost Considerations

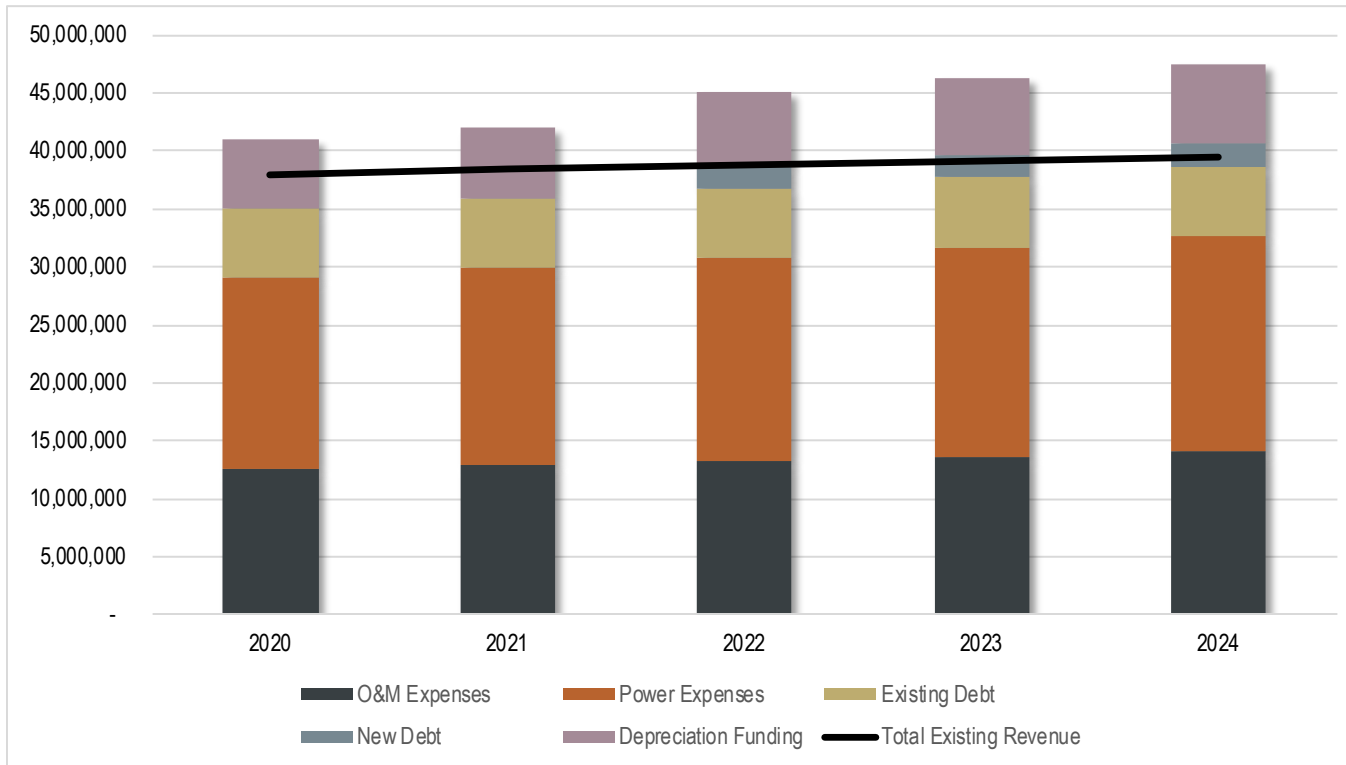
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## ◆ Funding Philosophy

- *Cash (pay-as-you-go)- Higher Near Term Rates*
  - Existing customers pay 100% of initial costs
- *Debt financing – Lowest Near-Term Rates*
  - Mitigates immediate rate impacts of costly capital
  - More closely matches costs to useful life of asset
  - Spreads costs between existing and future ratepayers
  - Debt capacity may be an issue
- *Hybrid*
  - Define a reasonable basis for cash/rate funding (R&R projects?)
  - Evaluate need for debt (large, long life projects)
  - Aligns funding with nature of capital project



