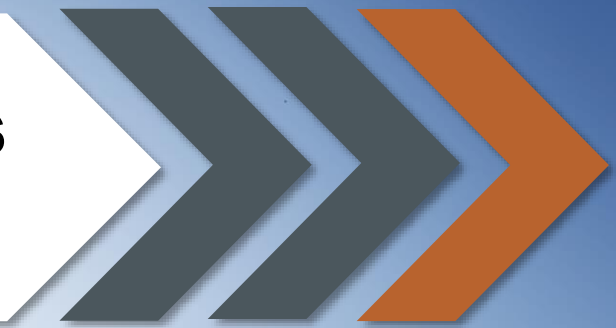




# Board of Commissioners Meeting



## Pole Attachment & Cost-of-Service Update

Presented by:

Sergey Tarasov, Project Manager

Matt Hobson, Project Manager

Paul Quinn, Project Consultant

December 07, 2020



# Presentation Overview

- **Recap**
- **Pole attachment fee update**
- **Cost-of-service follow-up**
- **Next steps**
- **Questions / discussion**



# Recap

- **Study commenced April 2020**
- **Board presentations:**
  - » July 13, 2020 to discuss rate setting fundamentals and study goals & objectives
  - » August 18, 2020 to discuss preliminary revenue requirement results and scenarios
  - » September 23, 2020 to finalize revenue requirement analysis
  - » October 27, 2020 to review pole attachment fees
  - » November 10, 2020 to review results of cost-of-service analysis



# 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 Charges

Variable Charges



# Pole Attachment Fee Update



# Pole Attachment Fees: What Are They?

- **The PUD rents space on its utility poles to telecommunication providers**
  - » Approximately 11,700 private attachments
  - » PUD also maintains 920 fiber attachments
  - » Pole attachment rental revenue totaled \$150,000 in 2019
- **Washington State regulates pole attachment fees for local utilities (RCW 54.04.045).**
  - » Establishes cost basis for “just and reasonable” rate
  - » Provides guidance on calculation
- **Fees should be reviewed periodically to ensure that they do not exceed the PUD’s actual capital and operating expenses related to pole attachments.**



# December 2020 Update

- **FCS Group presented pole attachment fee assumptions, methodology, and results to Board on October 27**
  - » Recommended to review potential fee changes with PUD legal counsel
- **Following review with legal counsel, PUD staff, and FCS Group:**
  - » Investment and operating costs for transmission poles included in calculation
  - » Attachments per pole rounded to two decimal places
  - » Reviewed cost of capital portion of carrying charge
- **Existing fee is \$12.45 per attachment**



# Pole Attachment Fee Components

Component	October 27 Board Meeting	December 7 Board Meeting	Difference
Average Pole Height (in feet)	41.44	41.44	N/A
Space Occupied per Attachment (in feet)	1.00	1.00	N/A
Gross Investment per Pole	\$856.28	\$1,125.11	+\$268.83
Carrying Charge	15.65%	14.94%	-0.71%
Attachments per Pole	2.00	2.14	+0.14
<b>Calculated Pole Attachment Fee</b>	<b>\$28.47</b>	<b>\$33.89</b>	<b>+\$5.42</b>





