Rates & Financial Policy Workshop

4 February 2020

TACOMA POWER
TACOMA PUBLIC UTILITIES

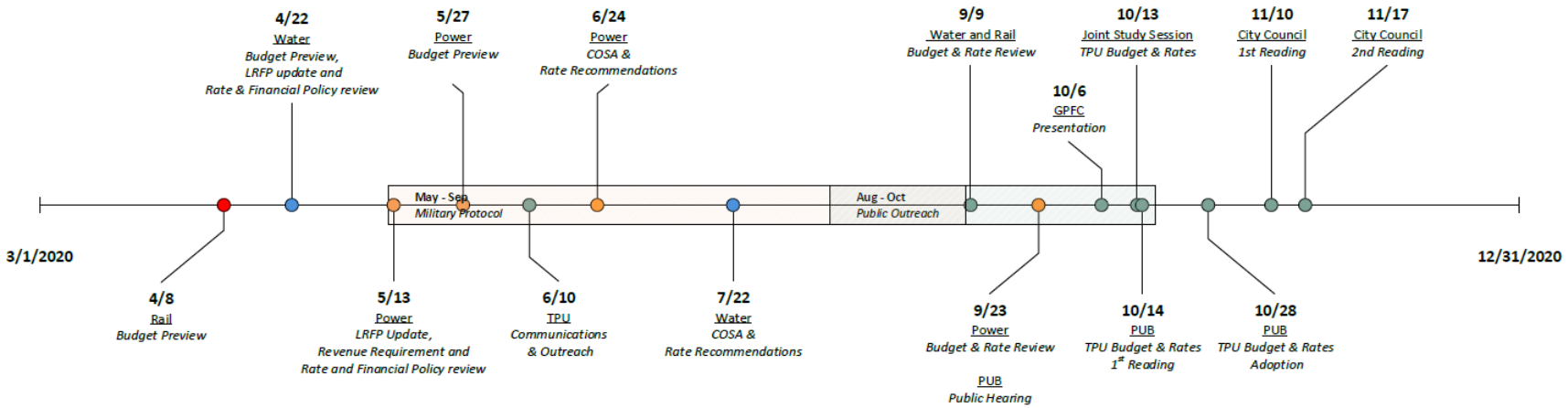
TACOMA WATER
TACOMA PUBLIC UTILITIES

TACOMA RAIL
TACOMA PUBLIC UTILITIES

Overview

Welcome!

2021/2022 TPU Rates and Budget Timeline



Today's Purpose Statement:

The goal of this workshop is for Tacoma Public Utilities staff to brief the Public Utility Board on policy issues and questions expected to arise during the upcoming Budget and Rates process, and for the Public Utility Board to provide staff with preliminary thoughts and feedback. This will allow staff to craft budget and rates proposals that more closely align with Public Utility Board goals.

Items not expected to be discussed in this workshop include:

- Financial hedging proposals (Power)
- Individual Budget line items
- Preliminary rate values

Timeline is DRAFT.

Table of Contents

Rate & Financial Policies

Section 2

SD 2 *financial sustain-ability*

SD 3 *rates*

Water Rate and Financial Policy

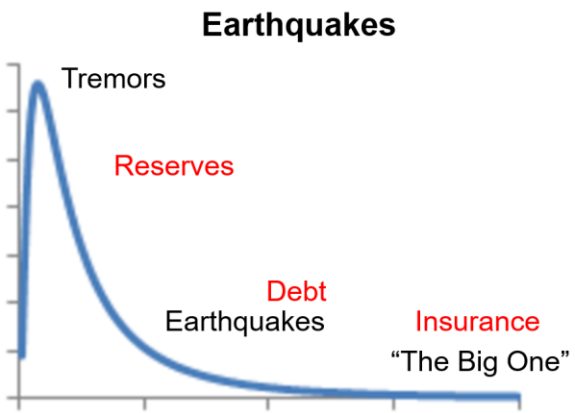
Revenue Requirement	• Regular reviews with full study every two years • Study includes projected revenue, expenses and capital improvements
Cost-Based Rates	• An embedded cost-of-service study will determine the cost of serving each customer class and allocation to recover projected expenses
Financial Metrics	• 60 days of current budgeted expenditures • Capital: $2M minimum in SDC Fund and 1% of original plant in Capital Reserve • Senior Debt Service Coverage above 1.5x • All In Debt Service Coverage above 1.25
Rate Adjustments	• Sufficient to meet Tacoma Water budgets • Minimize long-run costs to rate-payer • Short and long-run rate impacts presented • Revenue collected to maintain financial sufficiency
Low-Income	• Special consideration for low-income senior and/or disabled customers

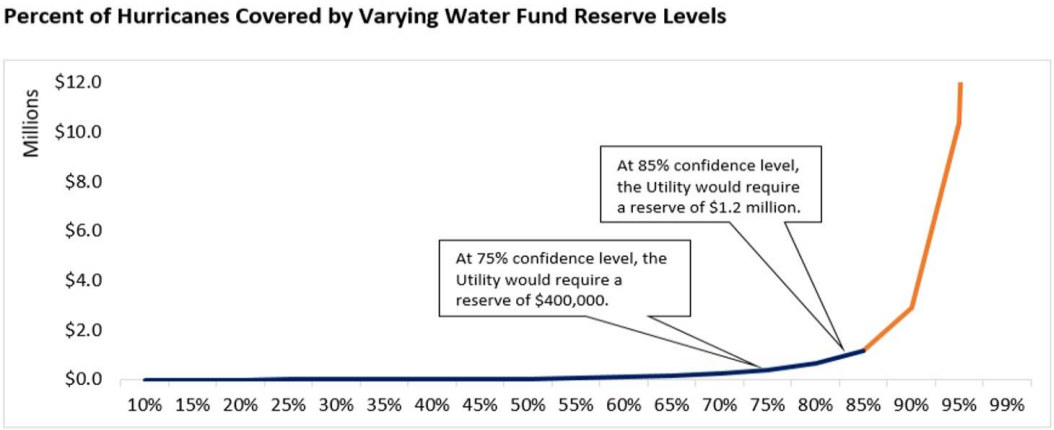
Policy Decision

Recommended Changes

Water may come with policy change recommendations in April.

- We are in the process of engaging with the Government Finance Officers Association (GFOA) to develop a risk-based model to understand the impact of primary risks to our reserves.
- This could result in changes to target levels currently set in our rate and financial policies.
- Once the modeling is complete, we will provide an update which may include recommendations.
- Examples of analyses:





To cover 75% of hurricanes, the Utility would reserve $400,000.

Source: Introduction to Risk and Probabilistic Thinking Presentation by GFOA on March 29, 2019.

Electric Rate and Financial Policy

Revenue Requirement	• Studies projected revenue, expenses, and capital improvements for the period to be covered by the rate change • Performed every two years
Cost-Based Rates	• Cost-of-Service Study determines the cost of serving each customer class • Allocates class responsibility for projected expenses of the system • Minimizes cross-subsidies between services or between classes of customers
Financial Metrics	• AA credit rating goal • Projected cash balances at minimum of 90 days of current budgeted expenditures • Minimum Debt Service Coverage Ratio approximately 1.5, based on adverse water conditions
Low-Income	• Special consideration for low-income senior and/or disabled customers
New Large Load	• 8-20 MW • CP Rate + 15% Adder for ten years

Recommended Change

Power may come with policy change recommendations in April.

The utility is in the process of evaluating the current risk of incremental resource costs from a new large load, especially in consideration of the strategic directive to promote economic development.

The result may be to:

1) to propose modifying or removing the existing rates and financial policy to reflect updated cost and risk perspectives, and/or
2) to create a NLL tariff in the board-approved rate schedules.

Rail Rate and Financial Policy

Revenue Requirement

- Studies projected revenue, expenses, and capital improvements for the period to be covered by the rate change
- Rates based on best estimates of rail volumes
- Performed at a minimum of every two years as part of the budget process

Cost-Based Rates

- Ensure sufficient resource planning and acquisition for reliable service while being as competitive as possible
- Rates for each class of service will be set to reflect the cost of supplying that service
- The character and volume of service will be factors in apportioning costs, developing rates, and tariff revisions

Financial Metrics

- Projected cash balances at minimum of 60 days of current budgeted expenditures
- Minimum Debt Service Coverage Ratio of 1.5

Recommended Change

Rail may come with policy change recommendations in April.

The railroad is in the process of evaluating the potential need for special funds. It will utilize established rate policies from Power and Water as guidance in establishing Rail's policy recommendations.

The result may be:

to create a new Rail Rate Stabilization Fund,

and/or

to create a new Rail Capital Reserve Fund.

Tacoma Water Long-Range Financial Plan

Section 3

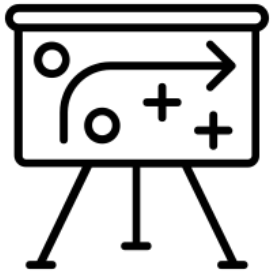
SD 2 *financial sustain-ability*

SD 3 *rates*

How does the utility build a financial plan?

Rate & Financial Policies

- Provide the foundation for the financial plan
- Guide consistent financial and rate decisions
- Promote financial stability and avoid rate shocks



Sensitivities & Priorities

- Blend information and expertise from all departments
- Assess industry trends and environment for risks and opportunities
- Evaluate how upcoming strategic efforts and new technology may impact the plan

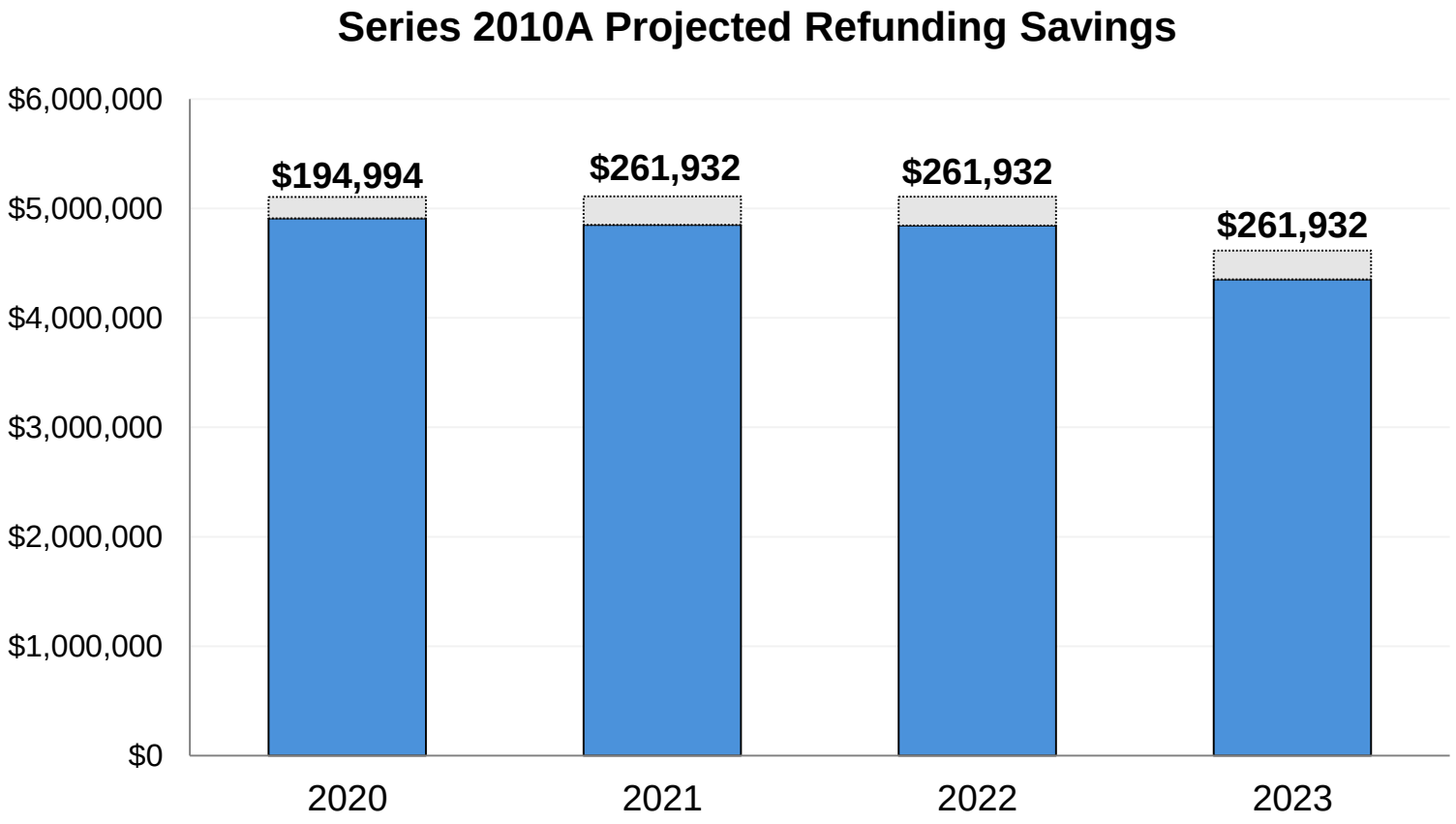
Revenue Requirement Analysis

- Determine the amount of revenue necessary to meet our obligations
- Evaluate sufficiency of current rates
- Develop a rate implementation strategy

SD 2 financial sustain-ability

Water has a possible refunding opportunity

Tacoma Water staff recommend a Bank Loan Refunding of Series 2010A Water Revenue Bonds with KeyBanc to achieve nearly $945,000 NPV, or about 5.31% savings.



The Status of Installed AMI Meters to Date

In response to Board Member Watson's question regarding AMI on 01/13/2020.

Meters Installed So Far:

~ 2,000 Residential

~ 500 Commercial

Meters To Be Installed:

100,000 Residential

3,000 Commercial

- All new meters installed as part of maintenance and growth are AMI compatible
- They are non-communicating until we also install the modules
- Modules will be installed once the network is built out
- "Mass deployment" will begin December 2020
- The AMI program will be sharing an update at the 02/26/2020 study session

SD 2 *financial sustain-ability* | SD 3 *rates*

Cost/Rate Increase Mitigation Communications

In response to Public Utility Board request regarding cost mitigation on 11/08/2019.

UTILITIES & YOU | January 2020

Put your mitts on this...

Baby, it's cold outside!

When the temperature drops, water pipes can freeze and rupture. Learning how to protect your plumbing during the cold weather can save you costly repairs. Before you think about hibernating this winter, protect your plumbing by taking these easy steps:

- Insulate exposed pipes, valves, and hose bibs.
- Shut off and drain outside faucets.
- Shut off and winterize your outdoor irrigation system.
- Disconnect your garden hoses from hose bibs.
- Locate your emergency shutoff and learn how to turn off your water supply.

Visit MyTPU.org/ProtectPipes for more tips. If you have a water emergency, call 253-502-8384. U*

JAN.1

Recycle Reset Surcharge in effect

If you live in the City of Tacoma, you will see a new recycling surcharge of $2.82 per month added to your Solid Waste (garbage, recycling, and yard waste) account beginning January 1, 2020. This surcharge is the result of recent changes in the international recycling market. Strict new policies took effect in January 2018 when China stopped accepting many recyclables due to high levels of contamination and garbage they were receiving. You will see this surcharge on your bills as the "Recycle Reset Surcharge." If you participate in our bill payment assistance programs, we waive the surcharge. U*

Tacoma Water saves more than $800,000 over 10 years

As part of our mission to keep rates low, we're committed to using what we know to responsibly manage our system and your dollars. By replacing the right assets at the right time, we deliver on the full value of your investment.

Recently, Tacoma Water inherited plastic pipes with a history of failing. Instead of replacing the pipes immediately, we looked at the pipes, researched their material, and analyzed their construction. The pipes were different than the other type of plastic we have that break. They will last another 50 years!

A few years later, we started to hear about corrosion on our service line connections from our crews. We looked at the connections, and sure enough, they weren't holding up in our soil; they would need to be replaced in 10 years. By using what we learned, we know the pipes will last longer than the connections, and those 10 extra years of safe use calculate to more than $800,000 in savings for customers. U*

2

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Source: U* - Utilities & You | January 2020 | https://www.mytpu.org/wp-content/uploads/U_Jan2020_WEB.pdf

Tacoma Power Long-Range Financial Plan Update

Section 4

Financial Metrics

Tacoma Power's financials are holding steady.