# Revenue Requirement = Overall Revenue Needs



- ◆ Identifies total financial obligations
- ◆ Evaluates sufficiency of existing rates
- ◆ Develops annual rate strategy

Graph is example only



Step 2:

# Cost of Service Analysis (COSA)

(equity evaluation)



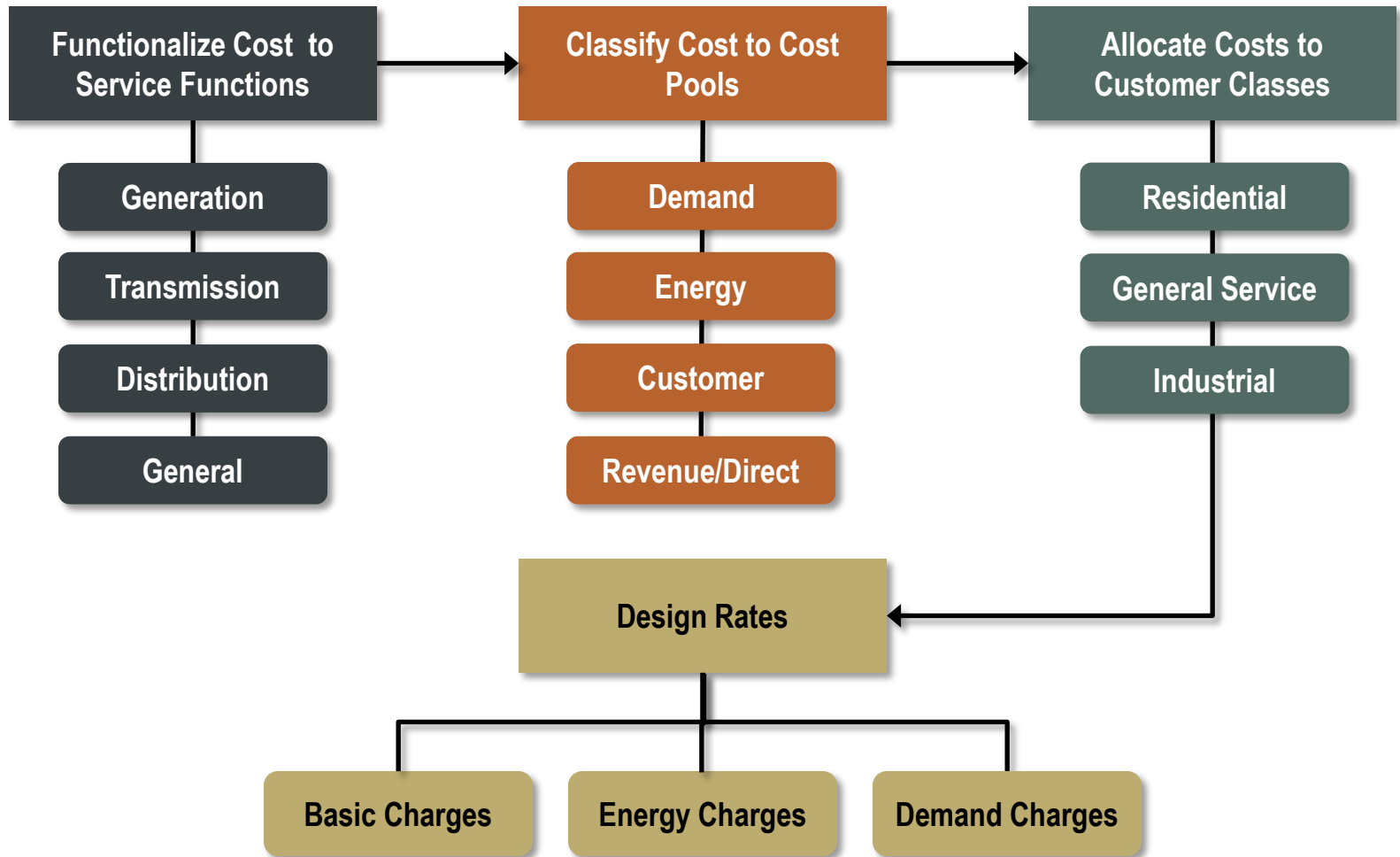
# What is Cost of Service?