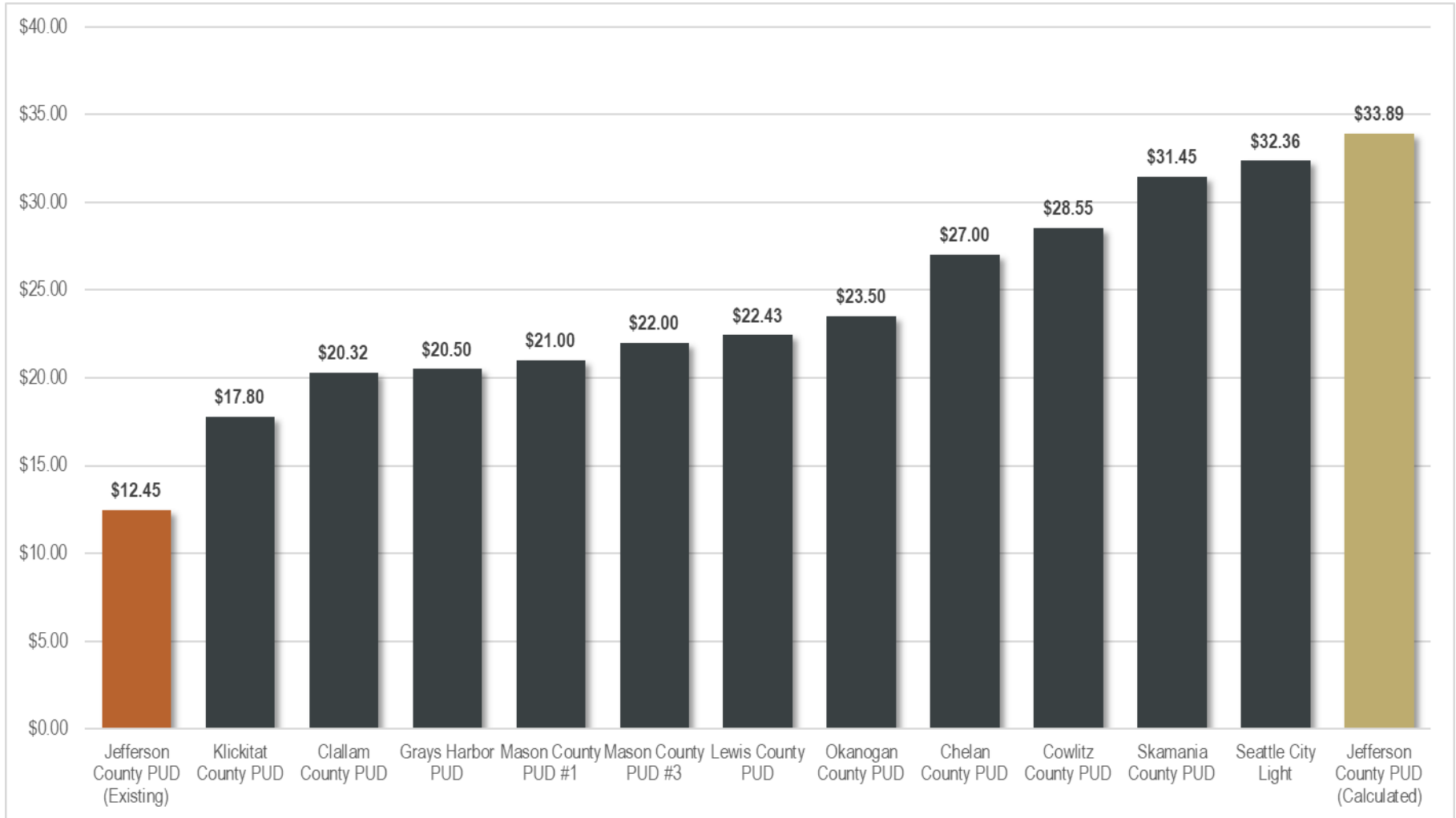
# Pole Attachment Fee Calculation

	Allocated Space (A)	Average Investment Cost per Pole (B)	Carrying Charge (C)	Multiply by 50 Percent (D)	Result A x B x C x D
Calculation #1	7.09%	\$856.28 (gross investment)	15.65%	50.00%	\$4.75
Calculation #2	35.39%	\$856.28 (gross investment)	15.65%	50.00%	\$23.72
<b>October 27 Attachment Fee Calculation</b>					<b>\$28.47</b>

Calculation #1	7.09%	<b>\$1,125.11</b> (gross investment)	<b>14.94%</b>	50.00%	\$5.96
Calculation #2	<b>33.23%</b>	<b>\$1,125.11</b> (gross investment)	<b>14.94%</b>	50.00%	\$27.93
<b>December 7 Attachment Fee Calculation</b>					<b>\$33.89</b>



# Comparative Pole Attachment Fees





# Recommendation

- **Phase-in pole attachment fees to \$22.45 over next two years**
  - » 2021: Increase fee from \$12.45 to \$18.45
  - » 2022: Increase fee from \$18.45 to \$22.45
- **Revisit fees in 2022 for potential future adjustments**



