



Wholesale Pricing & Policy Revisions

Purpose: To provide an update on initiative status and substance of approval request.

Jodi Collins, Financial Stewardship Manager

Lyna Vo, Utilities Economist

Public Utility Board Study Session | August 14, 2019

Executive Summary



Wholesale Background

Class Profile

- Number of Customers: 15
- Annual Demand: 2.5 MGD
- Annual Water Sales: \$3 million
- Contracted Demand: 18 MGD

Customers

- Auburn
- Black Diamond
- Bonney Lake
- Coal Creek Water Society
- Cumberland
- Enumclaw
- Fife
- Firgrove
- Fruitland
- King County Water District 111
- Mountain Terrace
- Puyallup
- Rainier View Water Co.
- RSN Enterprises (R Nakata)
- Valley WD

Strategic Initiative 145

Objective

- To increase net revenue in the wholesale market while responsibly managing supply risk

Goals

- Establish new pricing model
- Draft policy changes
- Ensure internal alignment
- Communicate proposal
- Implement revisions

Challenges

- Some customers are not in a position to take water
- Some customers are concerned with adverse changes
- Some customers have competing offers
- Some customers have a different business model

Proposed Revisions

Modernizing Existing Rates

- Balances business objectives of revenue stability and equity with efficient price signal
- Cost-of-service based
- Phases adjustments over 2 years
- Increases fixed rate
- Decreases volumetric rate

Pricing Alternatives

- Market Pricing
- Reverse Capacity Amortization

SDC Update

- Last updated: 2004
- Includes Tacoma's RWSS share
- Decreases overall charges

Fixed Fees Update

- Last updated: 2009
- Attempts to recover under collection of fixed fee revenue
- Provides consistency in billing for services
- Increases fees in alignment with actual expenses

Projected Timeline

PUB Study Session

- August 14
- Informational briefing

GPFC

- August 20
- Request recommendation

PUB Meeting

- September 11 (tentative)
- Request for approval

City Council

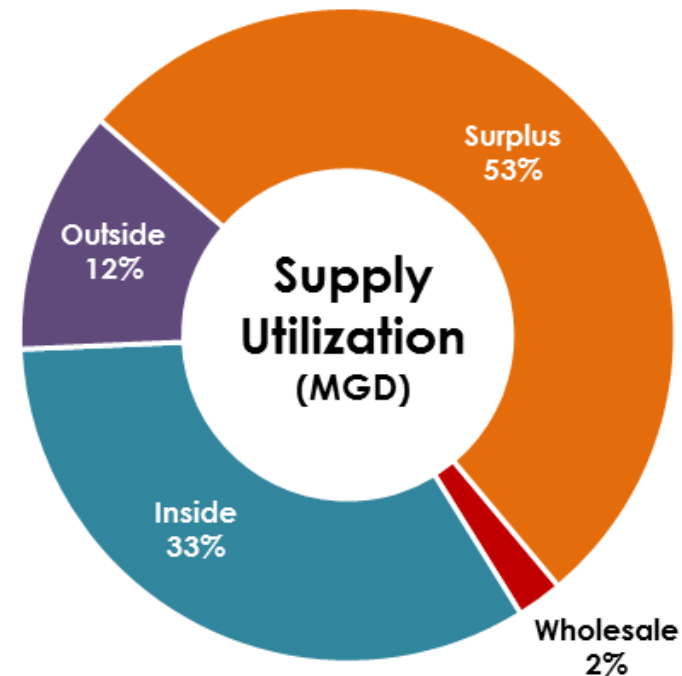
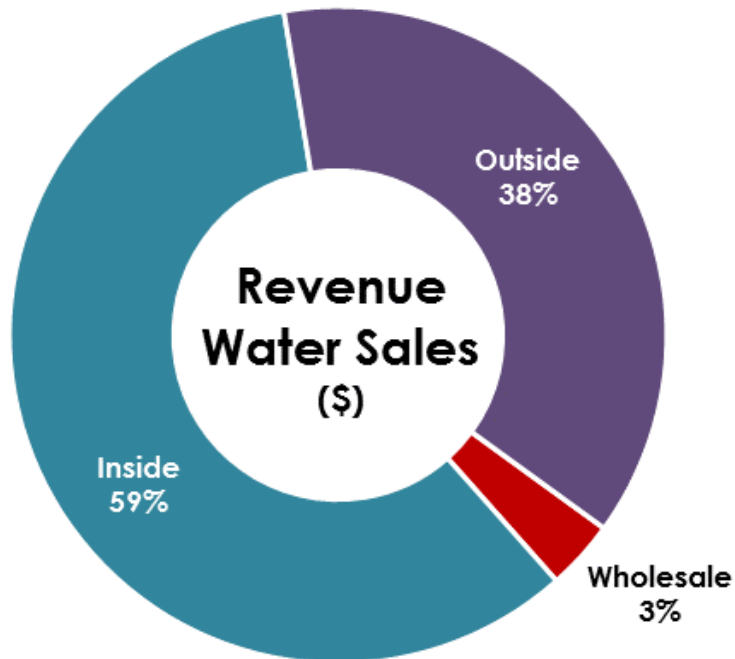
- September 24 (tentative)
- October 1 (tentative)
- Request for approval