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- ◆ **An equitable distribution of cost share that considers utility specific data:**
  - Measures of usage and demand
  - Planning, engineering and design criteria
  - Facility requirements
- ◆ **Cost of Service analysis determines:**
  - Total cost by class (equity)
  - Unit costs (\$/usage; \$/customer)
- ◆ **Fundamental question: Do cost differences exist to serve different customer classes of service?**

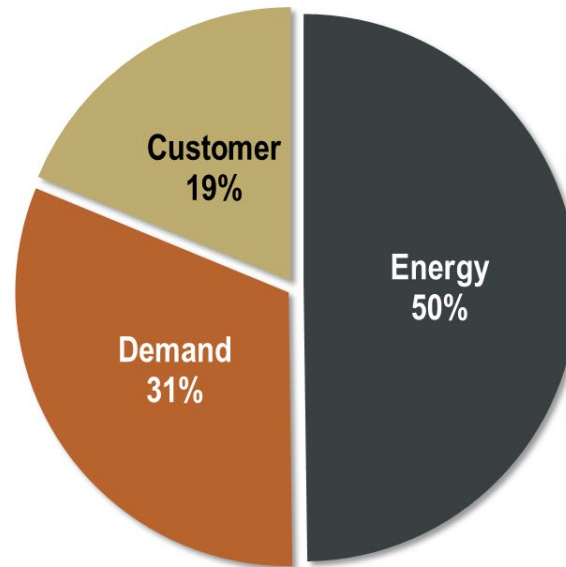


# Cost of Service Process (Electric)





# Classification of Cost Pools (Electric)



**Energy**

Costs that vary with the total consumption (flow) of the electricity over a specified period of time. Measured in kilowatt-hours (kWh's)

**Demand**

Costs predicated upon the maximum rate of use required at one point in time. Demand may be coincident or non-coincident to the system peak demand. Demand is measured in kilowatts (kW's)

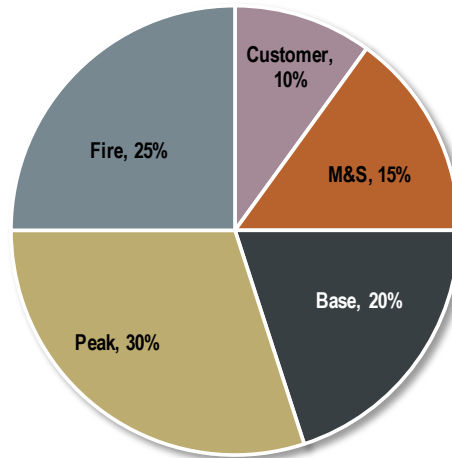
**Customer**

Fixed costs associated with having a customer on the system. These costs vary with the addition or deletion of customers, and not consumptive use – metering/billing/account services/backbone infrastructure requirements





# Classification of Cost Pools (Water)



**Base**

Costs relate to average service provided on demand and are essentially correlated with year-round water consumption.

**Peak**

Costs relate to peak demand service; associated with the ability of the system to provide capacity to customers with higher than average volume.

**Fire**

Costs associated with providing adequate capacity and water flow corresponding to min. fire safety standards. Incremental costs for storage, T&D, and hydrants for fire protection.

**Customer**

These are the costs associated with establishing, maintaining, and serving water customers and tend to include administrative, billing, and customer service costs.