# Cost-of-Service Follow-Up

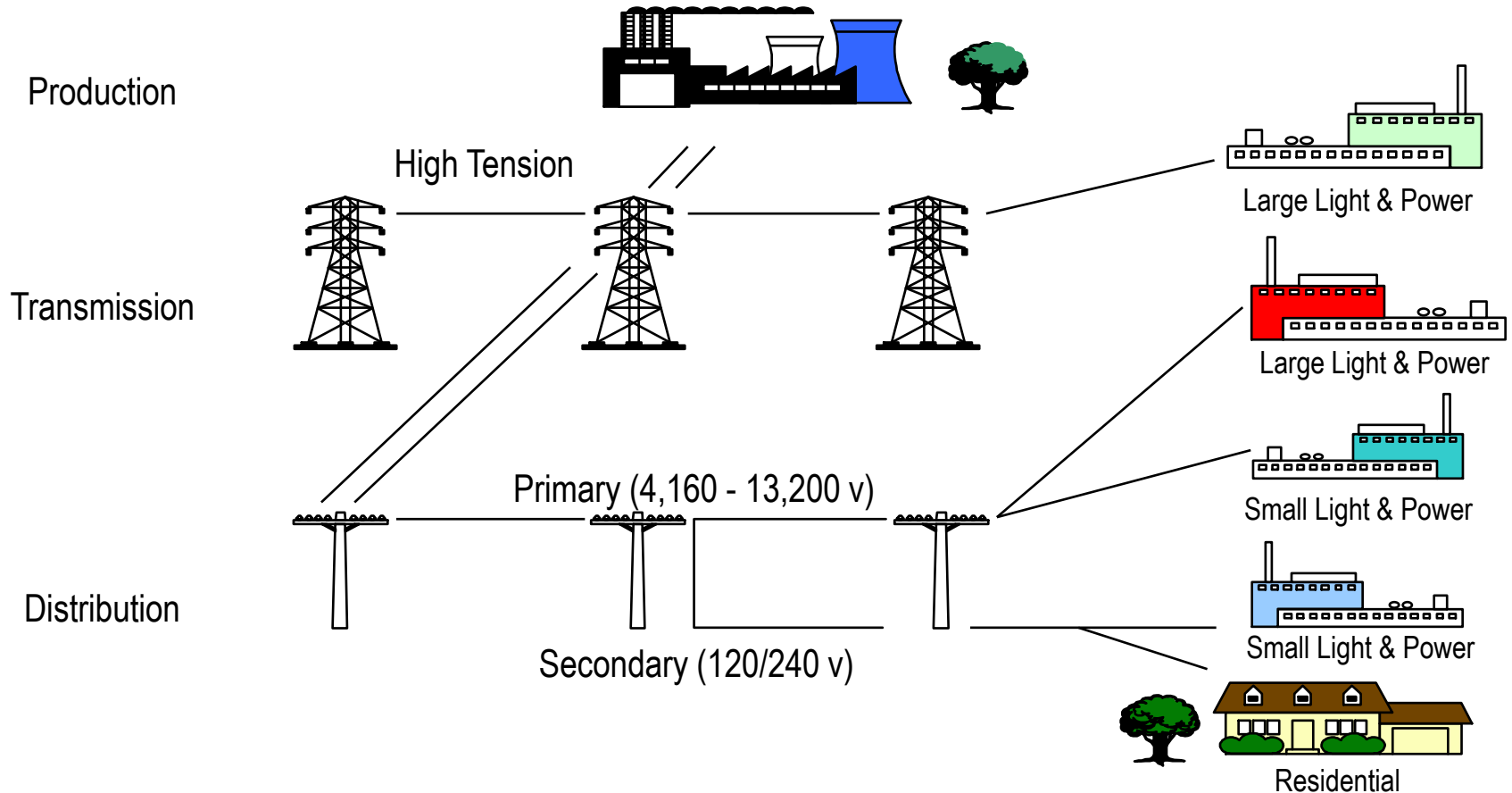


# Follow-Up Questions from the Board

- **Importance of load factors in cost allocation and sizing infrastructure**
- **Regional load factor comparisons**
- **Cost-of-service phase-in alternatives**



# Level of Service Considerations



- **Other considerations**

- » Total energy requirement – kWh (the more you use the more you pay)
- » Capacity (peak) energy requirement – kW (the higher the peak the more you pay)



# Industry Trends in Load Data Availability

- **Historically energy was the main data available by class of service**
  - » Large general service classes generally contain billing demand
  - » Large industrial may contain hourly data or peak coincidence data
- **Assumptions, estimates and load research studies (when available), are utilized**
  - » Aggregated feeder data could be used in some instances
- **AMI data significantly reduces uncertainty**



# Terminology

- **Demand**: amount of electricity drawn at a given time, typically expressed in watts (W) or 1,000 watts (kW)
  - » Example: 10 100-watt lamps consume electricity at the rate of 1 kW per hour
- **Energy**: actual electricity used over a period of time, typically expressed in kilowatt-hours (kWh)
  - » Example: 10 100-watt lamps operating for 1 hour consume 1 kWh
- **Average demand**: average rate of using electricity over a period of time
  - » Example: 10 100-watt lamps consume 5 kWh over a 10-hour period
    - $5 \text{ kWh} / 10 \text{ hours} = 0.5 \text{ kW}$
- **Peak demand**: maximum rate of using electricity over a period of time
  - » Example: 10 100-watt lamps are turned on for 1 hour over a 10-hour period
    - Maximum rate of use over a 10-hour period is 1 kW