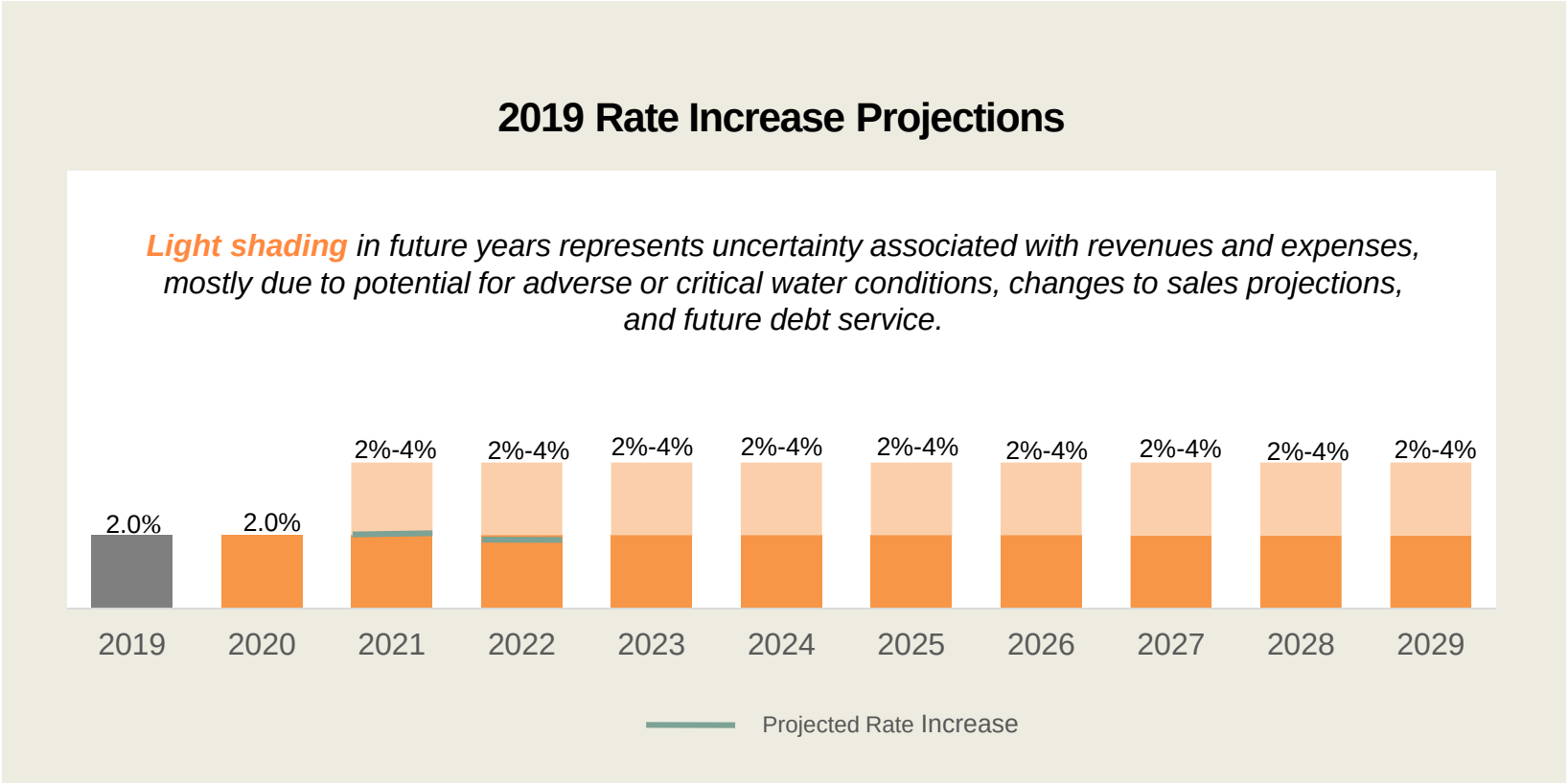
Bond Covenant & Financial Policy Metrics	2015	2016	2017	2018	2019*
Days of Liquidity: Liquidity / All Expenses *(Minimum: 90 Days)*	171	183	167	158	139
Debt Service Coverage – Bond Covenants: Net Operating Revenue / Debt Service *(Minimum: 1.25x)*	2.69x	3.25x	3.92x	4.25x	2.39x
Rating Agency Metrics	**2015**	**2016**	**2017**	**2018**	**2019***
Days of Liquidity: Liquidity / Operating Expenses	214	236	210	206	173
3-year average	286	280	249	236	205
(Target: 180 days)					
Debt Service Coverage – Rating Agencies (Net Operating Revenue – GET) / Debt Service	2.01x	2.31x	2.82x	3.06x	1.28x
3-year average	1.87x	2.09x	2.38x	2.73x	2.39x
(Target: >2.0x)					

* Preliminary, as of December 2019.

2019 Rate Increase Projections

Tacoma Power's financials are holding steady.

No changes in the 2019 estimated rate impacts from 2018 projections.



This forecast is subject to change, and is dependent upon actual financial performance in future years.

Water Condition Scenario Update

	Projected Rate Increases										
Scenario	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
***Base Case*:** Average Water * Conditions	**2.0%**	**2.0%**	**2.0%**	**2.0%**	**2.0%**	**2.0%**	**2.0%**	**2.0%**	**2.0%**	**2.0%**	**2.0%**
Critical Water in 2021 *	2.0%	2.0%	**10.7%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	2.0%	2.0%	2.0%
- with $12M RSF used	2.0%	2.0%	2.0%	2.0%	**4.0%**	**4.0%**	2.0%	2.0%	2.0%	2.0%	2.0%
Adverse Water * in 2021 & 2022	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Loss of Large Customer**	2.0%	2.0%	2.0%	2.0%	2.0%	**3.0%**	**4.0%**	2.0%	**3.0%**	2.0%	2.0%
Lower Wholesale Prices**	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%

* Preliminary, as of December 2019.
** As of June 2019.

Water Fixed & Variable Rates

Section 5

Goals of Rate Design

What are guiding objectives for Water rate decisions?

Water rates should ensure adequate supply.

- We incorporate short-term and long-term customer and demand forecasts in determining rates.

Water rates should be as low as is responsible.

- We apply a long-term view of rate impacts through our long-range financial planning.

Water rates should be fair.

- Our cost-of-service analysis allows us to allocate costs to customer classes based on their share of the system costs.

Water rates should be stable and understandable.

- We design for revenue stability in order to provide customers with rate stability.

Water rates should be the product of customer involvement.

- We apply gradualism to provide minimal impact to customers where possible.
- We incorporate customer feedback into our rates process through public outreach.

Evolution of Current Rates

How did Tacoma Water arrive at the current rate design?

2019 COSA Results

Residential Class

- 2.9% increase in revenue needed in 2019 and in 2020

Commercial Class

- 2.2% increase in revenue needed in 2019 and in 2020

Initial Proposal

Residential Class

- Split the rate adjustment between both the fixed and variable charges, or increase in the variable charge only

Commercial Class

- Split the rate adjustment between both the fixed and variable charges, or increase in the variable charge only

Final Proposal

Residential Class

- Increase in variable charge only
- Average monthly increase of $1.02 in 2019 and $1.08 in 2020

Commercial Class

- Increase in variable charge only
- Average monthly increase of $4.77 in 2019 and $4.64 in 2020

Fixed & Variable Rates

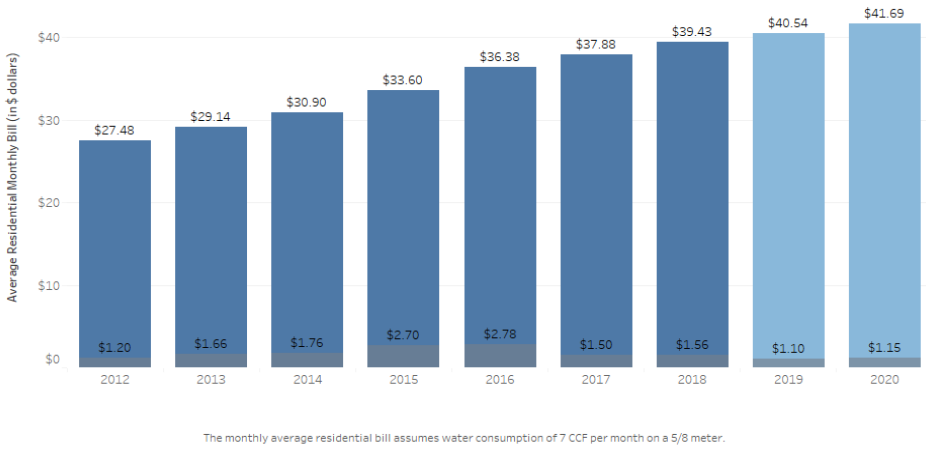
SD 2 *financial sustain-ability*

SD 3 *rates*

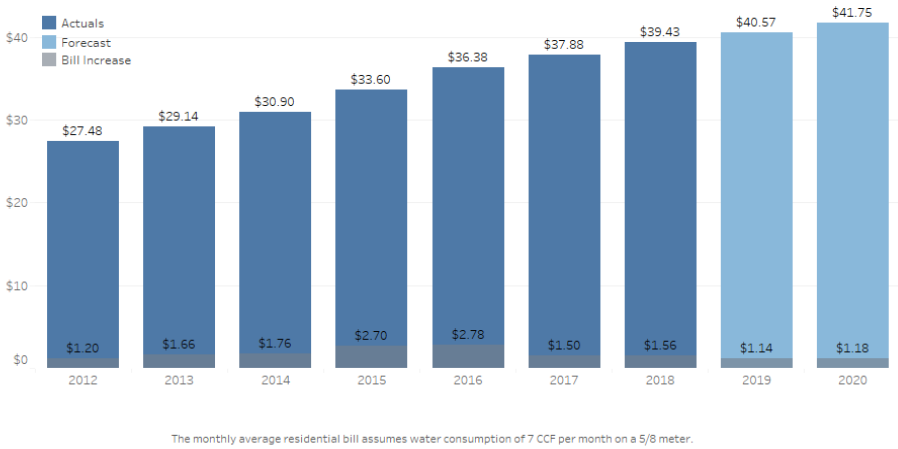
Evolution of Current Rates

Two rate scenarios were modeled for Board policy decision. Scenario 1 was chosen for 2019-2020.

Scenario 1 (variable only)



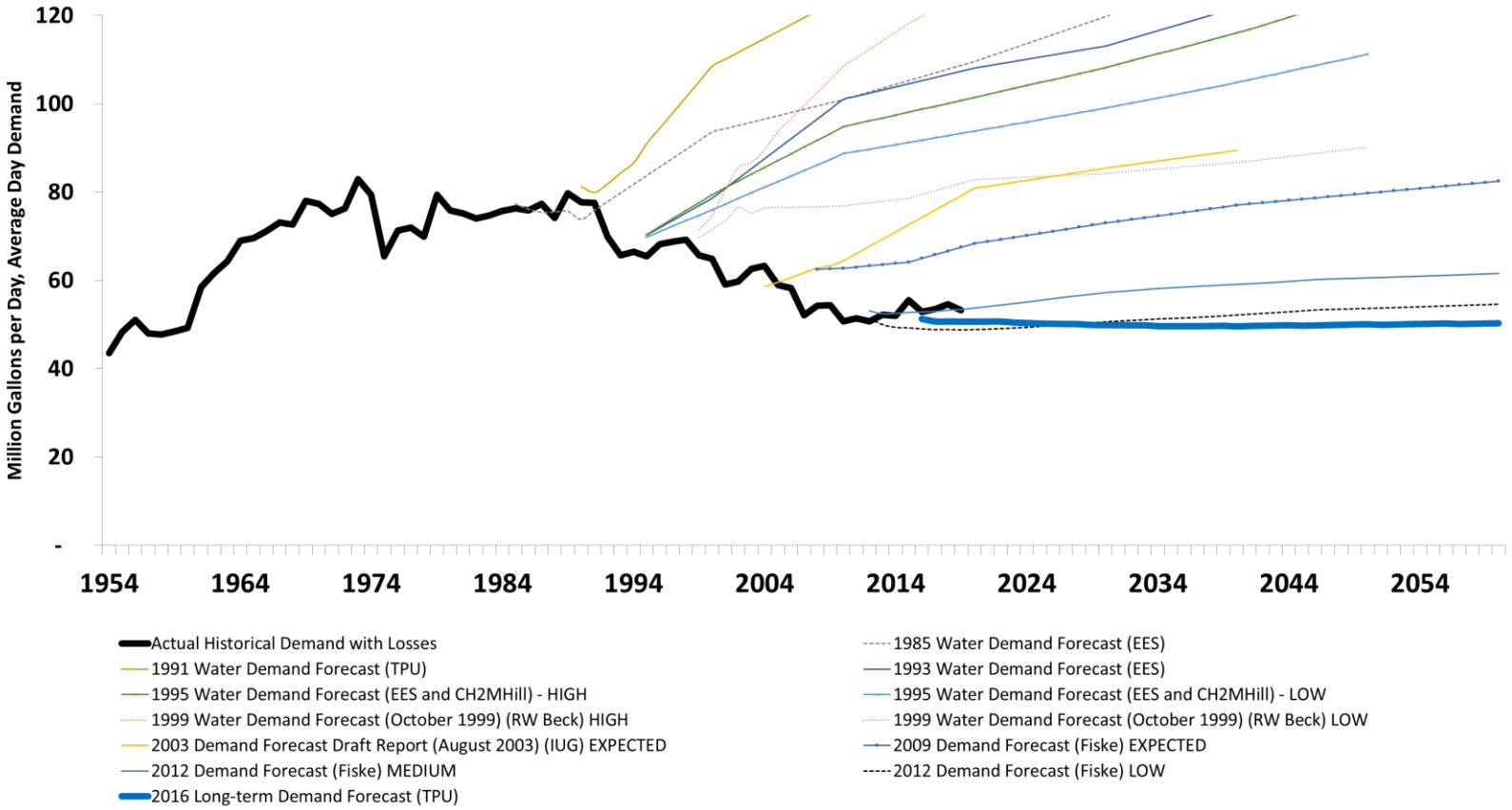
Scenario 2 (50/50 split)



Both scenarios showed that the impact of splitting the rate adjustment between the fixed and variable charges or in the variable charge only were not significantly different for an average residential single family customer.

Source: Tacoma Water Budget and Rate Recommendations Presentation on July 25, 2018

Declining Demands



Cost Structure: Fixed/Variable Cost Recovery

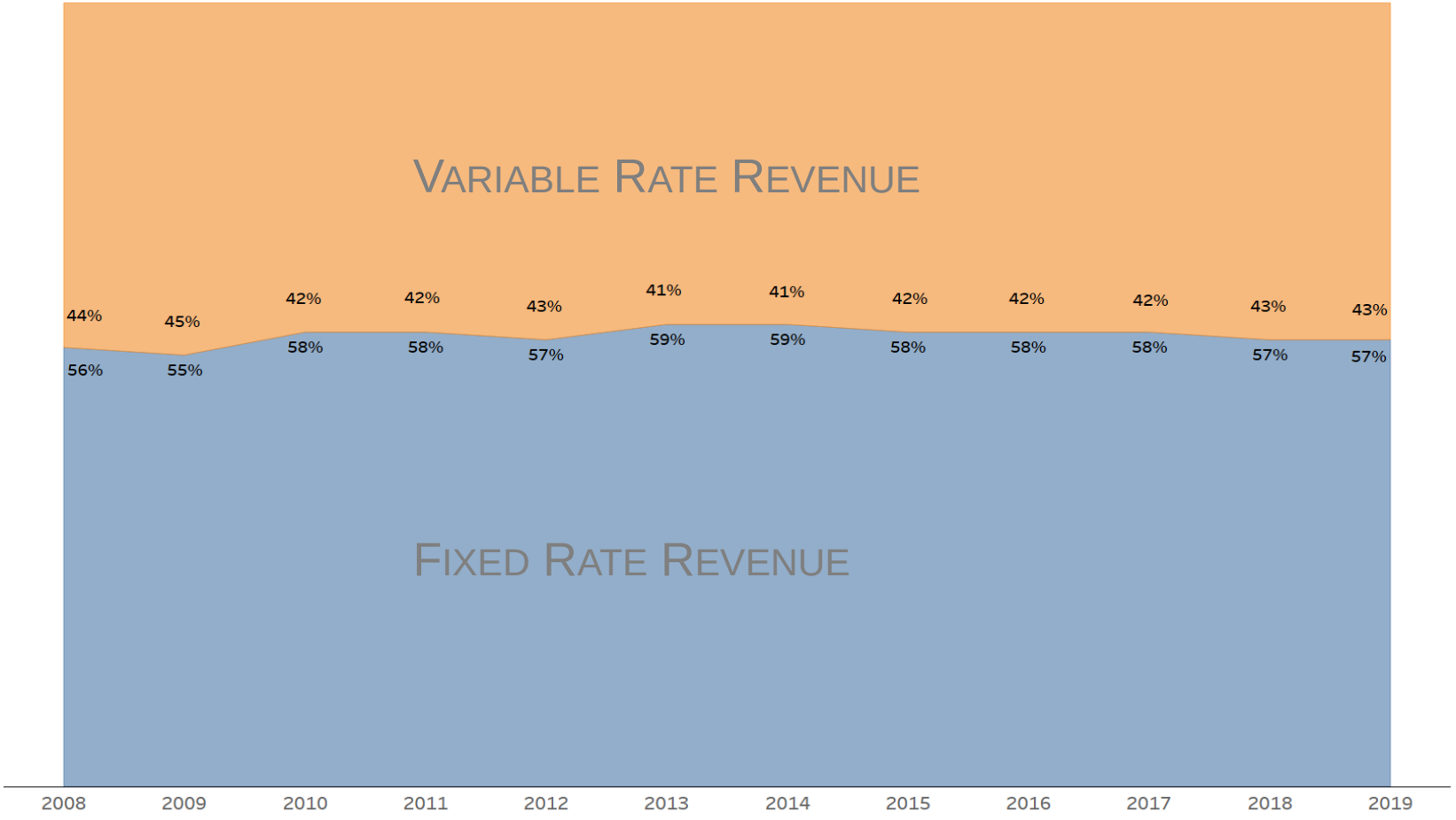
Our fixed costs are greater than the current monthly customer charge.