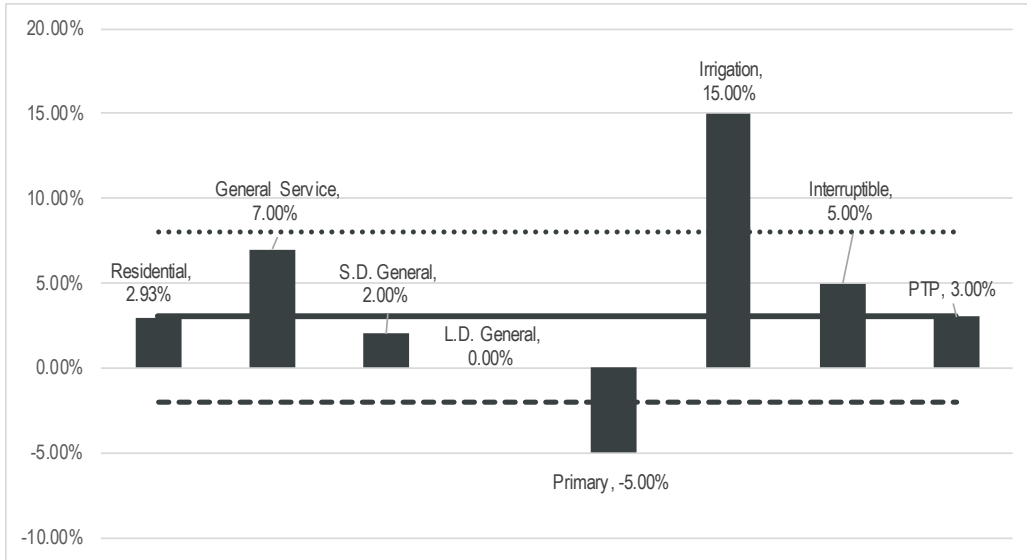
**M&S**

Costs associated with installation, maintenance, and repairs of meters and services.



# Cost of Service Results: Equity (Electric)

## Example only



- ◆ Class results of  $\pm 5.0\%$  of average are considered to be within COSA – industry standard

Class of Service	Existing		COSA		Difference	
	\$	% Share	\$	% Share	\$	% Change
Residential	\$ 24,000,000	61.7%	\$ 24,703,000	61.7%	\$ 703,000	2.93%
General Service	5,000,000	12.9%	5,350,000	13.4%	350,000	7.00%
S.D. General	2,500,000	6.4%	2,550,000	6.4%	50,000	2.00%
L.D. General	2,000,000	5.1%	2,000,000	5.0%	-	0.00%
Primary	1,500,000	3.9%	1,425,000	3.6%	(75,000)	-5.00%
Irrigation	100,000	0.3%	115,000	0.3%	15,000	15.00%
Interruptible	500,000	1.3%	525,000	1.3%	25,000	5.00%
PTP	3,300,000	8.5%	3,399,000	8.5%	99,000	3.00%
<b>Total</b>	<b>\$ 38,900,000</b>	<b>100.0%</b>	<b>\$ 40,067,000</b>	<b>100.0%</b>	<b>\$ 1,167,000</b>	<b>3.00%</b>



# Cost of Service Results: Unit Costs (Electric)

Function	Residential	Gen. Service	L. General	Primary
Production				
Energy \$/kWh	\$ 0.0345	\$ 0.0345	\$ 0.0345	\$ 0.0345
Demand \$/kW	\$ 2.00	\$ 2.30	\$ 3.00	\$ 2.60
Transmission				
Energy \$/kWh				
Demand \$/kW	\$ 1.00	\$ 1.25	\$ 1.50	\$ 1.15
Distribution				
Energy \$/kWh				

## Total

<b>Energy \$/kWh</b>	<b>\$ 0.0345</b>	<b>\$ 0.0345</b>	<b>\$ 0.0345</b>	<b>\$ 0.0345</b>
<b>Demand \$/kW</b>	<b>\$ 4.75</b>	<b>\$ 5.70</b>	<b>\$ 8.00</b>	<b>\$ 7.75</b>
<b>Customer \$/Mo.</b>	<b>\$ 37.00</b>	<b>\$ 80.00</b>	<b>\$ 140.00</b>	<b>\$ 42.00</b>

Customer \$/Mo.	\$ 15.00	\$ 40.00	\$ 60.00	\$ 20.00
Total				
Energy \$/kWh	\$ 0.0345	\$ 0.0345	\$ 0.0345	\$ 0.0345
Demand \$/kW	\$ 4.75	\$ 5.70	\$ 8.00	\$ 7.75
Customer \$/Mo.	\$ 37.00	\$ 80.00	\$ 140.00	\$ 42.00

Example only



# Board Discussion: Classes of Service

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## ◆ Evaluate Classes of Service?