# Load Factor

- **Definition: a measure of efficiency of the usage of electricity**
  - » How much energy was used in a time period versus how much energy could have been used
- **Why is it important and how is it used in rate studies?**
  - » Infrastructure needs to be sized to meet potential demand, not average demand
  - » Customers that are not as efficient at using electricity, need to pay their proportionate share of the cost of oversizing facilities
  - » Used to calculate billing demand

# **Load Factor** (continued)



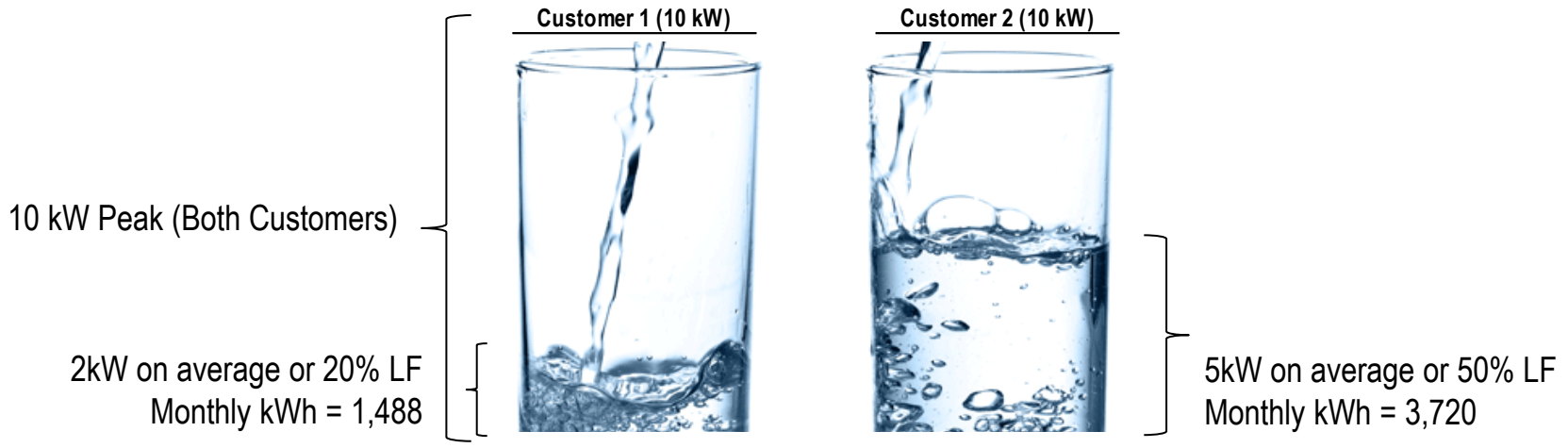
Maximum  
potential

Actual usage (varies over time)

- **Infrastructure is sized for your maximum potential, not ongoing use**
- **Load factor shows how efficiently the customer is using the system**