- Water business is “capital-intensive”
- Over 95% of our costs are “fixed” in the very short run (power, treatment, and solids handling are the only variable costs on this time horizon)
- Fixed rates, at a minimum, must recover those costs that have NO connection to demand – e.g. postage, billing, meter reading, administration and general costs
- These only provide high level bookends for fixed cost recovery
- Beyond those bookends, we use the fixed vs. variable split to effect business objectives (e.g. send a conservation signal, effect revenue and bill stability, and maintain high credit ratings) and to improve equitability of rate design
- “Customer charges may be designed to recover up to 65 percent of revenue requirements for customer classes with strong seasonal consumption patterns.”

SD 2 *financial sustain-ability*

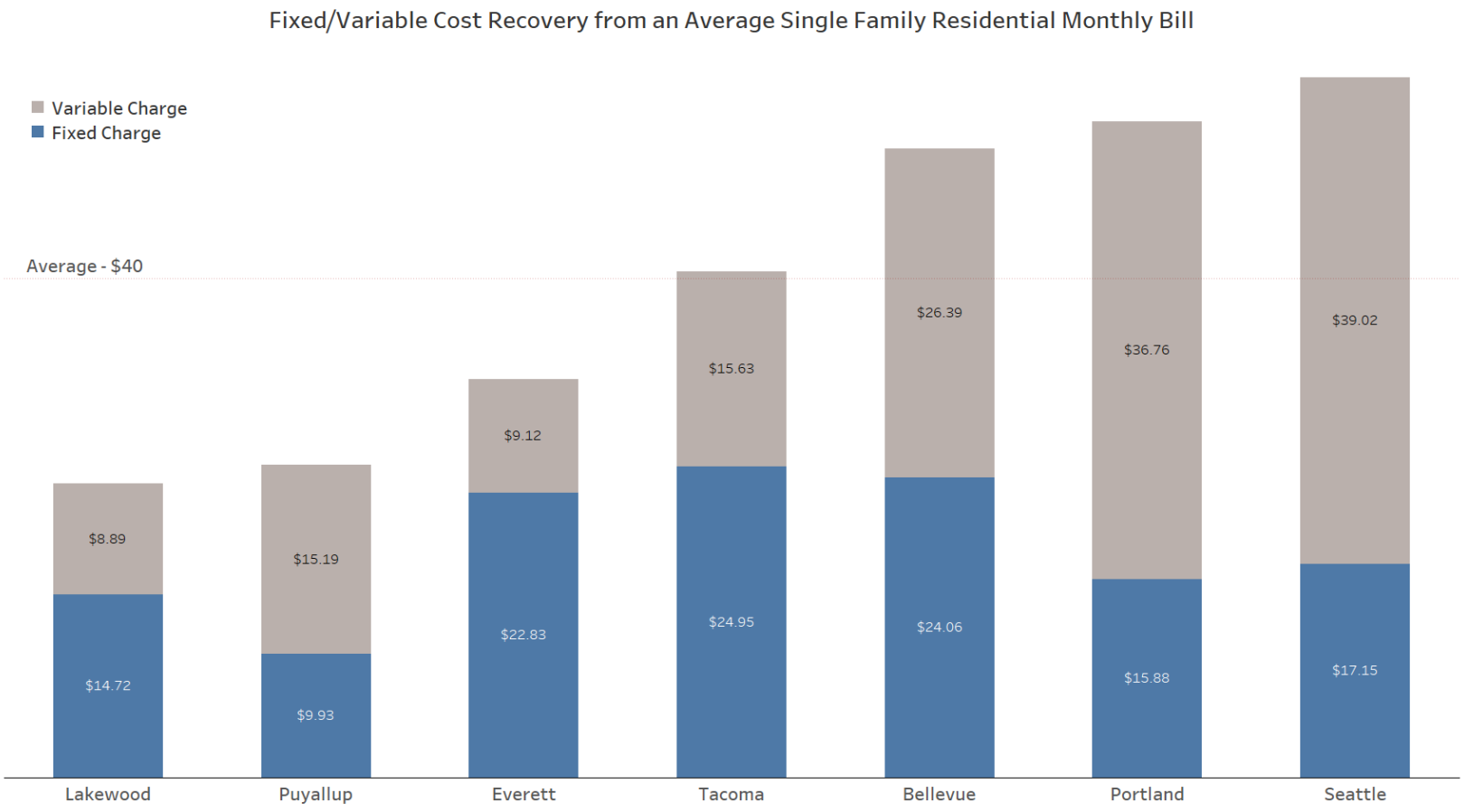
SD 3 *rates*

Residential Fixed/Variable Rate Recovery Ratio



Policy Decision

Cost Structure: Fixed/Variable Cost Recovery



Fixed cost recovery ($) is based on an average single family residential customer. The assumption for an average single family residential customer is 6 CCF in winter months and 9 CCF in summer months.

Power Fixed & Variable Rates

Section 6

Power Utility Ratemaking: Basic Principles

Rates are set to recover costs.

- Costs largely fixed
- Today, the price of electricity is based primarily on the amount consumed (not fixed)

Customers are generally grouped into classes based on similar cost profiles.

- Size
- Usage patterns
- Use of system

Costs are allocated to classes based on their share of the system costs.

- Generally deemed equitable (“user pays” principle)
- Effort to minimize subsidies within and across classes

Why is this an issue now?

- Changing industry causing utilities to address ratemaking in a new way
- Declining customer consumption

Points of Discussion in 2019/2020

How did Tacoma Power arrive at the current rate design?

Cost-of-Service	• Customer costs are $23 for residential and $35 for small general • 2020 customer charges will be $17.30 and $23.50, respectively
$ or %	• Customer charge changes can seem large in percent terms but are capped in dollar impact
Low-Income	• Fixed increases benefit low-income users in inefficient or large dwellings • Variable increases benefit low-income users in small dwellings
Bill Stability	• Fixed increases are the same throughout the year • Variable increases create spikes in winter when bills are high and troughs in summer
Equity	• Fixed increases benefit large users, variable benefit small users • Fixed increases benefit traditional users, variable benefits DER owners

Coordination with Strategic Directives

	HIGHER FIXED	HIGHER VARIABLE
Equity & Inclusion	+ low-income, high users benefit + caps dollar impact of rate increase + reduces subsidy to customers that can afford to invest in DER and conservation	+ low-income, low users benefit
Financial Sustainability	+ better aligns prices with cost-to-serve + reduces financial risk of declining loads causing rate increases + increases bill predictability	
Rates	- difficult for some customers to understand/accept	+ easier to understand - low elasticity of demand for electricity requires very high price signals to significantly impact consumption
Environmental Leadership	+ encourages electrification	+ encourages solar and other DER + encourages conservation

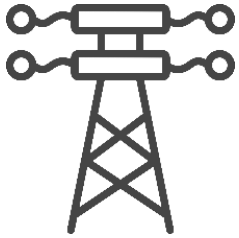
Detailed Customer Cost Breakdown

Minimum System Analysis

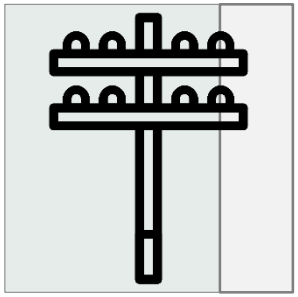
The ability to take electricity off the grid requires infrastructure. Even when only 1kWh is used, the utility makes fixed investments to connect each customer to the system

Generation Plant

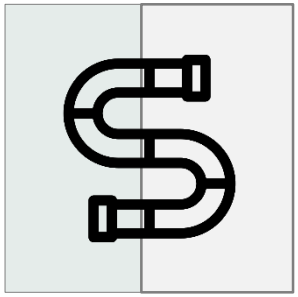
Transmission Plant



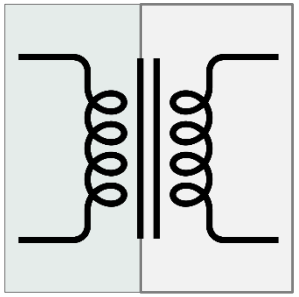
Distribution Plant



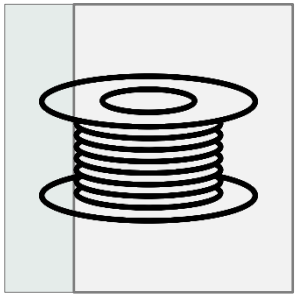
Poles, Towers, and Fixtures



Conduit and Vaults



Line Transformers



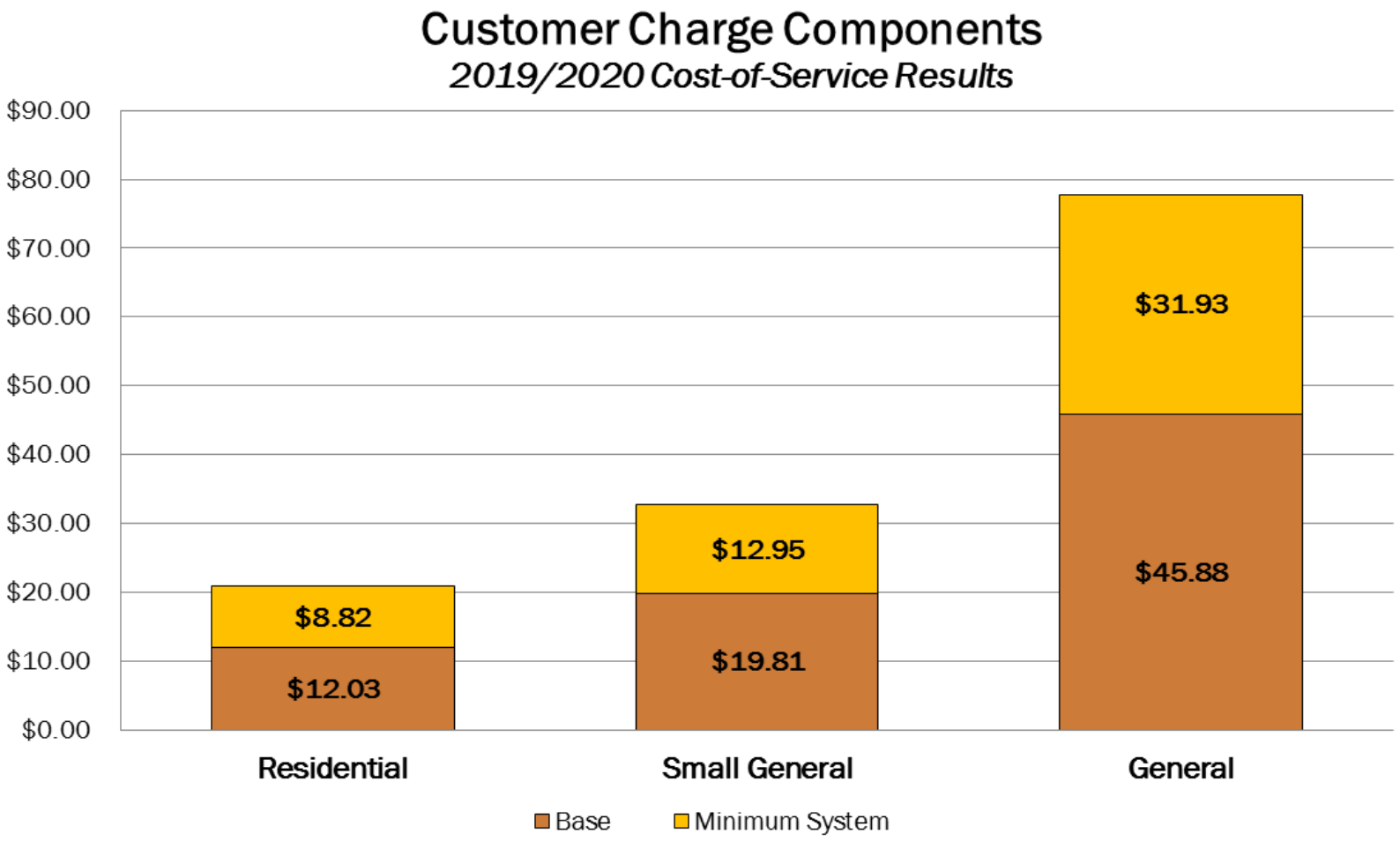
Conductors and Devices

The cost of the smallest theoretical distribution system required to connect a customer to the grid is assigned to the customer charge in the cost of service analysis

SD 2 *financial sustain-ability*

SD 3 *rates*

Detailed Customer Charge Breakdown



Data from 2019/2020 Cost-of-Service Analysis. Does not include $2.46 per month allocated cost for Click! underrecovery.

SD 2 *financial sustain-ability* SD 3 *rates*

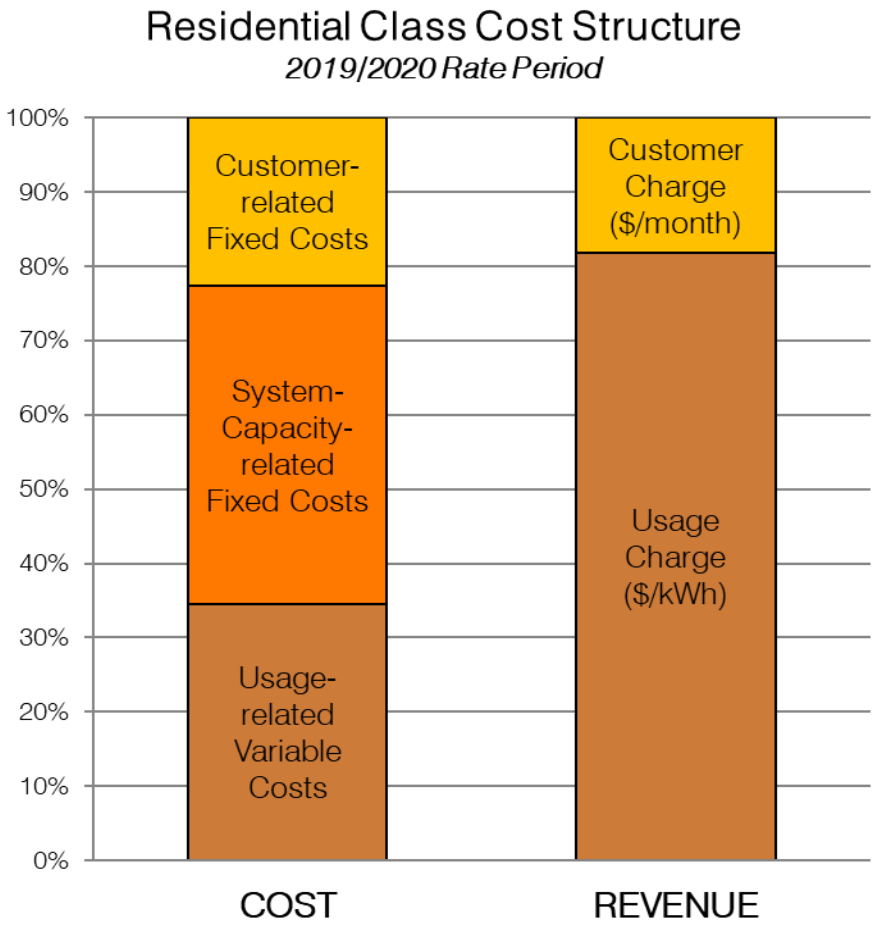
Tacoma Power Residential Ratemaking

Fixed Cost Recovery

- Sales figures are declining, which means fixed cost recovery drives rate increases
  - 65% of costs are fixed
  - 18% of revenues are fixed

Policy Issues

- Today, higher-usage customers pay more than their share of the utility's fixed costs
- Individual customer bill impacts, especially low-income bill impacts, are a key concern
- Rate design changes impact policy objectives, such as the promotion of:
  - energy efficiency,
  - electric vehicle, and
  - solar energy adoption



Data from 2019/2020 Cost-of-Service Analysis. Does not include $9.6 million in fixed cost allocated for Click! underrecovery.