### — Electric

- Residential (including discount)
- General Service ( $\leq 50\text{kW}$ )
- Small Demand ( $>50 - \leq 350\text{kW}$ )
- Large Demand ( $>350\text{ kW}$ )

### — Water

- Residential (including discount)
- Commercial

### — Sewer

- Standard (including discount)

### — Electric

- Primary General Service
- Irrigation
- Interruptible Primary Schools
- Lighting (Street & Area)

- Kala Point

- Kala Point

## ◆ Starting June 2020 PUD accounts are billed for service



# **Board Discussion: COSA Implementation**

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- ◆ **Cost of Service Implementation**
  - Follow cost of service?
  - Incorporate results all at once?
  - Phase-in over time?



Step 3:

# Rate Design

(collect target revenue)



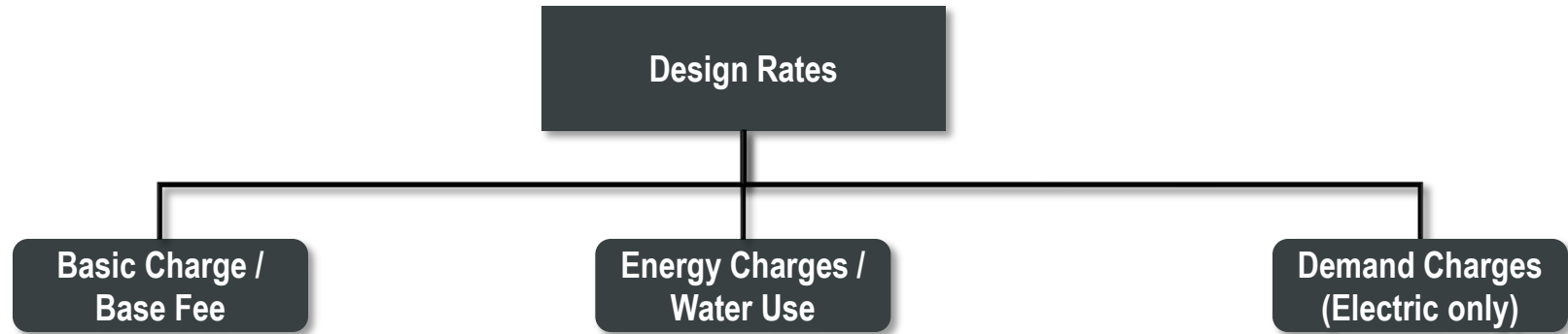
# Rate Design

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- ◆ **Produce sufficient revenue to meet the overall financial requirements of the utility**
- ◆ **Collect the target revenue level for each class of service**
- ◆ **Cost-based and equitable**
- ◆ **Convey the price signals facing the utility**
- ◆ **Meet the goals and objectives of the utility**



# Rate Design Components



- ◆ **Fixed costs on the system**

- Billing/meter reading/accounting
- Share of infrastructure maintenance

- ◆ **Assessed per customer on a monthly basis**

- ◆ **Costs that vary with energy or water use**

- Measured in kWh or gallons over a billing period (e.g. month)

- ◆ **Assessed on a per kWh or gallon basis**

- ◆ **Fixed costs associated with peak usage**

- Based on maximum use within a billing period (e.g. month)
- Measured in kW

- ◆ **Assessed on a per kW basis**





# Existing Rates: Electric

Class of Service	Basic Charge (per month)		Energy Charge (per kWh)			Demand Charge	Reactive Power
	Single Phase	Three Phase	0-600 kWh	601+kWh	all kWh	all kW	per kVARh
Residential	\$ 18.50	\$ 27.00	0.0882	0.1070	n/a	n/a	n/a
General Service	18.50	34.00	n/a	n/a	0.1007	n/a	n/a
Small Demand	60.00		n/a	n/a	0.0852	5.50	0.00283
Large Demand	110.00		n/a	n/a	0.0757	9.00	0.00281
Primary Demand	300.00		n/a	n/a	0.0747	8.50	0.00106
Interruptible Primary (Schools)	300.00		n/a	n/a	0.0702	\$5.50 - \$9.50	0.00300
Seasonal Irrigation	30.00		n/a	n/a	0.0687	n/a	n/a