# Allocation vs. Rate Design

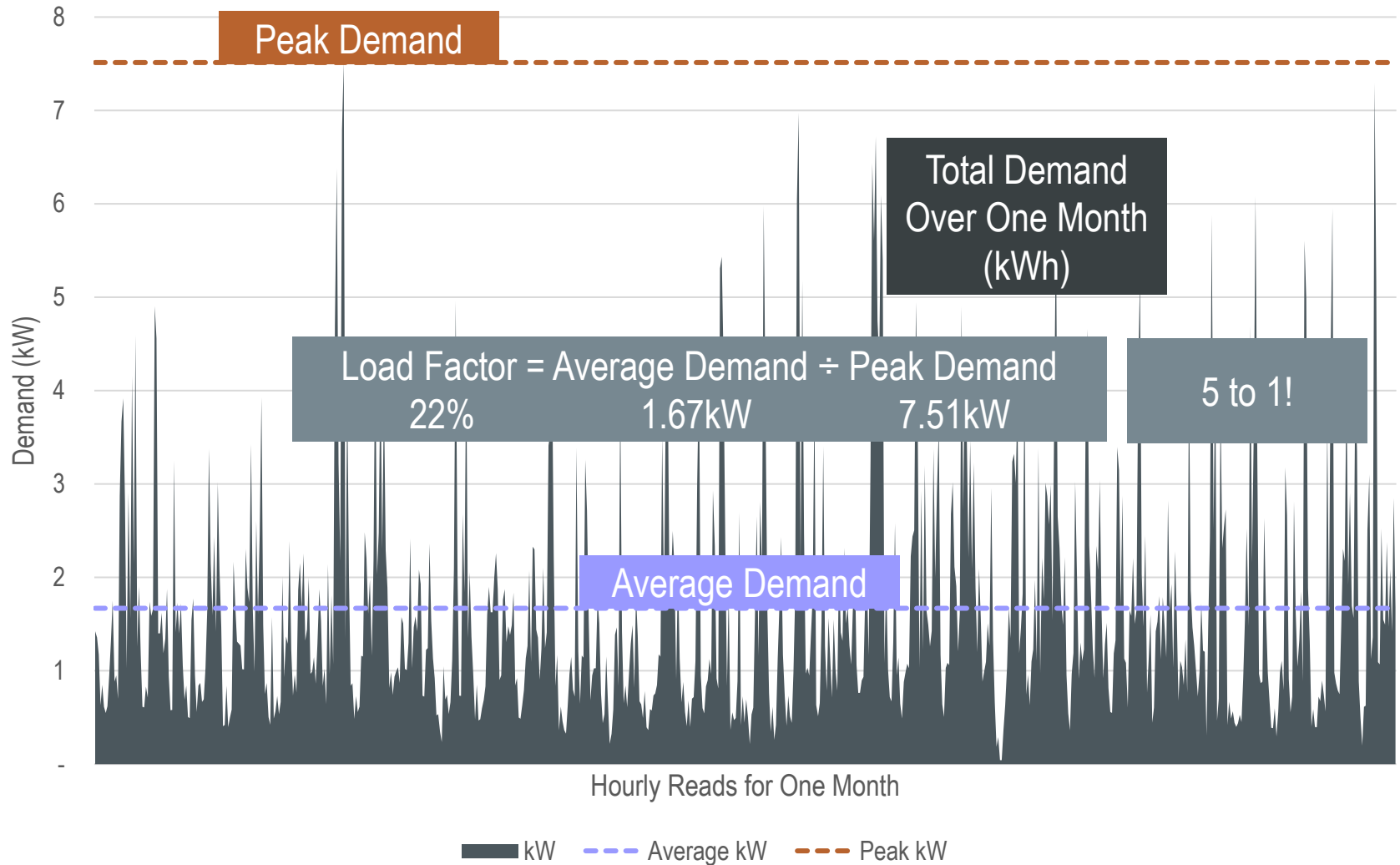


Allocation Factor	Peak kW	%	Ex. Dist. Expense	Unit Cost		
				\$ / Peak kW	\$ / Avg. kW	\$ / kWh
Customer 1	10.00	50%	\$ 100.00	\$ 10.00	\$ 50.00	\$ 0.0672
Customer 2	10.00	50%	100.00	\$ 10.00	\$ 20.00	\$ 0.0269
<b>Total</b>	<b>20.00</b>	<b>100%</b>	<b>\$ 200.00</b>	<b>\$ 10.00</b>	<b>28.57</b>	<b>\$ 0.0384</b>

- **Distribution expenses are sized based on peak demand (kW)**
- **Residential rates are typically assessed on energy (kWh)**
  - » Unit costs per peak kW: equal for both example customers
  - » Unit costs per energy kWh: much different based on LF efficiency
- **Customer 1 needs a smaller glass!**