SD 2 *financial sustain-ability* SD 3 *rates*

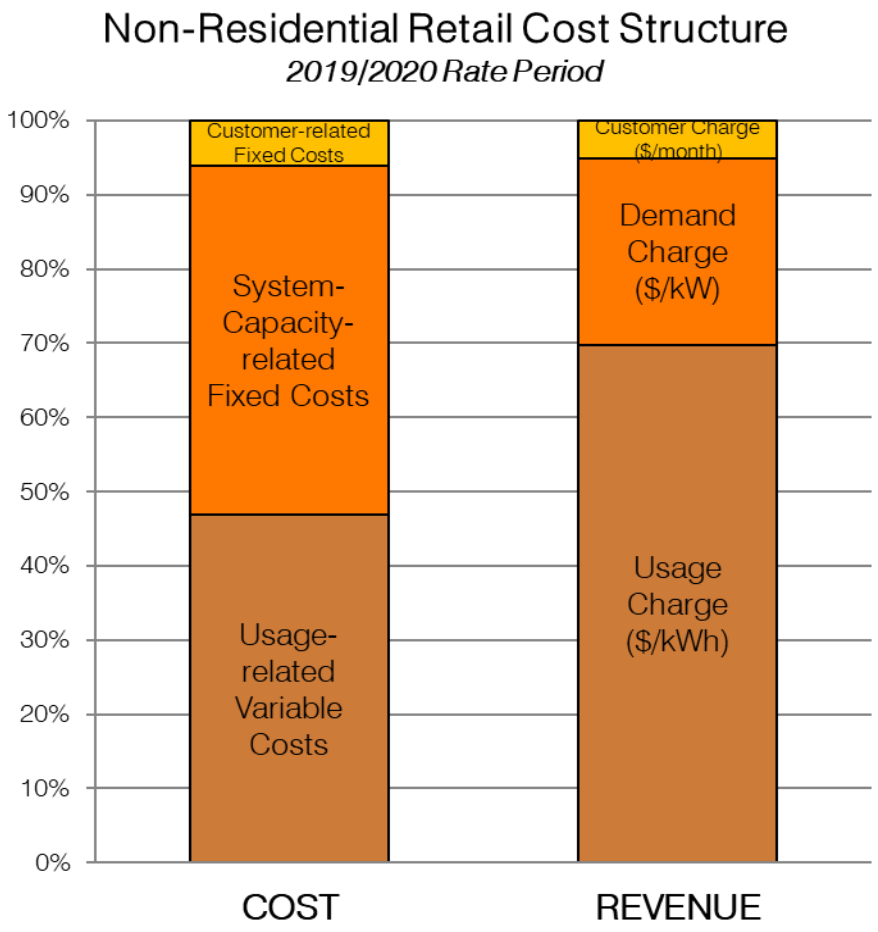
Tacoma Power Non-Residential Ratemaking

Fixed Cost Recovery

- Fixed cost recovery is also an issue for this class, although typically not as stark due to the use of demand charges
  - 53% of costs are fixed
  - 30% of revenues are fixed

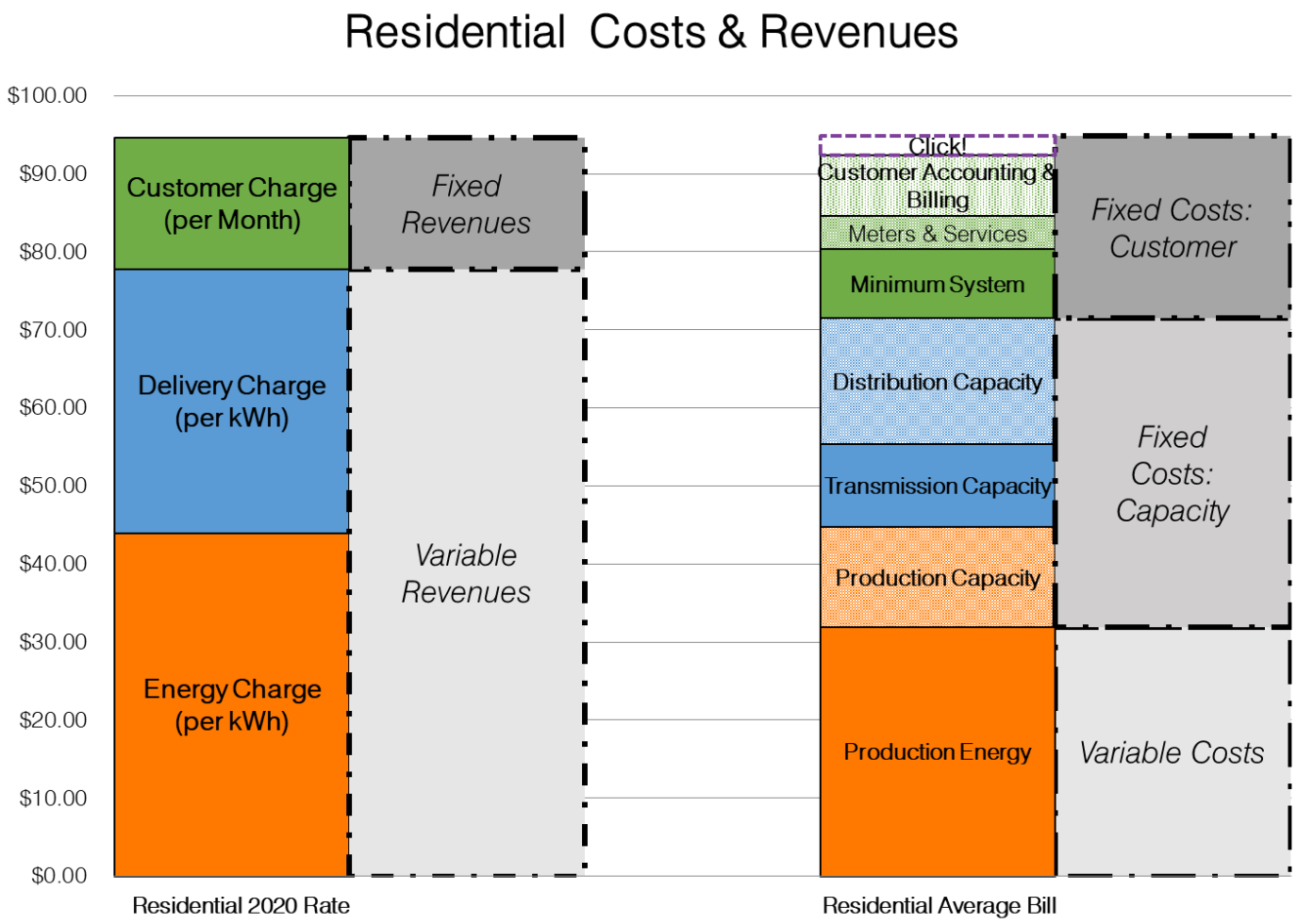
Policy Issues

- Commercial classes can be broad and diverse. There is no "typical" non-residential customer, yet there is often one rate for all of them
- Customers with a higher load factor (average usage ÷ maximum usage) are less costly to serve and so should arguably pay a lower average rate



Data from 2019/2020 Cost-of-Service Analysis. Does not include $0.96 million in fixed cost allocated for Click! underrecovery.

Detailed Residential Breakdown: All Elements



Data from 2019/2020 Cost-of-Service Analysis.

Detailed Residential Breakdown: All Elements

	Residential Pure COSA		Residential 2020 Rate	Actual vs. COSA	
Production Energy	$0.032893	$0.073750 per kWh	$0.045351+ $0.035353= $0.080704 per kWh	$0.006954	9.4%
Production Capacity	$0.013266				
Transmission Capacity	$0.010922				
Distribution Capacity	$0.016669				
Minimum System	$8.83	$23.32 per month	$17.30 per month	($6.02)	-26%
Meters & Services	$4.25				
Customer Account & Billing	$7.79				
Click! Underrecovery	$2.46				

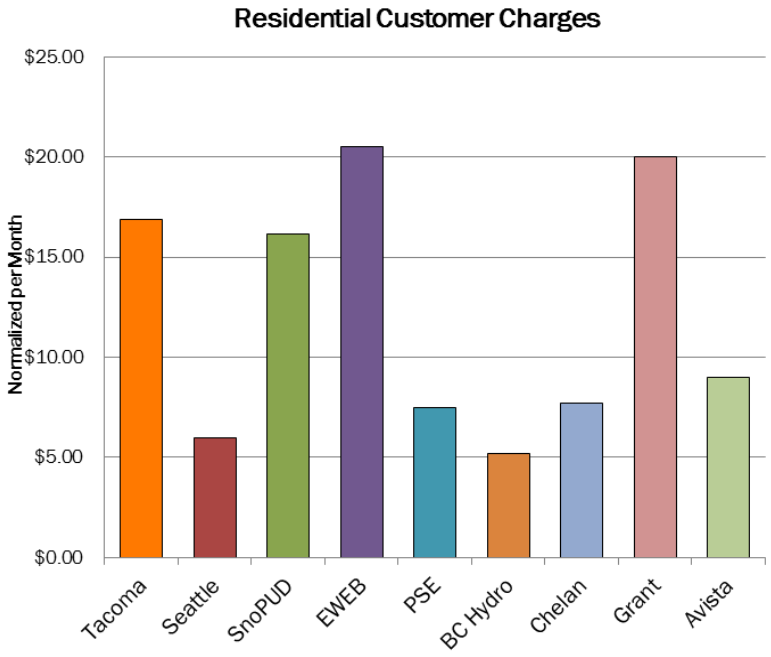
Data from 2019/2020 Cost-of-Service Analysis.

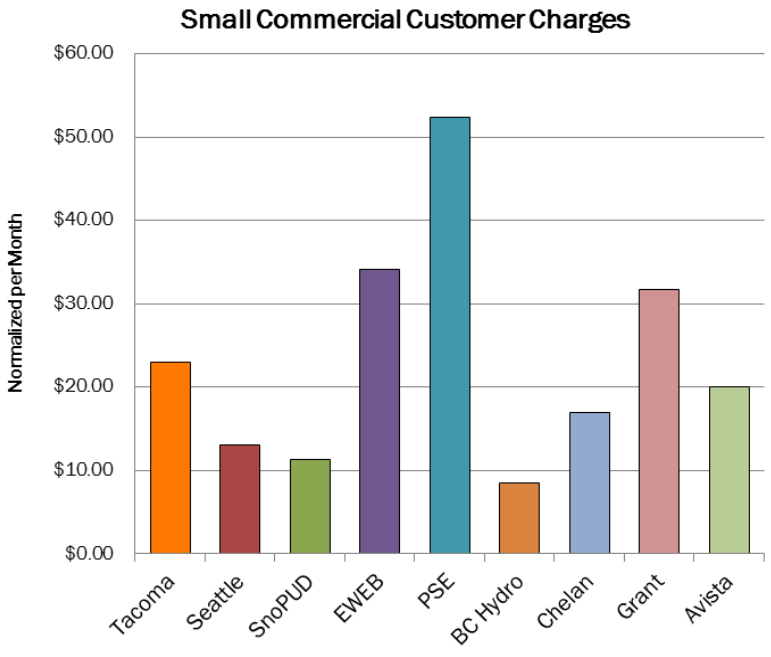
Fixed & Variable Rates

SD 2 *financial sustain-ability*

SD 3 *rates*

Utility Fixed Charge Comparison





Snohomish County PUD is currently revising customer charge to increase fixed cost recovery.

Fixed Charge Policy Topics

Carbon Reduction

- Household heating choices
- Vehicle electrification costs

Conservation Incentives

- I-937 incentives & utility programs
- Demand elasticity
- Perception

Low-Income Impacts

- Usage patterns
- Bill impact on high users can outweigh benefit to low users
- Mitigation options

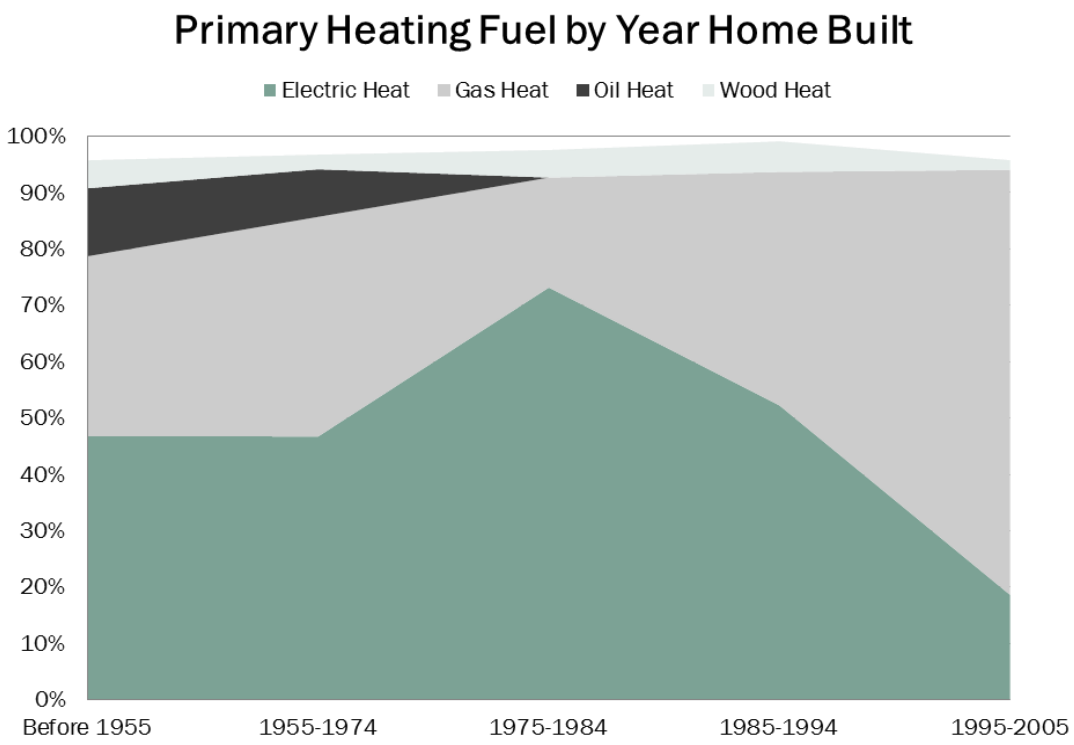
Customer Bill Stability

- Dollar impacts versus percent impacts
- Seasonality

SD 5 environ-mental

Carbon Impacts of Household Choices: Heating

Gas heat is the fuel of choice for many new homes.



Electrification of housing is decreasing in the service territory.