**Notes:**

1. Discount rates available.
2. Lighting rates available.
3. PTP rates not shown; pass through charges of BPA power and transmission costs.
4. Interruptible demand rate includes a \$4.00 per kWh charge for critical demand in previous 11 months

◆ **Rate structure considerations:**

- Time of use rates – requires AMI meters
- Residential demand rates – requires AMI / demand meters
- Electric Vehicle rates – requires AMI meters
- Power factor adjustment instead of reactive power charge
- Other?



# Existing Rates: Water

Base Fee (per month)	2020
Residential	\$ 25.65
Commercial	
3/4"	\$ 25.65
1"	61.40
1.5"	120.00
2"	191.29
3"	357.00
4"	593.80
6"	1,184.50
8"	1,894.00

Volume Fee (per 100 gal)	2020
Residential	
Tier 1 (0-5,000gal)	\$ 0.29
Tier 2 (5,001-10,000gal)	0.40
Tier 3 (10,000-30,000gal)	0.54
Tier 4 (30,001+gal)	1.00
Commercial	
All use	\$ 0.40

**Notes:**

1. Discount rates available.
2. Kala Point rates available.

- ◆ **Rate structure considerations:**
  - Separate capital surcharge?
  - Other?



# Existing Rates: Sewer

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Description	2020
Standard Rate	\$ 30.80
Kala Point	20.00
Low Income	21.56

- ◆ **Rate structure considerations:**
  - Develop separate charges for O&M and capital?
  - Other?