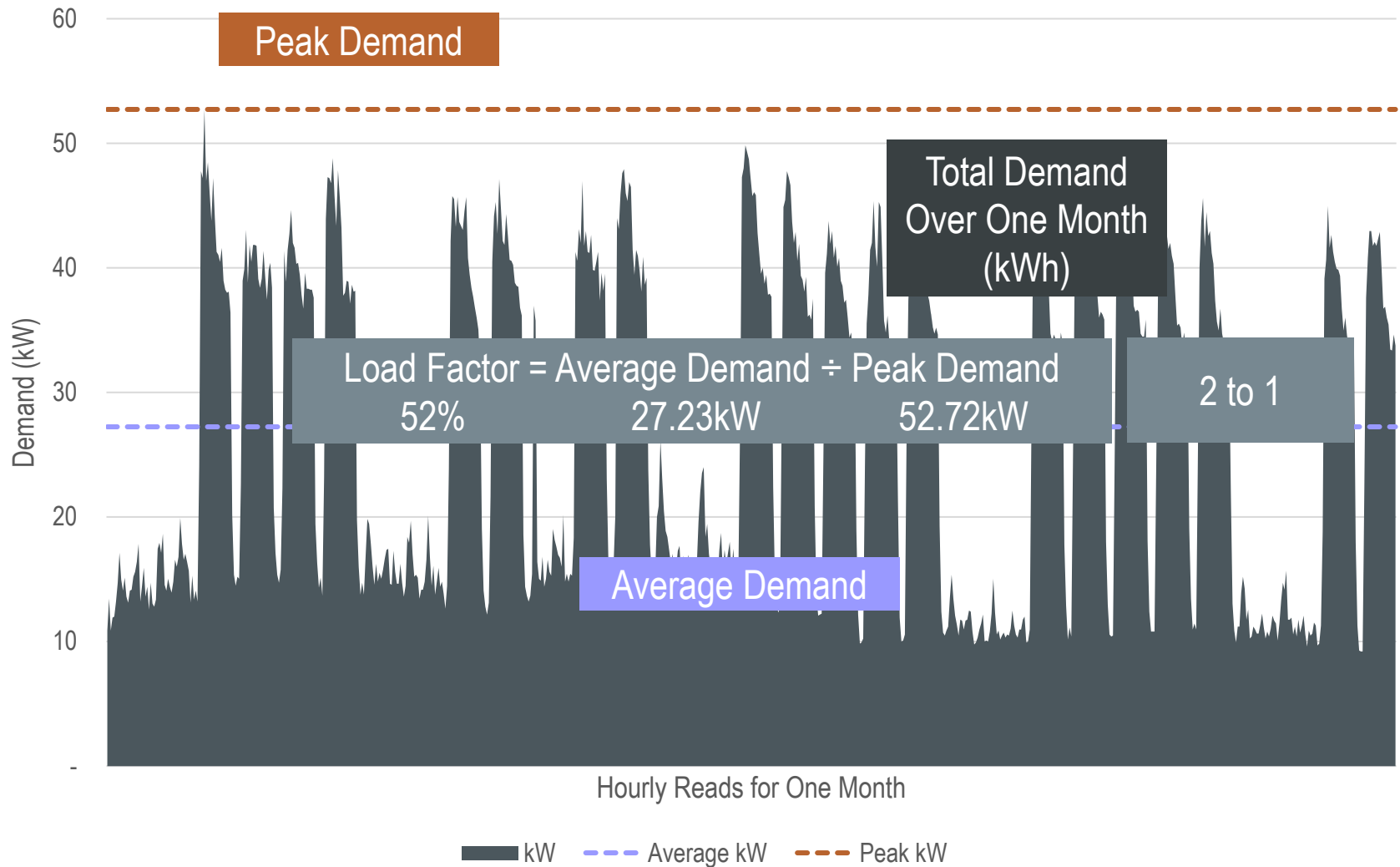


# Load Factor: Residential Example





# Load Factor: Commercial Example



# Load Factor Sample

- **Sample of load factors for local utilities with AMI meters or sample data**
  - » Jefferson based on sample data and BPA reconciliation analysis

<b>Annual Peak Load Factor Survey</b>	<b>Residential</b>	<b>Small Demand General</b>
Jefferson PUD	13.6%	37.5%
WA - Sample 1 (City)	12.4%	32.5%
WA - Sample 2 (PUD)	16.8%	46.3%
WA - Sample 3 (PUD)	14.4%	45.1%
WA - Sample 4 (Coop)	20.1%	32.5%
WA - Sample 5 (City)	13.8%	37.3%
OR - Sample 1 (Coop)	17.1%	39.4%
ID - Sample 1 (City)	17.5%	30.8%
ND - Sample 1 (Coop)	12.7%	49.0%



# Cost-of-Service Results

Customer Class	2021		Difference	
	Existing	COSA	\$	%
Residential	\$ 23,413,686	\$ 25,728,368	\$ 2,314,682	9.9%
Residential - Discount	524,046	982,304	458,258	87.4%
General Service	4,957,838	4,679,617	(278,221)	-5.6%
Small Demand General Service	2,204,691	1,809,219	(395,472)	-17.9%
Large Demand General Service	1,426,288	1,120,972	(305,316)	-21.4%
Primary General Service	1,246,917	670,799	(576,118)	-46.2%
Irrigation/Drainage	1,844	8,098	6,254	339.2%
Interruptible Primary Schools	446,817	315,403	(131,415)	-29.4%
Lighting	206,303	146,503	(59,799)	-29.0%
<b>Total</b>	<b>\$ 34,428,430</b>	<b>\$ 35,461,283</b>	<b>\$ 1,032,853</b>	<b>3.0%</b>

- **±5.0% of average is within cost-of-service (industry standard)**
  - » Residential, Residential – Discount, & Irrigation can increase towards cost-of-service
  - » All other classes can decrease towards cost-of-service
- **Board requested phase-in alternatives**



# Cost-of-Service Phase-In Alternatives

- **Alternative 1 – No decreases for demand general service classes**
  - » Gradual increases for general service, residential and irrigation
- **Alternative 2 – Allow primary school customer rates to decrease**
  - » No decreases for demand general service classes
  - » Gradual increases for general service, residential and irrigation
- **Alternative 3 – Minimum increase set at half of overall system increase**
- **Alternative 4 – Allow primary school customer rates to decrease**
  - » Gradual increases for all other customer classes
  - » Recommended alternative
  