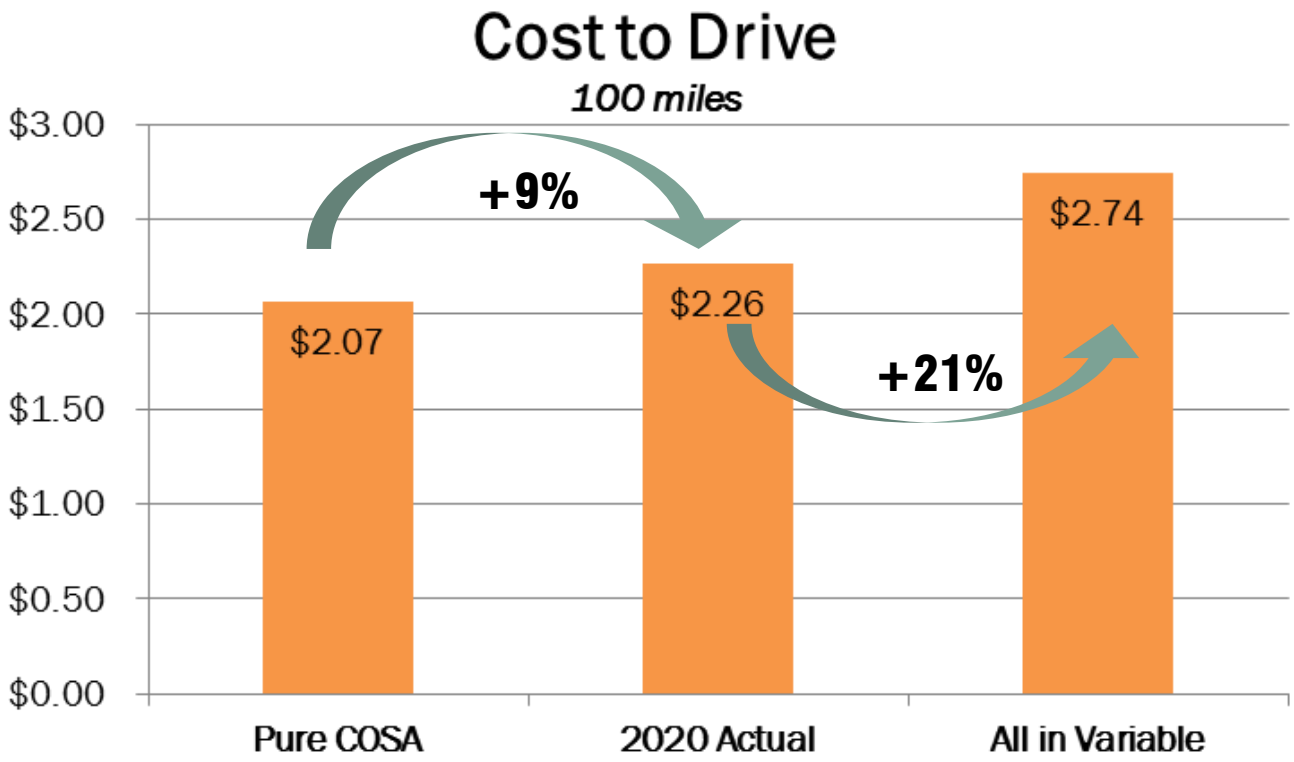
Due to the low cost of natural gas, many homebuilders are choosing to install natural gas instead of electric heat.

The choice of natural gas heat over electric heat increases a home's carbon footprint by about 92%.

Electric "fuel" prices (variable charges) must remain as low as possible to encourage consumers to choose or remain on electric heat. It is rare to convert to electric once gas has been chosen.

Based on data from 2005 Tacoma Power building stock survey.

Carbon Impacts of Household Choices: EVs



Residential Rate	19/20 COSA	2020 Actual	All in Variable
Customer	$23.30	$17.30	$0.00
Energy	0.032890	0.045351	0.043626
Delivery	0.040860	0.035353	0.054198

Example Electric Vehicle: 2017 Nissan Leaf, approximately 3.6 miles per kWh

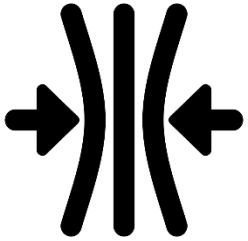
SD 3 *rates*

SD 5 *environ-mental*

Conservation: How much does price matter?

I-937: "Societal Test"

Tacoma Power is required to acquire a certain amount of conservation each year. The target is set using a "societal test" of cost-effectiveness. This formula does not include the level of retail rates. Therefore, Tacoma Power will seek to acquire the same amount of conservation regardless of rate design or level.



Elasticity of Demand

The responsiveness of individual consumers to price increases is measured by economists as the "elasticity of demand." If the elasticity of demand for electricity is low ("inelastic"), consumers do not reduce usage (conserve) very much even when prices are raised. Most studies find that electric demand is very inelastic; when rates increase by 1%, then consumers conserve between 0.05% and 0.81%.

Legislation and Programs Drive Conservation

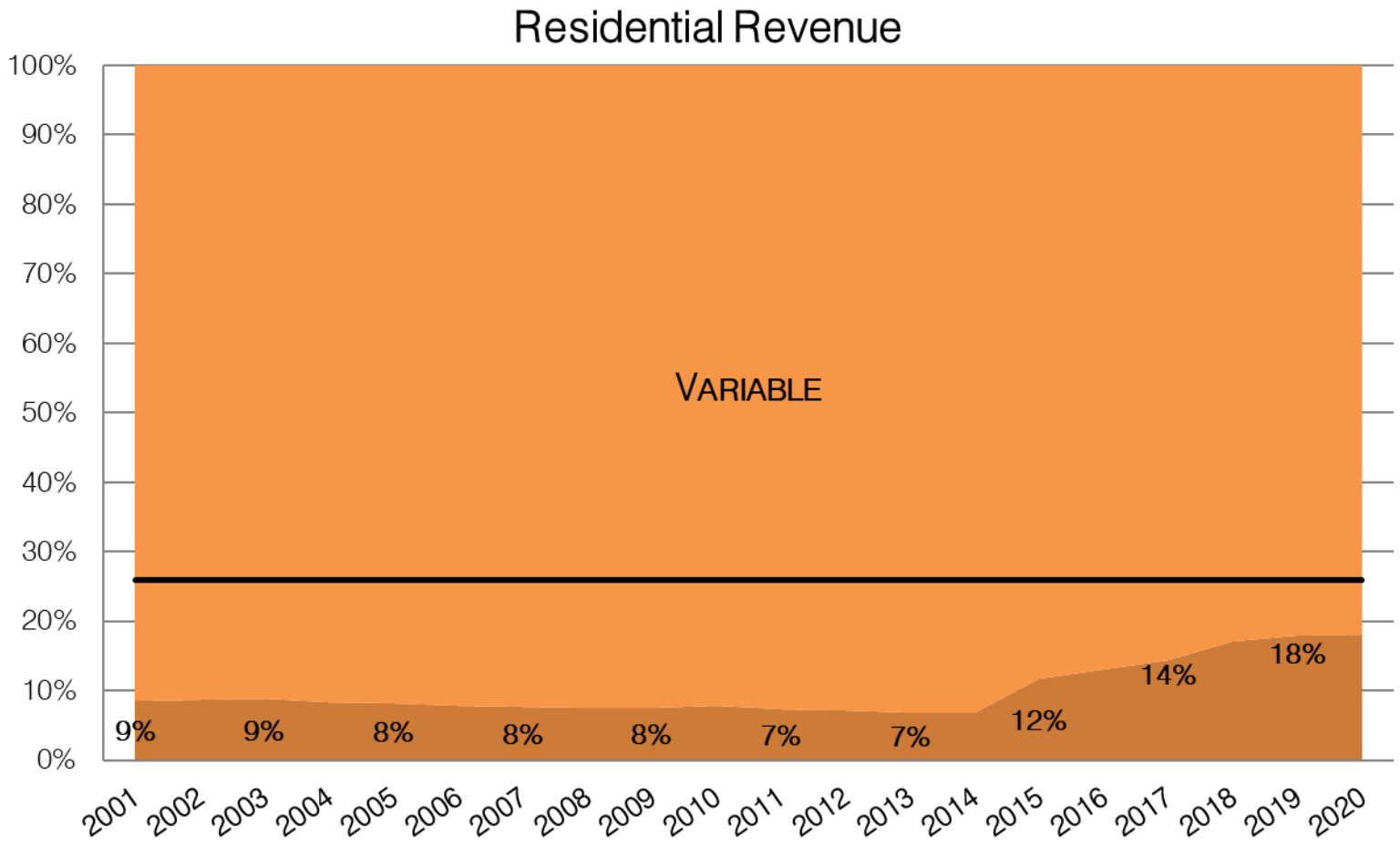
Due to the low elasticity of demand, raising rates is not an efficient way of encouraging conservation. If policymakers wish to expand conservation efforts, they should focus on expanding direct consumer programs (rebates, retrofits, et cetera) and lobbying for tougher codes & standards.

SD 3 rates

SD 5 environ-mental

Conservation: How much price signal remains?

Most retail revenue is still recovered through variable charges.



SD 1 equity inclusion

Focus on Low-Income

Approximately one-third of the customers in Power's service territory are low-income.

Many low-income customers live in high-use houses or inefficient apartments. They are large users and benefit from a fixed increase. Many other low-income customers live in efficient houses or small-use apartments. They benefit from a variable charge increase.

Tacoma Power estimated the **value of houses, apartments**, and other dwellings in the service territory from County Assessor data.

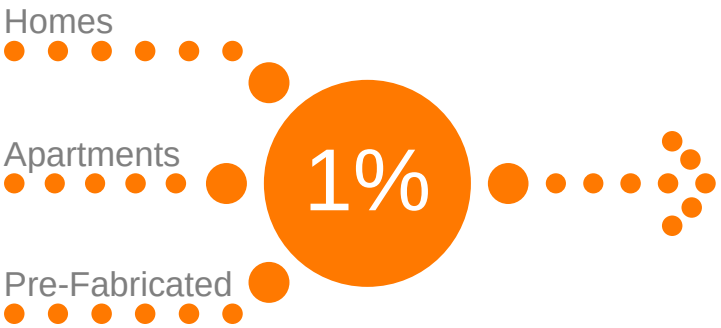
Consumption records were pulled for the valued houses, apartments, mobile homes, *et cetera*.

NO LINK was found between the value of the house, apartment, or other dwelling and the consumption level.

<u>Conclusion</u>: Because low-income customer consumption is highly variable, rate design cannot protect low-income customers as a group.

SD 1 equity inclusion

Income Does Not Determine Usage



Only 1% of the variation in Tacoma Power's customers' electric use can be explained by estimated income.

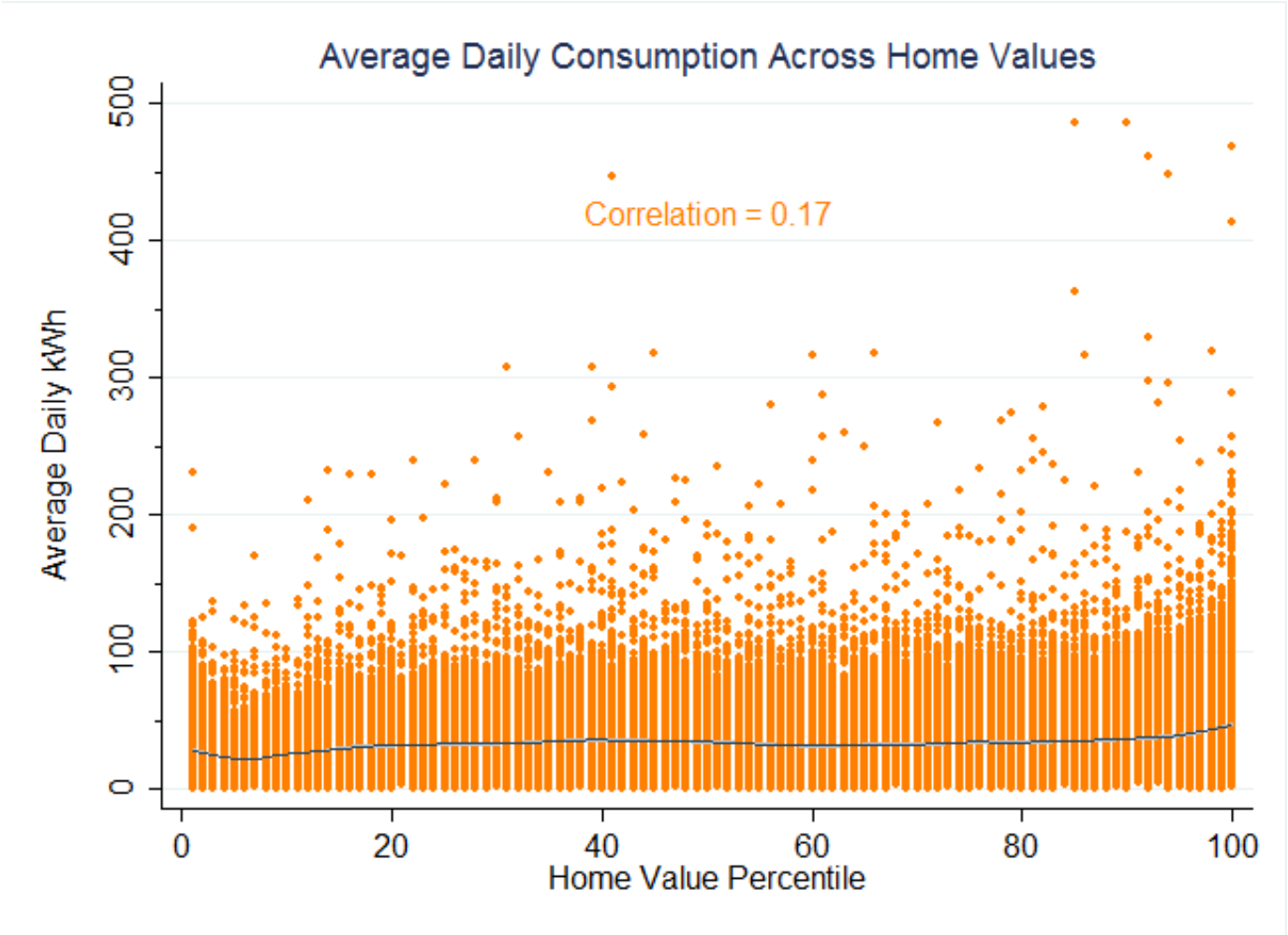
Tacoma Power's internal studies have **failed to find systematic correlations between estimated income level and electric usage**.

In **Tacoma Power's service territory**, air conditioning is relatively rare, and many homes, particularly older homes, are heated electrically. It is **much harder for low-income residents to forego heating** than air conditioning.

While some low-income individuals live in small apartments with low usage, others live in single-family homes with high usage. Regardless of home type, **low-income housing units tend to be less efficient** than high-income ones.

SD 1
equity
inclusion

Income Does Not Determine Usage



Fixed Charges Limit Rate Increase Dollar Impact

Under a fixed-charge increase, the dollar value of the increase for all customers is fixed. Under a variable-charge increase, some high users can see extremely high dollar increases

Consider the example of a small user of 600 kWh/month and a large user of 1800 kWh per month.

Example	Higher Fixed Charge*	Higher Variable Charge†	Difference
Low	$ 68.39	$ 60.78	$ (7.61)
High	$ 155.17	$ 172.33	$ 17.16

The small user pays $7.61/month more under an higher-fixed rate design, while the large user pays $17.16/month more under an higher-variable rate design. The negative impact of the variable rate design is 225% higher.