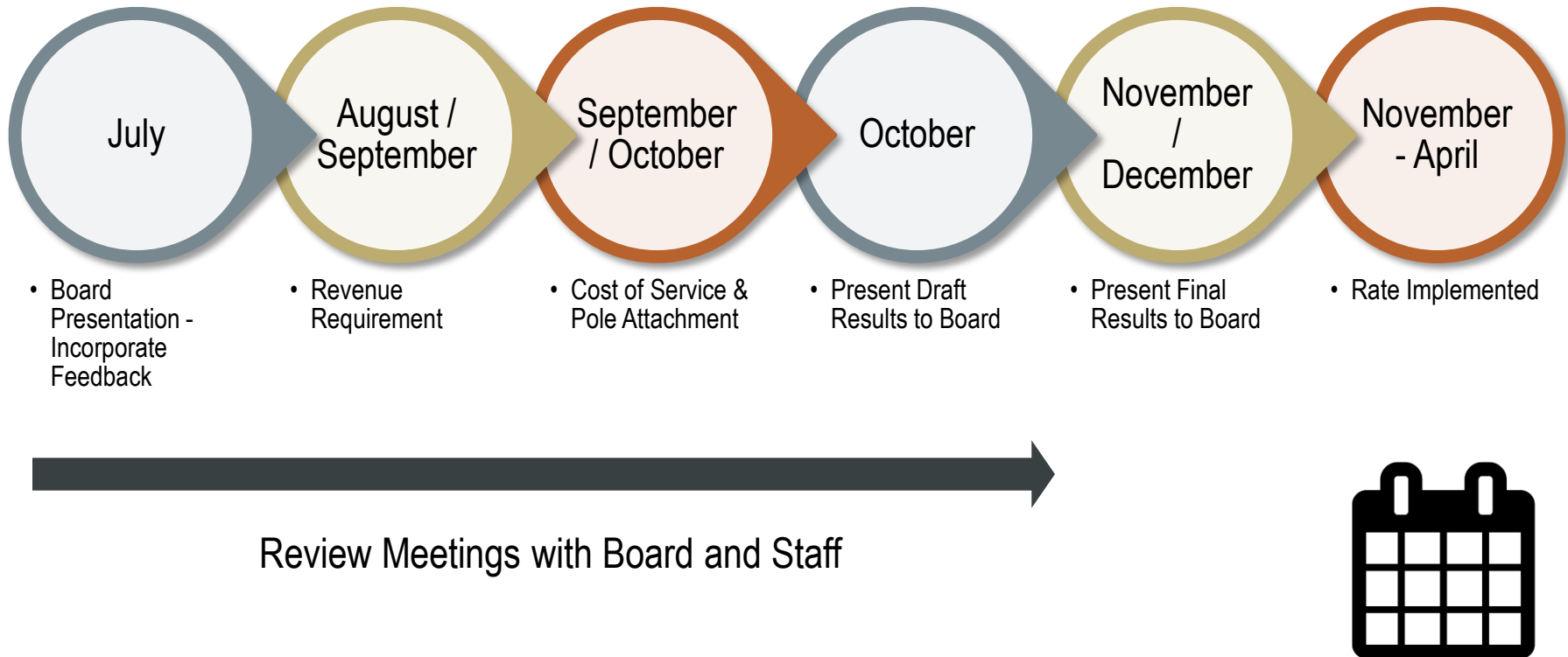


# Public Education/Communication

- ◆ **Greater public scrutiny requires public engagement, education and transparency**
- ◆ **Multiple options available**
  - Dedicated website
  - Open house
  - Traveling public meetings
  - Rate committee
  - Radio/ television interviews
  - Bill calculators
  - Frequently asked questions
  - Newsletters
  - Bill stuffers/ notices



# Next Steps





Questions?



# Existing Rates: Power Factor

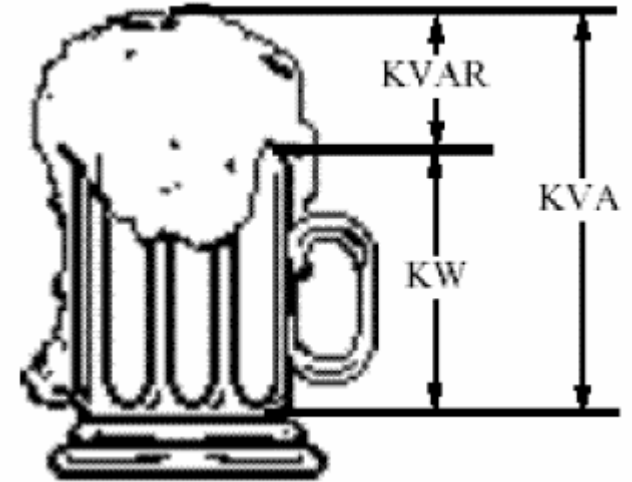
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- ◆ **What is a power factor?**
  - Ratio of *real* power to *apparent power*
    - **Real power**: produces work / operates equipment; measured in kW
    - **Reactive power**: does not produce work, but is needed to operate equipment; measured in kVAR
    - **Apparent power**: vector sum of real and reactive power; measured in kVA
  - Measure of how effectively electric power is being used at the customer location
  - Closer to 1.0 factor the more efficient the usage
  - Loads with poor power factors cause greater power requirements and infrastructure demands



# Existing Rates: Power Factor (continued)

- ◆ **Power factor = kW / kVA**
- ◆ **Example power factor adjustment:**
  - Target power factor: 97%
  - Example small demand customer:
    - Monthly kW: 60
    - Power factor: 90%
  - Power factor adjustment:
    - Adjustment = 97% (target) - 90% (actual) = 7%
  - Billed demand:
    - 60 kW (read kW) \* (1 + 7% (adjustment)) = 64.2 kW
    - Adjustment = 64.2 kW – 60 kW = 4.2 kW
  - Rate will be the current class specific class demand rate per kW



**Notes:**

1. Figure from an article by PowerStudies.com.