- **Selected alternative to be re-evaluated during next study**





# Alternative 1 & 2

ALTERNATIVE 1 - NO DECREASES FOR DEMAND GENERAL SERVICE CLASSES	2021	2022	2023	2024
Residential	3.90%	9.54%	4.44%	4.39%
Residential - Discount	3.90%	9.54%	4.44%	4.39%
General Service	2.00%	2.00%	2.00%	2.00%
Small Demand General Service	0.00%	0.00%	0.00%	0.00%
Large Demand General Service	0.00%	0.00%	0.00%	0.00%
Primary General Service	0.00%	0.00%	0.00%	0.00%
Irrigation/Drainage	6.00%	14.00%	7.00%	7.00%
Interruptible Primary Schools	0.00%	0.00%	0.00%	0.00%
Lighting	0.00%	0.00%	0.00%	0.00%
<b>Total</b>	<b>3.00%</b>	<b>7.00%</b>	<b>3.50%</b>	<b>3.50%</b>

ALTERNATIVE 2 - ALLOW PRIMARY SCHOOLS TO DECREASE	2021	2022	2023	2024
Residential	4.00%	9.62%	4.51%	4.44%
Residential - Discount	4.00%	9.62%	4.51%	4.44%
General Service	2.00%	2.00%	2.00%	2.00%
Small Demand General Service	0.00%	0.00%	0.00%	0.00%
Large Demand General Service	0.00%	0.00%	0.00%	0.00%
Primary General Service	0.00%	0.00%	0.00%	0.00%
Irrigation/Drainage	6.00%	14.00%	7.00%	7.00%
Interruptible Primary Schools	-5.25%	-5.25%	-5.25%	-5.25%
Lighting	0.00%	0.00%	0.00%	0.00%
<b>Total</b>	<b>3.00%</b>	<b>7.00%</b>	<b>3.50%</b>	<b>3.50%</b>



# Alternative 3 & 4

ALTERNATIVE 3 - MIN. INCREASE AT HALF OF SYSTEM INCREASE	2021	2022	2023	2024
Residential	3.66%	8.48%	4.18%	4.15%
Residential - Discount	3.66%	8.48%	4.18%	4.15%
General Service	1.50%	3.50%	1.75%	1.75%
Small Demand General Service	1.50%	3.50%	1.75%	1.75%
Large Demand General Service	1.50%	3.50%	1.75%	1.75%
Primary General Service	1.50%	3.50%	1.75%	1.75%
Irrigation/Drainage	6.00%	14.00%	7.00%	7.00%
Interruptible Primary Schools	1.50%	3.50%	1.75%	1.75%
Lighting	1.50%	3.50%	1.75%	1.75%
<b>Total</b>	<b>3.00%</b>	<b>7.00%</b>	<b>3.50%</b>	<b>3.50%</b>

ALTERNATIVE 4 - DECREASE SCHOOLS & GRADUALLY PHASE-IN	2021	2022	2023	2024
Residential	3.21%	7.27%	3.69%	3.68%
Residential - Discount	3.21%	7.27%	3.69%	3.68%
General Service	2.75%	6.75%	3.25%	3.25%
Small Demand General Service	2.75%	6.75%	3.25%	3.25%
Large Demand General Service	2.75%	6.75%	3.25%	3.25%
Primary General Service	2.75%	6.75%	3.25%	3.25%
Irrigation/Drainage	5.00%	9.00%	5.50%	5.50%
Interruptible Primary Schools	-2.50%	-2.50%	-2.50%	-2.50%
Lighting	2.75%	6.75%	3.25%	3.25%
<b>Total</b>	<b>3.00%</b>	<b>7.00%</b>	<b>3.50%</b>	<b>3.50%</b>