*$25.00/month, $0.072319/kWh†$5.00/month, $0.092961/kWh

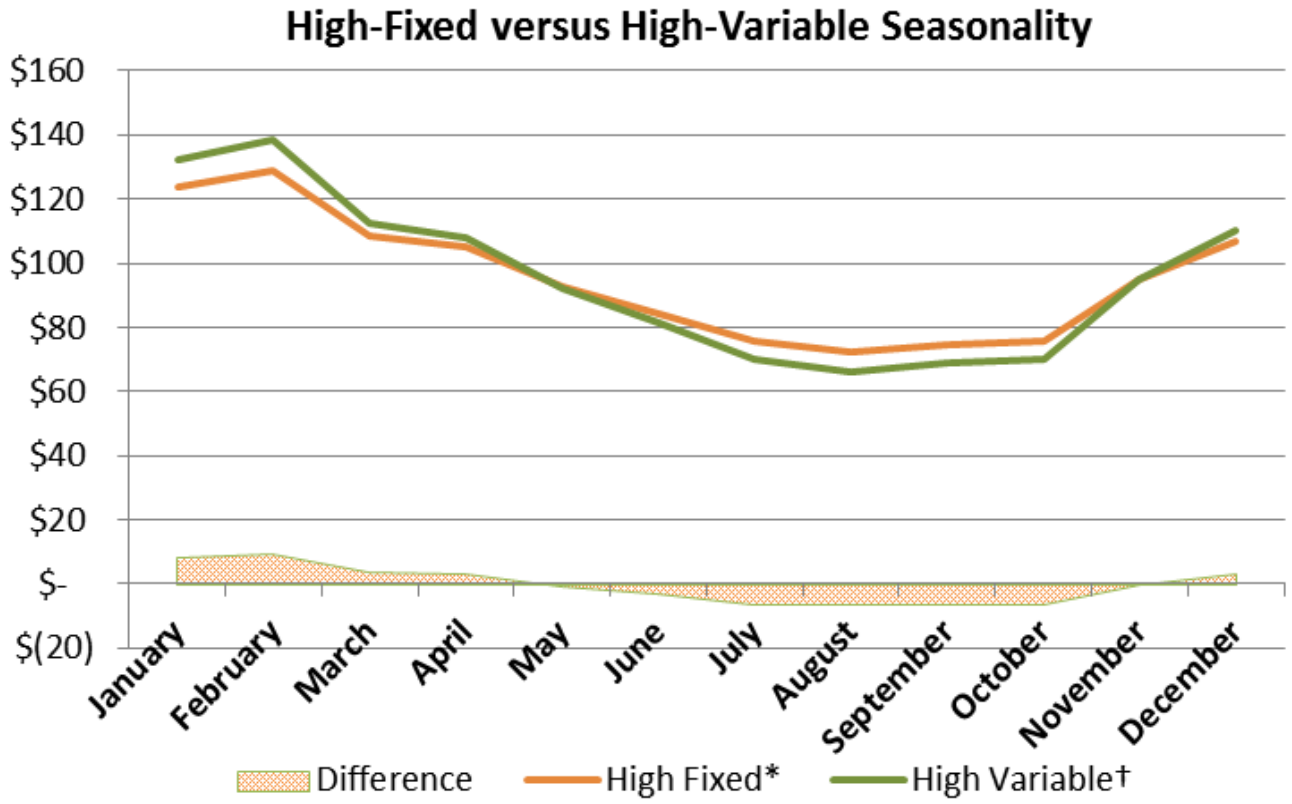
SD 1 *equity inclusion*

SD 3 *rates*

Fixed Charges Reduce Seasonality

High variable costs result in high winter bills, especially for bimonthly-billed customers.

Low-income customers in particular have difficulty managing bill volatility.

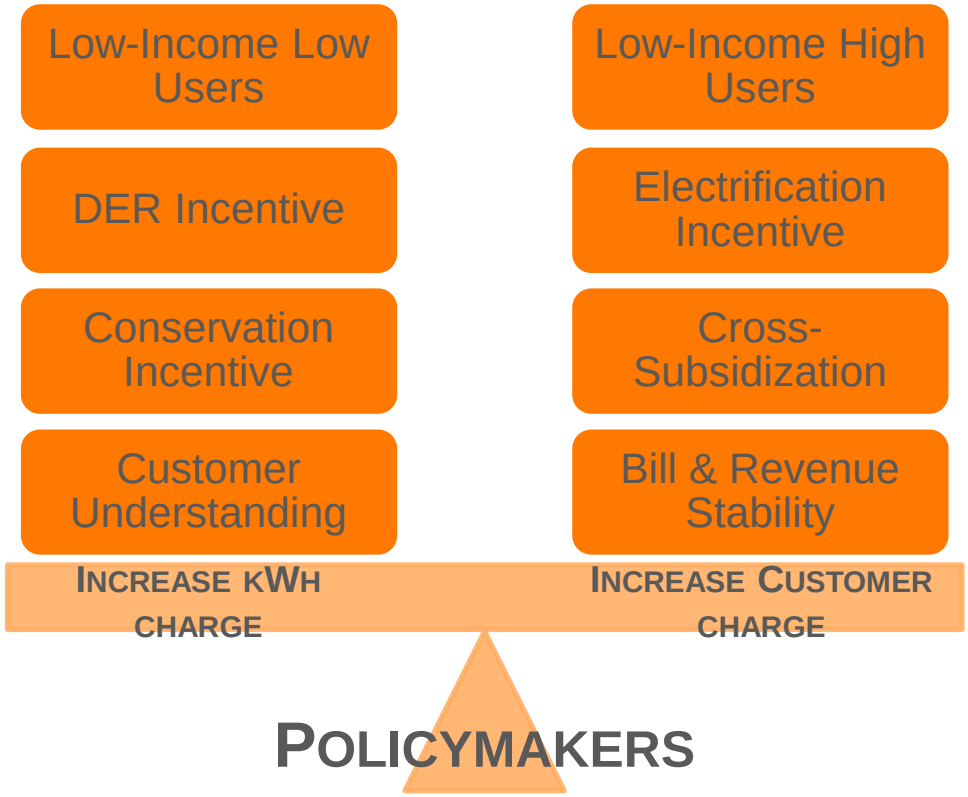


*$25.00/month, $0.072319/kWh †$5.00/month, $0.092961/kWh

Policy Choices for 2021/2022: Trade-Offs

The Customer Charge in 2021/2022

Retail rates are anticipated to rise in 2021/2022. Staff anticipates that the cost-of-service analysis will continue to show fixed costs greater than the current customer charge. Management anticipates a proposal to continue to increase the customer charge.



Rail Tariffs

Section 7

SD 3
rates

Rail Tariffs

Tacoma Rail has Three Active Tariffs.

Switch & demurrage charges, published on Tacoma Rail's website

Freight Tariff TMBL 8807-I

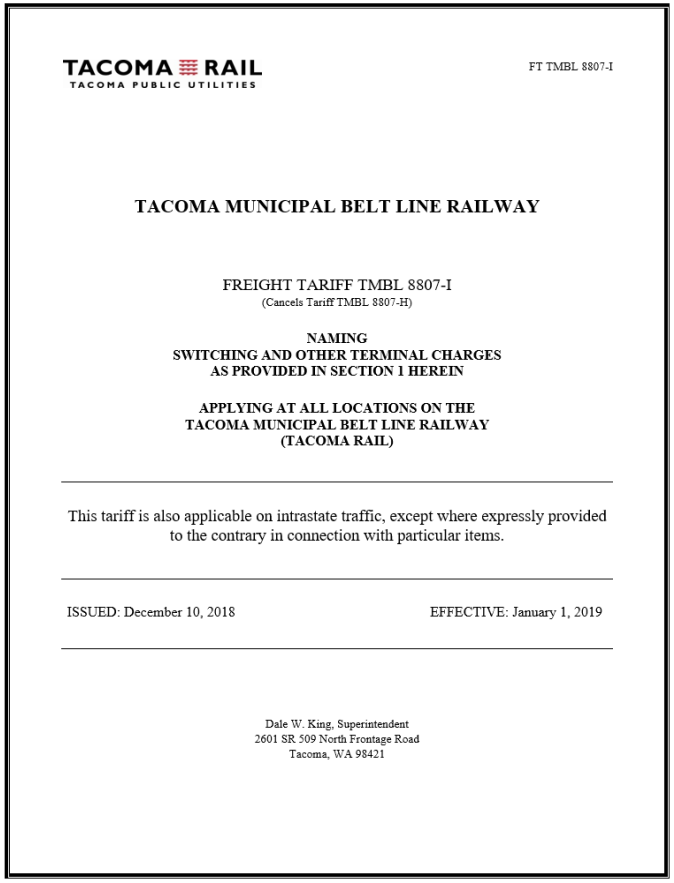
- Defines line haul switch charges
- Intermodal, unit trains, commercial & hazardous
- Defines miscellaneous switch charges

Freight Tariff TRMW 8807-I

- Defines line haul switch charges
- Defines miscellaneous switch charges

Demurrage Tariff TMBL 6004-C

- Defines demurrage charges for both TMBL & TRMW
- Demurrage is the undue detention of a railcar
- $60 per day excluding Saturday, Sunday, and holidays
- Pooled credits and debits



TACOMA RAIL
TACOMA PUBLIC UTILITIES

FT TMBL 8807-I

TACOMA MUNICIPAL BELT LINE RAILWAY

FREIGHT TARIFF TMBL 8807-I
(Cancels Tariff TMBL 8807-H)

**NAMING
SWITCHING AND OTHER TERMINAL CHARGES
AS PROVIDED IN SECTION 1 HEREIN**

**APPLYING AT ALL LOCATIONS ON THE
TACOMA MUNICIPAL BELT LINE RAILWAY
(TACOMA RAIL)**

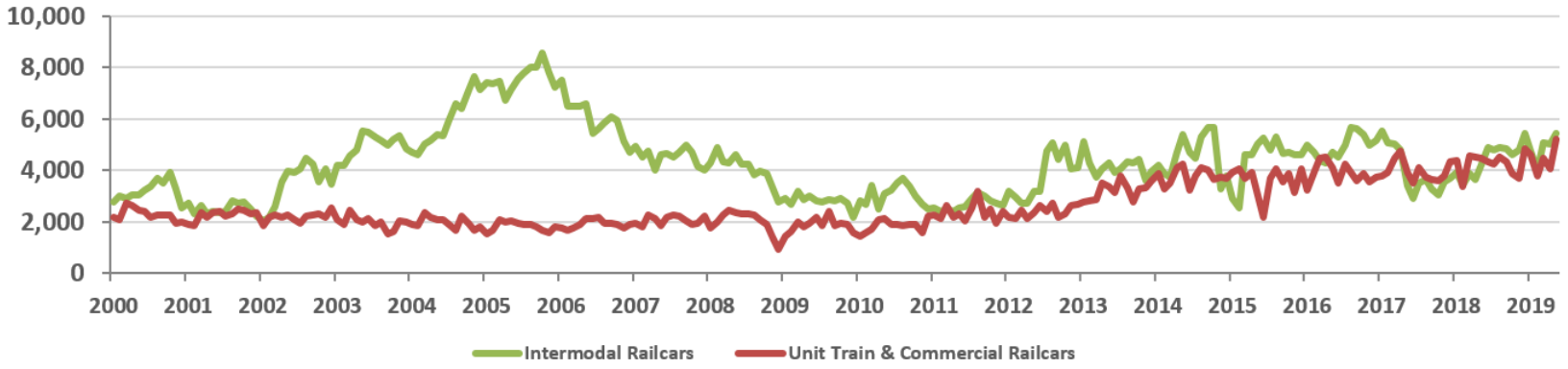
This tariff is also applicable on intrastate traffic, except where expressly provided to the contrary in connection with particular items.

ISSUED: December 10, 2018 EFFECTIVE: January 1, 2019

Dale W. King, Superintendent
2601 SR 509 North Frontage Road
Tacoma, WA 98421

SD 3
rates

Major Line Haul Rate Type Characteristics



Intermodal

- Less labor intensive
- More volume
- Yard management
- Higher track wear
- Service windows
- Fewer destinations
- Do not incur demurrage

Unit Trains

- Less labor intensive
- More volume
- Yard management
- Higher track wear
- Service windows
- Fewer destinations
- Subject to demurrage
- Increased regulatory requirements

Commercial

- Labor intensive
- Lower volume
- Less track utilization
- Lower track wear
- Daily service
- More destinations
- Subject to demurrage

SD 3
rates

Line Haul Rate Types & History

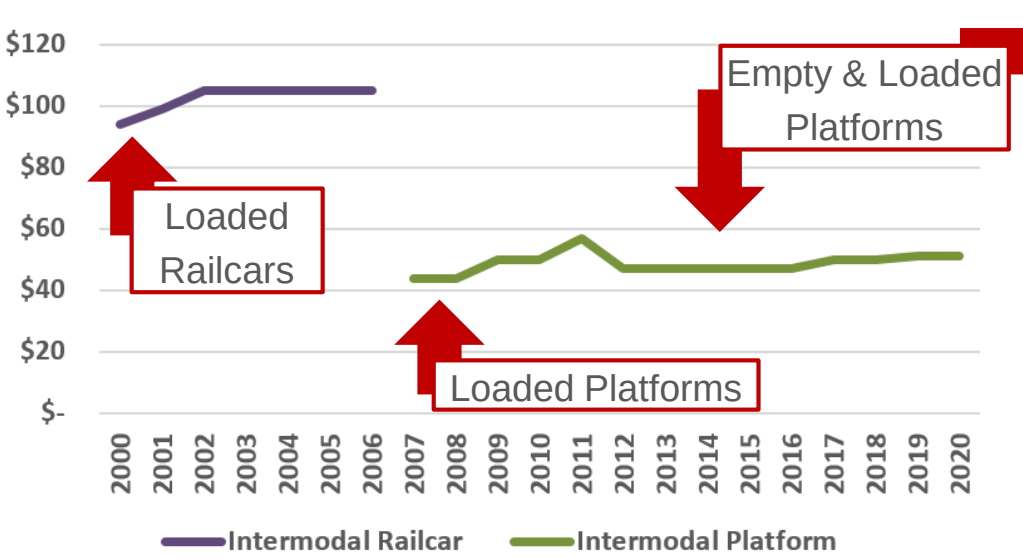
Intermodal railcars are currently charged per loaded or empty platform.

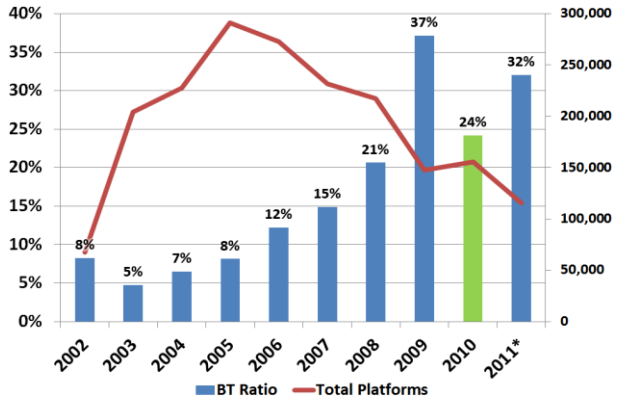
A platform is a location within a railcar, used for loading containers, that is separated by articulations.

Single Well, 1 Platform

Three Well, 3 Platforms

Five Well, 5 Platforms





SD 3
rates

Line Haul Rate Types & History

Unit trains are charged per loaded railcar.

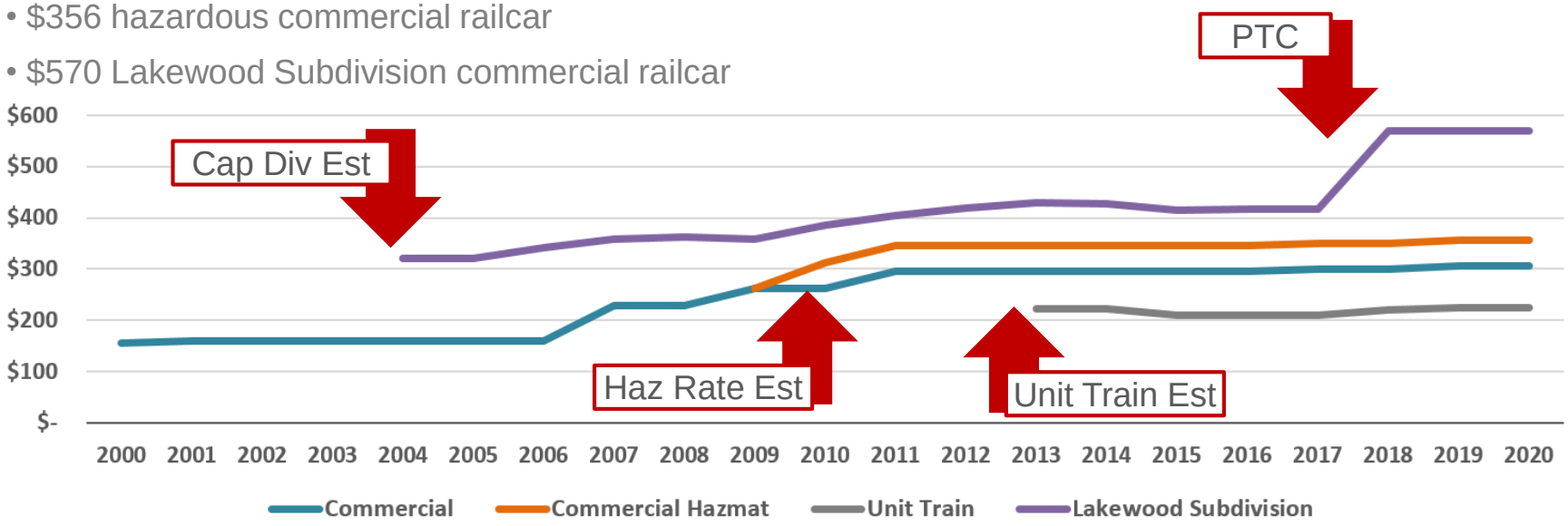
A unit train is defined as a train consisting of more than 90 railcars, other than intermodal, all destined to a single facility.