Wholesale Customers

- Meeting: As requested
- Analytical and contract support

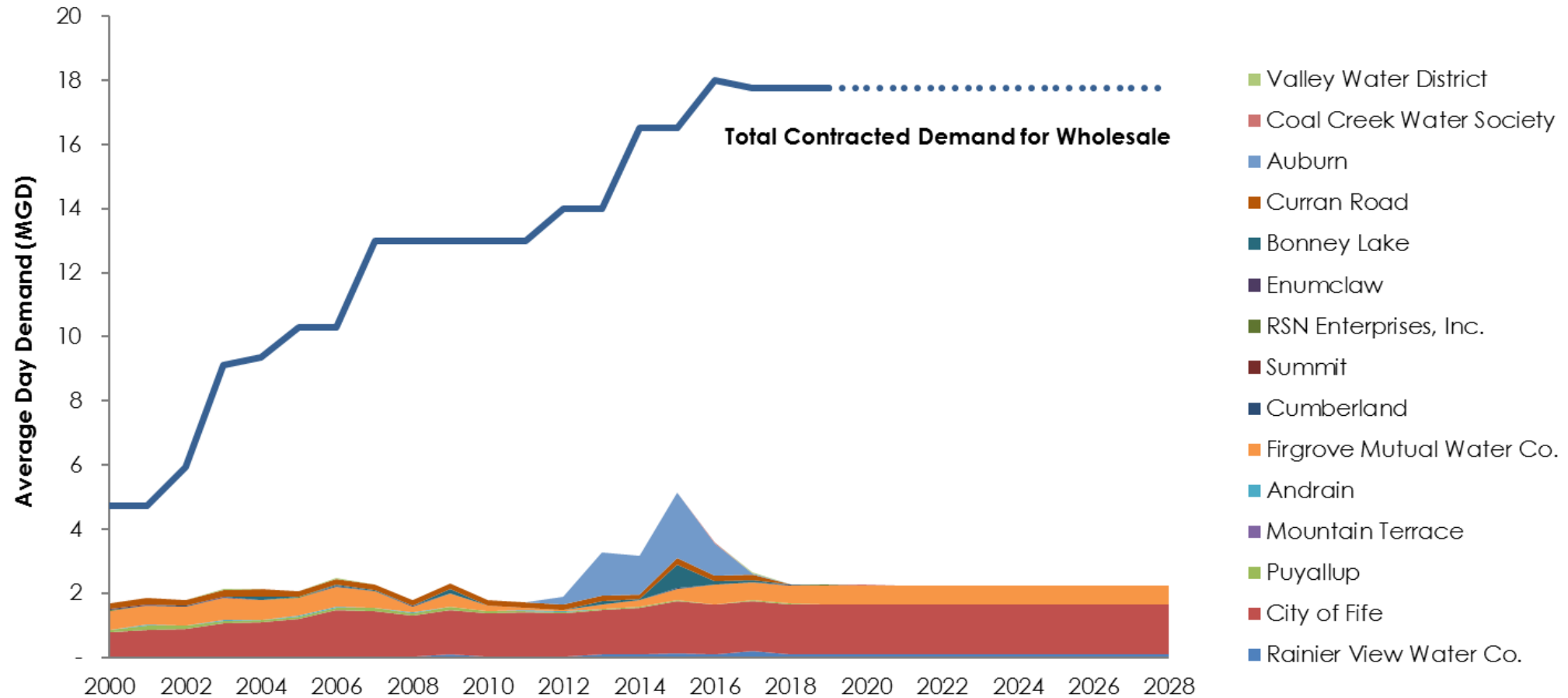
Wholesale: A Small % of Sales & Demand

The percentage of wholesale sales and demand relative to retail inside and outside City of Tacoma customers.