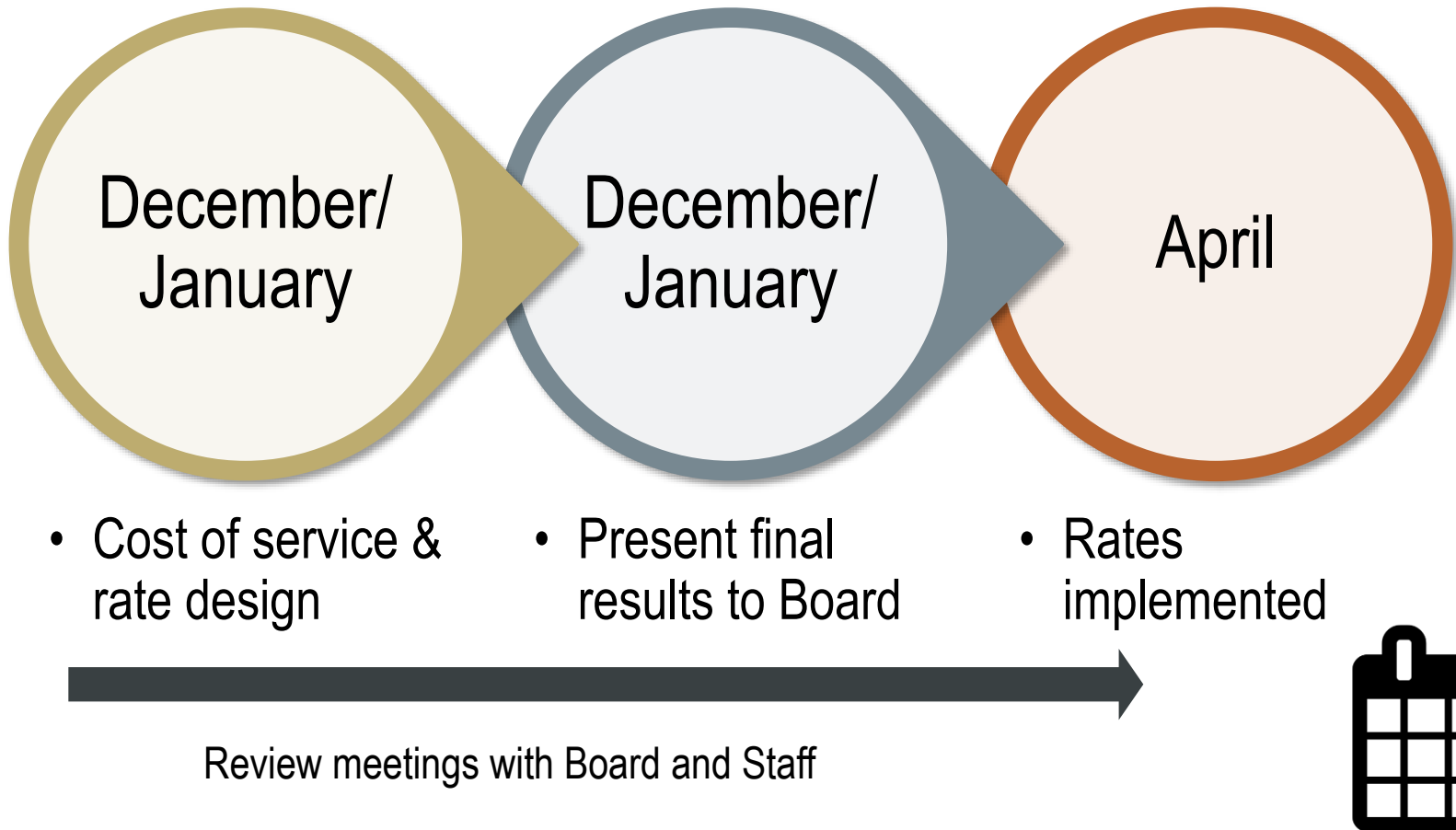
# Cost-of-Service Summary

- **Cost-of-service analysis identified interclass adjustments are warranted**
- **Optional recommendation**
  - » Due to COVID-19 pandemic gradually transition towards cost-of-service (alternative 4)
  - » Revisit phase-in strategy during next update or when AMI data becomes available

<b>ALTERNATIVE 4 - DECREASE SCHOOLS &amp; GRADUALLY PHASE-IN</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>
Residential	3.21%	7.27%	3.69%	3.68%
Residential - Discount	3.21%	7.27%	3.69%	3.68%
General Service	2.75%	6.75%	3.25%	3.25%
Small Demand General Service	2.75%	6.75%	3.25%	3.25%
Large Demand General Service	2.75%	6.75%	3.25%	3.25%
Primary General Service	2.75%	6.75%	3.25%	3.25%
Irrigation/Drainage	5.00%	9.00%	5.50%	5.50%
Interruptible Primary Schools	-2.50%	-2.50%	-2.50%	-2.50%
Lighting	2.75%	6.75%	3.25%	3.25%
<b>Total</b>	<b>3.00%</b>	<b>7.00%</b>	<b>3.50%</b>	<b>3.50%</b>



# Next Steps



**Thank you!**  
**Questions?**

[www.fcsgroup.com](http://www.fcsgroup.com)

# Appendix



# 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.



# Glossary of Terms

- **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**
- **M&S – meters & services**
- **PUD – public utility district**
- **RCW – revised code of Washington**
- **R&R – renewal and replacement**
- **TIER – time interest earned ratio**