Two unit train rates:

- $224 for each loaded railcar to a facility which can unload or load the unit train in its entirety
- $300 for each loaded railcar to a facility which cannot unload or load the unit train in its entirety

All other line haul charges fall under the following categories:

- $306 commercial railcar
- $356 hazardous commercial railcar
- $570 Lakewood Subdivision commercial railcar



SD 3
rates

Fuel Surcharge

Freight Tariff TMBL 8807-I ITEM 1220:

All loaded railcars will have a per car fuel surcharge applied in addition to the switch charge in item 1010-series.

NOTE 1 – The fuel surcharge will be reviewed and adjusted quarterly.

NOTE 2 – Adjustments to the fuel surcharge will reflect any rate changes to Tacoma Rail's current fuel price above $2.50 per gallon at the time of review. The Fuel Surcharge Rate will also include 10% to cover taxes and administrative costs.

NOTE 3 – Fuel surcharge collected above or below actual cost of fuel over the previous three months will offset the new fuel surcharge rate appropriately. If the offset applied to the fuel surcharge drops below $0.00, no fuel surcharge will apply.

Historical (posted on the website)

Current: $0.00

Q4 2018: $0.00

Q3 2018: $1.25

Q2 2015: $0.00

Q1 2015: $1.89

Demand-Side Management

Section 8

Demand-Side Management & Environmental Policy Promotion through Pricing

Shore Power Rate

- Concept & Methodology

Demand Response/Interruptible Rate

- Rationale
- Avoided Cost in IRP

Residential Prepay

- Usage patterns
- Mitigation

Time-of-Use

- Post-AMI possibilities
- Timeline

Looking for general feedback, concerns and considerations…

SD 5 environ-mental

Shore Power

The utility is supporting the Port's electrification efforts.

- $2 million grant from DERA and TransAlta to the Port to electrify Husky terminal
- Long-term plan to electrify all major terminals at the Port
- Ideal rate design for the Port makes easy to apportion shore power electricity bill to shipping lines; demand charges are hard to divide

The proposed shore power rate is designed to recover the same costs in a different ways.

- Based on otherwise-applicable rate (Schedule G)
- No subsidy planned. Goal is to recover the same dollar amount that would be charged in the demand charge with a higher per-kWh charge

The rate is designed based on the estimates of the kWh usage of shore power.

- All rates require load forecast estimates.
- Two methods found similar results:
  1) Deterministic model
  2) Stochastic model

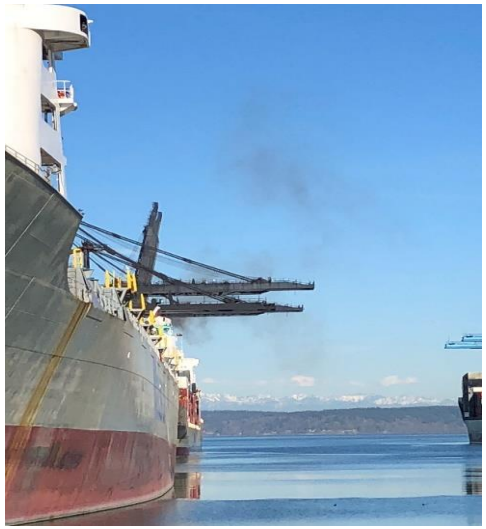
DERA is an EPA program under the Diesel Emissions Reduction Act.

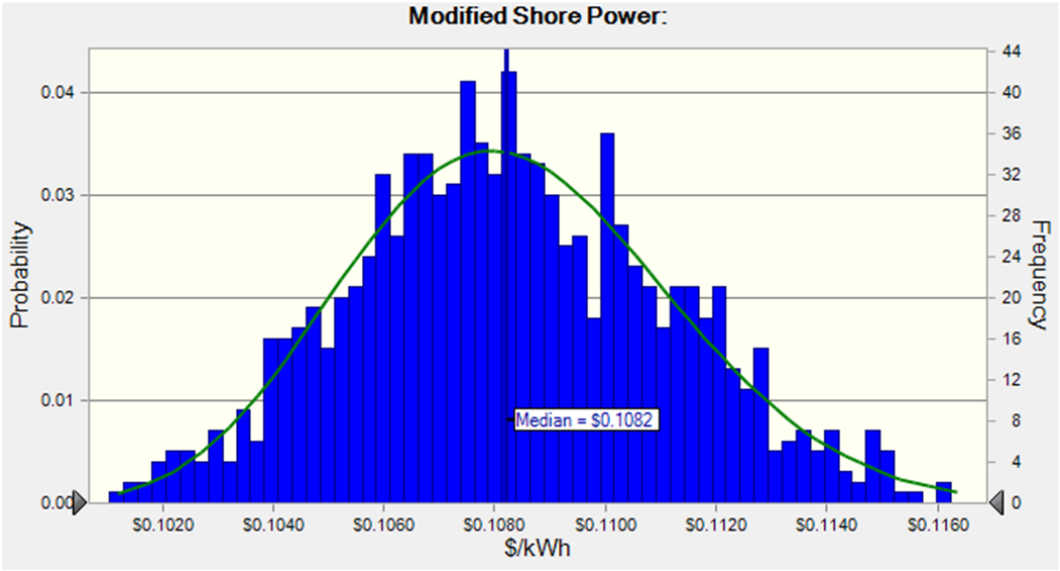
SD 5 environ-mental

Suggested Rate: Monte Carlo Methodology

Recommended Rate: 10.82¢

- Additional retail load & revenue
- Improved air quality
- May require some utility-side investment, which may be recovered with capital recovery charge





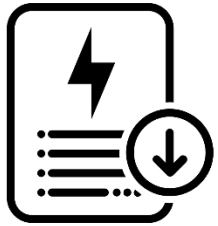
SD 5 environ-mental

Demand Response / Non-Firm Pilot

Rationale

There are two drivers for utilities to pursue demand-response programs:

- One is to create an alternative to acquiring supply-side resources, either for cost or environmental reasons
- The other is to improve customer satisfaction through offering bill control and service-level options



Since demand-side resources can be seen as substitutes for generation resources, current thinking is to let the IRP process define the need and the value of such resources.

Mechanism

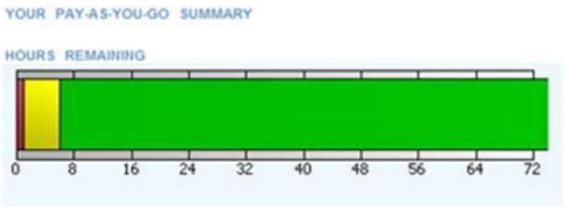
Rate options would be created that offer cost savings opportunities based on IRP findings to help ensure cost-based ratemaking and internal consistency

Defining the program as a pilot program will allow the utility to make adjustments based on learnings while setting appropriate expectations with our customers.

SD 1 equity inclusion

SD 5 environ-mental

Prepay



Meter #	607
Ave KWH Usage/hr	1.54
Cost per KWH	$0.064062
Ave Cost/hr	$0.10
$ Remaining	$93.44
Hours Remaining	947
KWH Remaining	1459
Last Purchase Amount	$25.00
Last Purchase Date	2008-08-27

Advantages

- High customer satisfaction
- Provides consumers with greater control over electricity costs
- Informs consumers in real time of the energy consumption of various appliances and activities
- Research indicates a conservation effect is found from participants
- Reduces “bill shock” by allowing small payments throughout a billing cycle
- Eliminates disconnect/reconnect fees
- Helps customer pay down arrearages
- Can help cash-strapped customers by avoiding or reducing security deposit for service
- Can be a good budgeting tool for room-mates
- Reduces number of customer write-offs, resulting in better cash-flow stability
- Reduced call-center costs

Tacoma Power's PAYGO Experience

- Very **popular** with customers
- **Changed customer behavior**
  ineffective attempts at conservation replaced with effective actions
- **Informed** customers of the cost of running certain appliances, performing certain activities
- Ability to **pay anytime** very helpful to unbanked and shift-working customers
- Ability to designate a certain proportion of **payment to arrears** resulted in some large debt repayments

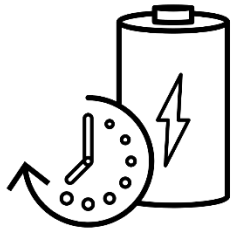
SD 5 environ-mental

Time-of-Use (TOU): Post-AMI

Customers have expressed interest in monitoring electric usage in real time.

During the rate outreach for the 2019/2020 biennium, small business owners in particular expressed support for AMI because they are interested in greater control of their electric bills. This is a natural market segment for TOU rate offerings.

Changes in utility costs should be the driver for pricing changes.



With the advent of the EIM, power markets in the Northwest are expected to change. Currently, there is very little difference in the cost to serve customers at different times of day. As power markets change, staff is very aware of the need to understand any cost bases for time-differentiated rates.

Sufficient data is required to properly design TOU rates.

Utility best-practices suggest that at least one year of data be collected before a major changes such as TOU is implemented. An expedited timeline could be facilitated if AMI meters are installed as a statistically-valid random sample throughout the service territory. Such a deployment, however, is more costly than installing the meters in a geographic pattern. Staff is working with the AMI team to understand the best balance of cost and data acquisition.

Commercial & Industrial Rates

Section 9

Non-Residential Ratemaking Considerations

Schedule G versus Schedules HVG/CP

- G class is broad and diverse. There is no “typical” G customer, yet there is one rate for all of them
- Some G class customers are bigger than some HVG customers. Size may be a better class distinction than voltage for large customer designation

Load Factor

- Customers with a higher load factor (average usage ÷ maximum usage) are less costly to serve and so should arguably pay a lower average rate

New Large Loads

- Tacoma Power is receiving more inquiries regarding large load terms, after a long period of industrial load decline
- A re-evaluation of marginal generation costs is underway

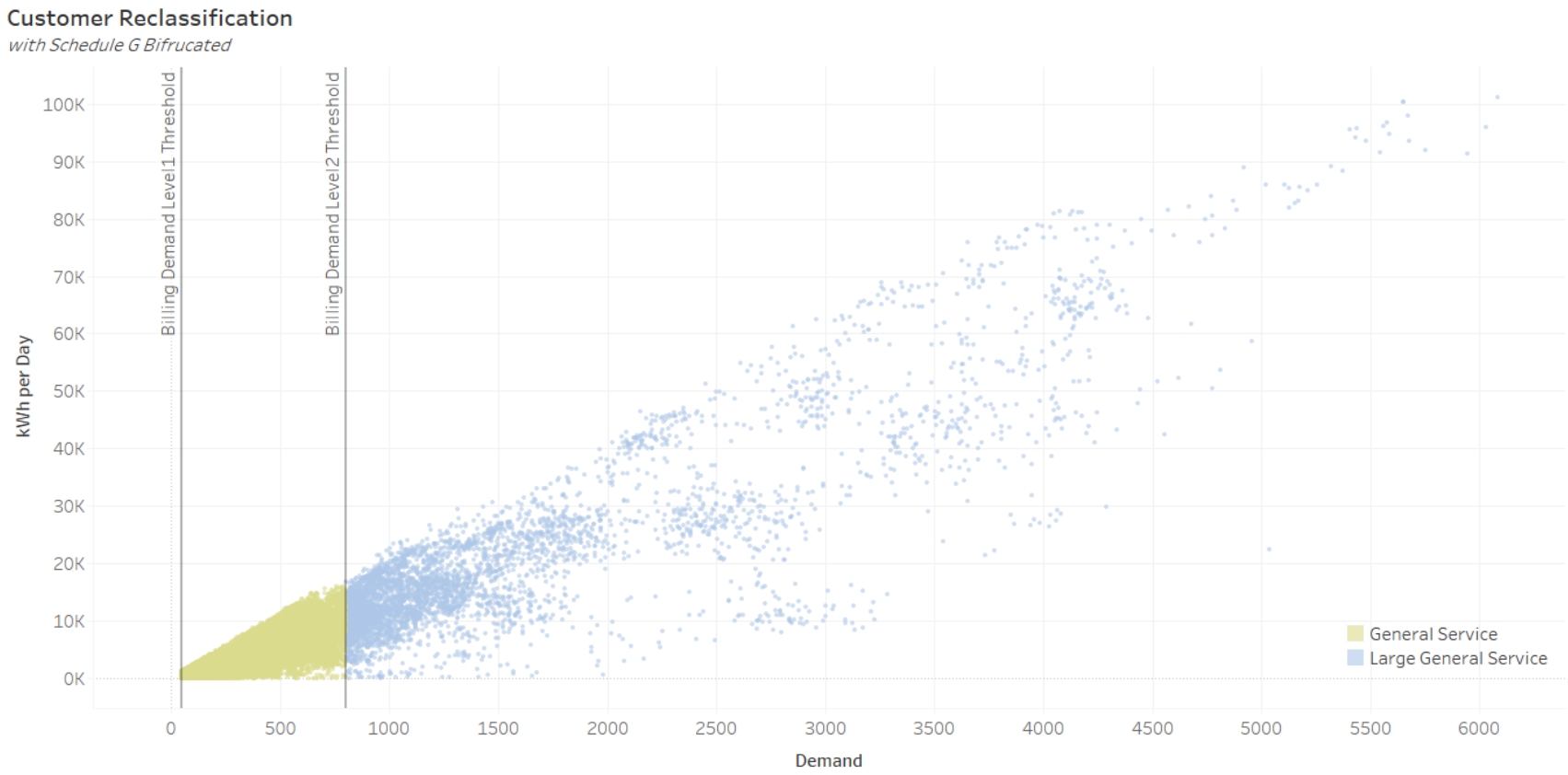
Special Considerations

- McChord Participation Protocol

Looking for general feedback, concerns and considerations…

G Class Load Research Findings

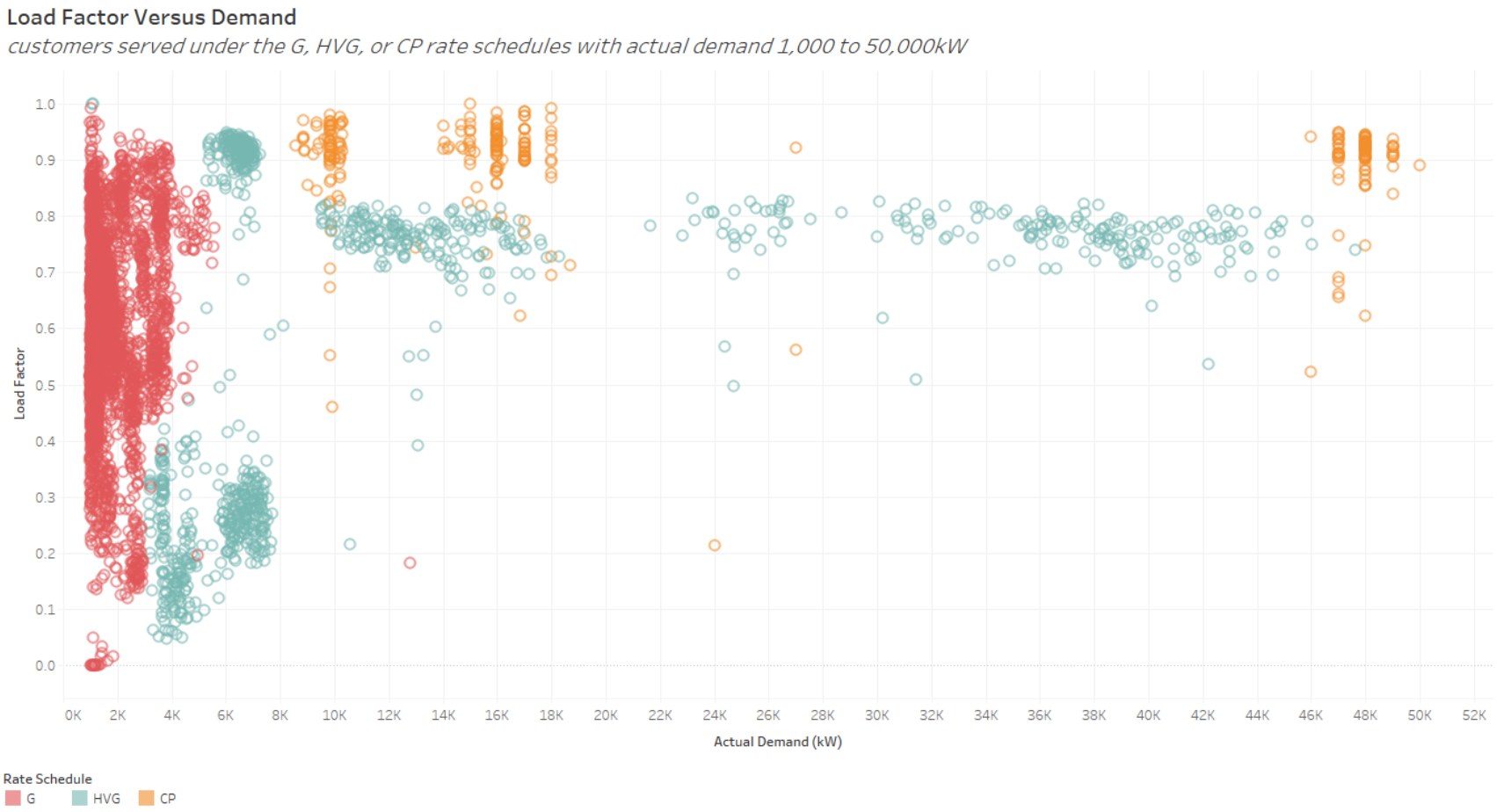
G Class Load Research (Preparation for 2022/23)



Billing Demand Level1 Threshold
50

Billing Demand Level2 Threshold
800

Chart of all customers 1+ MW / load factor



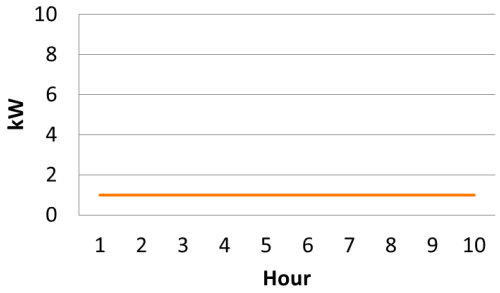
Load Factor Measures the Efficiency of a Load

How do you use 10 kWh?