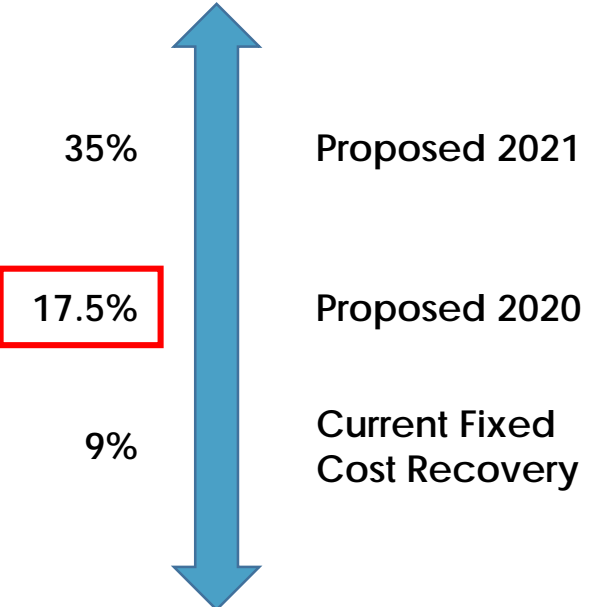
Customers Haven't Grown Into Capacity

Historical and forecasted underutilization of contracted capacity by wholesale customers.



Proposal Represents Balanced Approach

A 35% fixed cost recovery balances our business objectives of revenue stability and equity with efficient price signal.

Rate Design Comparison					
Cost Recovery	Current	2020	2021*		
Variable Cost Recovery	2,414,118	2,197,543	1,774,683		
Fixed Cost Recovery	249,571	466,146	955,598		
Total Wholesale Cost of Service	\$2,663,689	\$2,663,689	\$2,730,281		
Winter Rate	\$1.97	\$1.80	\$1.45		
Summer Rate	\$2.47	\$2.25	\$1.81		
Peaking Rate	\$3.70	\$3.37	\$2.72		
Fixed Cost Recovery	9%	17.5%	35%		

** The cost of service analysis for 2021 will be conducted during the 2021-2022 budget and rate cycle.*

Potential Opportunity

An illustrative example of potential revenue opportunity against the status quo.

10 Year Average Annual Forecast Comparison			
Scenarios	Forecasted Wholesale Revenue	% of Total Expected Revenue	Expected GET Revenue
Status Quo	\$2,000,000	3.2%	\$160,000
Pricing & Policy Revisions	\$5,600,000	6.5%	\$448,000
Potential Opportunity	\$3,600,000	3.3%	\$288,000



Water System Development Charges

Purpose: To refresh system development charges.

What is a system development charge?

System development charge (SDC) is a charge for a water service connection.



One-Time Charge

One-time charge for new water service connection to the water system, service upgrade requiring a larger meter, or existing service for larger meters that exceed usage thresholds



Growth

Based on an equitable share of the cost of entire existing water system and future facilities necessary to accommodate growth



Cost Recovery

Purpose is to recover costs of building capacity from customers that need it

Why is the charge being updated?

Updating our analysis for system capacity, Tacoma's RWSS share of assets, capital projects, and debt.



System Capacity

Supply and treatment, pumping, transmission, and storage changes



RWSS Assets

Previously excluded Tacoma's RWSS assets since it did not exist



Capital Projects

Ten year Capital Improvement Plan (CIP) changes



Debt & Interest

Debt and interest changes

What was the analysis?

Refreshing many components of our cost structure in order to draft a new proposal.