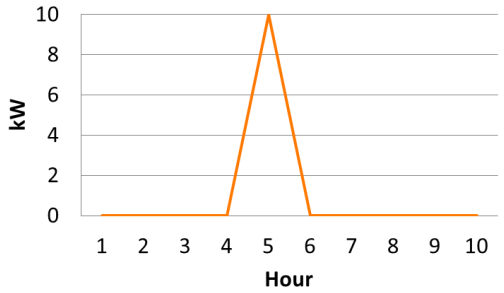
Average Usage compared to ***Usage at Peak Consumption***

1 kW per hour for 10 hours

10 kW for 1 hour



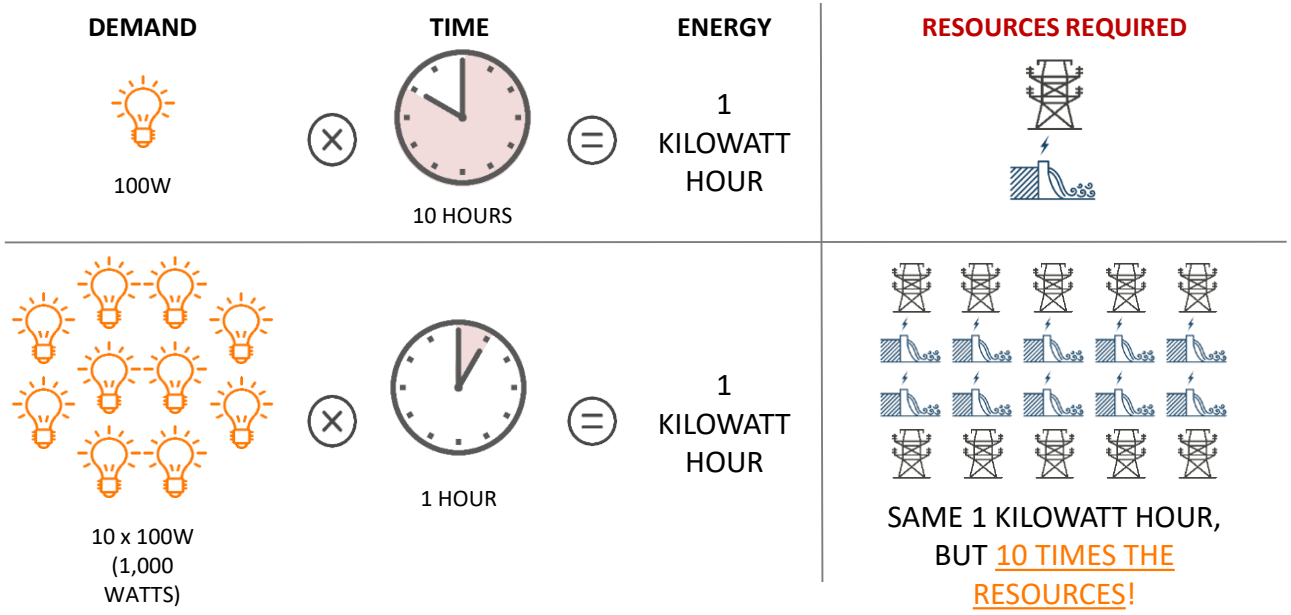
High-load-factor customers use most of their capacity at all time.



Low-load-factor customers have excess capacity for much of the time.

Time-of-Use is Another Important Factor

The energy used by one 100-watt lightbulb lit for ten hours is the same as the energy used by ten 100-watt lightbulbs lit for one hour. However, the demand of ten 100-watt lightbulbs lit for one hour is ten times the demand of one 100-watt lightbulb lit for ten hours.



HVG/CP Class Consolidation

CP Rate is an Artifact of the Power Crisis

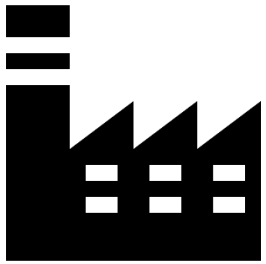
- Contractual requirement that scheduled power demands match actual load, or customer is subject to penalties
- Historically lower than HVG rate for high-load factor customers and very large loads
- Minimum contractual demand of 8 MW
- Confusion regarding eligibility for new and existing customers, especially vis-à-vis NLL rate policy provision for new customers

Options for Existing HVG/CP Customers

- Given the limited number of customer served and that the customers are generally similarly situated, it makes sense to consolidate and standardize the two rate options.
- The alternative is to sunset these rate options (close to new customers) and set up a new set of general service rate schedules that logically flow from one to another.

Next Steps

- Bill impacts being assessed
- Stakeholder/customer conversations planned



New Large Loads

Current NLL policy provision applies only to 8-20 MW customers.

- Economic Development and Power Management both engaging with potential customers that could bring loads greater than 20 MW
- No clear provisions in place; need indicative pricing for customers over 20 MW
- Makes sense to address this potential customer group in conjunction with Industrial and General Service customer class rate revisions

Current NLL policy provision is based on now-outdated IRP.

- 15% Adder based on conservation (marginal resource) in 2016, compared to the 2016 CP rate
- Reflects concern to protect current customers from paying for new generation resources needed to serve new customers that may not remain in business long enough to pay for new resources
- Since 2016, loads have continued to decline and wholesale prices remain soft, such that the utility is increasingly concerned to protect against risk of “too little” load as well as “too much” load

The NLL policy should be more adaptive to changes in utility conditions.

- Initial thinking is to reference the IRP and current portfolio length under various hydro conditions to identify the appropriate pricing for “regular” industrial loads, to be updated each IRP
- A new NLL rate could be a formula using the latest resource cost prices as determined in the IRP
- The utility may still require a negotiated price for extremely large loads over some size to be determined based on expected utility length, transmission constraints, and other factors

McChord Update: History

What is the McChord Participation Protocol?

The McChord Air Force Base contract provides the base a perpetual right to negotiate rate increases.

In response to a 2003 rate case dispute, Tacoma Power agreed upon a framework, called the McChord Participation Protocol, to facilitate these contracted negotiations. The Protocol specifies rate case events and information exchanges intended to facilitate good-faith negotiations.

As part of the Participation Protocol, Tacoma Power provides the military a copy of the Cost-of-Service Analysis. The Base frequently retains a rate consultant to make technical suggestions regarding the model.

What was the issue in the 2019/2020 process?

Tacoma Power uses a “coincident peak” (CP) allocator to allocate certain Demand-classified costs. This is a standard modeling choice. However, there are several versions of CP allocators which are in use.

Historically, Tacoma Power has used a “12-CP” allocator, which allocates relatively more cost to non-seasonal classes as compared to seasonal classes. The military consultant suggested use of a “3-CP” allocator, which has the opposite effect.

To illustrate the dollar values involved, in the last biennium, the residential class is allocated $4.9 million dollars of Demand-classified cost using the 12-CP allocator, and $12.3 million dollars using a 3-CP allocator.

What is Coincident Peak Allocation?

Demand-driven costs are often allocated based on “coincident peak”. At the moment of a system peak, the demand of each class of customers is estimated. The contribution of each customer class to the peak is used to allocate the costs to each class. In a 3-CP allocation, monthly peak for each of the three highest months is used to create the allocator. In a 12-CP allocation, monthly peak for each of the months of the year is used to create the allocator.

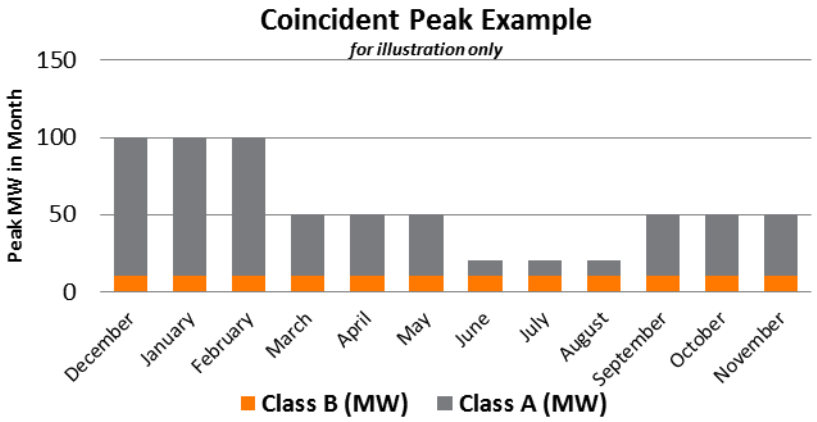
During the peak season (winter), the residential class tends to contribute the most to the peak, because residential customers tend to be the most weather-sensitive (have the most heating load). Therefore, a peak-season (3-CP) allocator allocates more to the residential class.

Effect of Coincident Peak Allocation (Example)

Illustrative Example

Consider the example of a winter-peaking utility with two classes, a weather-sensitive Class A and a flat-load Class B.

The percent contribution to monthly peak of Class A varies from 90% in winter to 50% in summer. Therefore, an average that includes the summer months is lower than an average which only includes winter months.



Estimated Class Load at Time of Monthly Peak	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Class A (MW)	90	90	90	40	40	40	10	10	10	40	40	40
Class B (MW)	10	10	10	10	10	10	10	10	10	10	10	10
Total System (MW)	**100**	**100**	**100**	**50**	**50**	**50**	**20**	**20**	**20**	**50**	**50**	**50**

Class Contribution to Peak as percent	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Class A	90%	90%	90%	80%	80%	80%	50%	50%	50%	80%	80%	80%
Class B	10%	10%	10%	20%	20%	20%	50%	50%	50%	20%	20%	20%
Average for 3 Months (Winter)	**90% Class A, 10% Class B**											
Average for 12 Months	**75% Class A, 25% Class B**											

McChord Update: Results

Tacoma Power maintains that the existing 12-CP allocator best reflects the current cost structure of the utility.

Arguments for **3-CP allocators** are more applicable to **thermal utilities**.

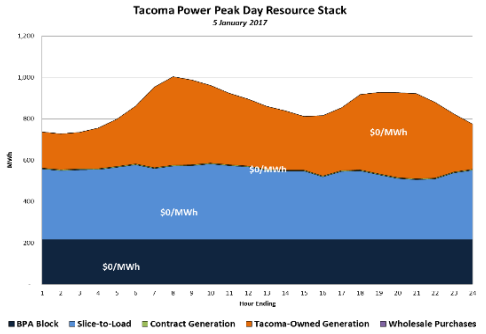
Hydroelectric systems are unique because:

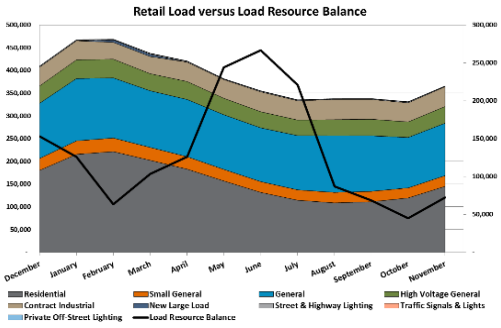
- Plants are built for **energy instead of capacity**
- Time of greatest resource **constraint** is **not necessarily time of highest load**
- **Zero fuel cost** and fish passage costs greatly reduce direct link between generator cost and output

A peak-season allocator for Demand-allocated Production costs is most theoretically appropriate when the system is built to meet the seasonal load peak. Tacoma Power's current **Integrated Resource Plan (IRP) standard specifically notes that hydroelectric resource inadequacy might occur in any month, not just in three Winter months**.

In traditional thermal-based systems, the time of most constrained power supply (lowest load/resource balance) occurs at time of system peak (Winter). In contrast, **Tacoma Power experiences its expected lowest load/resource balance in October (Fall), while experiencing expected retail peak in February**.

Staff requests the Board to support use of the 12-CP allocator until cost studies show otherwise





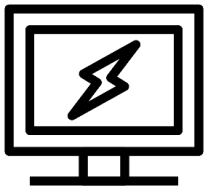
The Public Utility Board was briefed on this issue at the 8 May 2019 Study Session.

Post-AMI Opportunities

Section 10

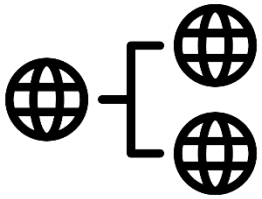
SD 1 equity inclusion | SD 3 rates | SD 6 innovation

Post-AMI Rate Options: Future Consideration



Customers have expressed interest in monitoring usage in real time

As customers are better to able understand how their behavior affects their bill, they may be more likely to respond to behavioral change messaging from the utilities as well as new rate plan options.



Expect more class subdivisions

Staff expects to be able to use AMI data to identify customer groups previously unrecognizable. Cost allocation methods can be better aligned and rate offerings can be tailored for these groups after they are identified.

SD 3 *rates* SD 6 *innovation*

Specific AMI Rate Options for Future Consideration

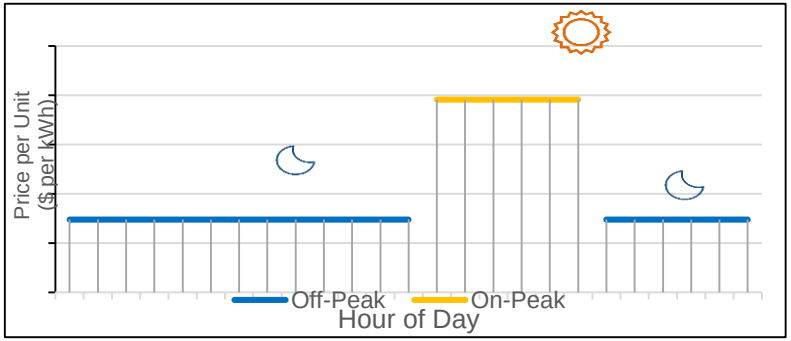
Water changes are expected to be minimal at first, but subdivisions will be likely

Parks & Irrigation may be separated into two rate classes.

Having an irrigation-only class would provide tax benefits to the utility.

Customers may also realize savings from other utilities (such as Environmental Services).

AMI opens up many new possibilities for retail power rate options



TOU expected to be an offering for power post-implementation.