Higher Costs

Growth Related Plant Cost



Lowered Costs

Growth Related Debt

Growth Related CIP (2019 – 2028)

Average Demand

Available System Capacity

What was the result?

Inside City	2004	2019	Difference	% Change
Unit Capacity Cost				
Base	\$ 2.64	\$ 2.09	\$ (0.55)	
Max	\$ 0.28	\$ 2.09	\$ (0.55)	-21%
4-Day Max	\$ 2.36			
Residential				
5/8"	\$ 1,485	\$ 809	\$ (676)	
3/4"	\$ 2,229	\$ 1,213	\$ (1,016)	
1 inch	\$ 3,715	\$ 2,022	\$ (1,693)	-46%
1 1/2 inch	\$ 7,427	\$ 4,043	\$ (3,384)	
2 inch	\$ 11,883	\$ 6,469	\$ (5,414)	
Commercial & Other				
5/8"	\$ 1,984	\$ 1,061	\$ (923)	
3/4"	\$ 2,978	\$ 1,592	\$ (1,386)	
1 inch	\$ 4,963	\$ 2,653	\$ (2,310)	-47%
1 1/2 inch	\$ 9,927	\$ 5,306	\$ (4,621)	
2 inch	\$ 15,881	\$ 8,489	\$ (7,392)	

Outside City	2004	2019	Difference	% Change
Unit Capacity Cost				
Base	\$ 3.17	\$ 2.51	\$ (0.66)	
Max	\$ 0.34	\$ 2.51	\$ (0.66)	-21%
4-Day Max	\$ 2.83			
Residential				
5/8"	\$ 1,782	\$ 970	\$ (812)	
3/4"	\$ 2,674	\$ 1,456	\$ (1,218)	
1 inch	\$ 4,456	\$ 2,426	\$ (2,030)	-46%
1 1/2 inch	\$ 8,912	\$ 4,852	\$ (4,060)	
2 inch	\$ 14,262	\$ 7,763	\$ (6,499)	
Commercial & Other				
5/8"	\$ 2,382	\$ 1,273	\$ (1,109)	
3/4"	\$ 3,574	\$ 1,910	\$ (1,664)	
1 inch	\$ 5,954	\$ 3,183	\$ (2,771)	-47%
1 1/2 inch	\$ 11,911	\$ 6,367	\$ (5,544)	
2 inch	\$ 19,057	\$ 10,187	\$ (8,870)	

What's the difference?

Comparing the existing charge to the proposed charge.

Example (Inside City)	Estimated GPD	Before	After
Average Day Demand	7,500	\$19,800	\$15,675
Peak Day Demand	10,000	\$ 700	\$ 5,225
4-Day Peak Demand	9,000	\$ 3,540	
Total SDC		\$24,040	\$20,900

What is the impact?

Understanding how the proposed charges will affect system development charges.



Combined Peak Costs

Simplify peak costs by combining Peak Day and Four Day Maximum into one unit capacity cost



Reduced Charges

Reduce overall charges for all customers



Proposal

Request approval for new charge effective 2020

Conduct analysis on a 5 year cycle



Water Service Construction Charges

Purpose: To refresh fixed charges related to water service construction.

What is water service construction?

Water service construction is a water service installation on new or existing mains constructed by Tacoma Water:

623



Stubs

8



Meters

458



Meter, Yoke, & Box

109



Services

3



Meter Exchanges

Average number of completed water service installations per year.

What are the charge(s)?

Water service construction charges are typically categorized as: (1) fixed charge or (2) time and materials (T&M).



Fixed Charges

Fixed charges, also commonly referred to as fixed fees, are published rates set in the Tacoma Municipal Code (TMC)

These rates are set prices determined by type of water service

Last updated in 2009



Time and Materials (T&M)

In circumstances where fixed fees are not adequate to cover the actual costs, water service construction charges are based upon actual costs, which are commonly referred to as T&M

In recent years, the number of T&M charges have gone up in lieu of fixed charges

Why are the charges being updated?

Closing the gap between fixed fees and T&M by designing fees that closely mirror total expenses.



Fixed Charges

Current revenue collection *does not* recover total expenses



T&M

Current revenue collection recovers total expenses, but it is a very manual process and time intensive for staff and developers

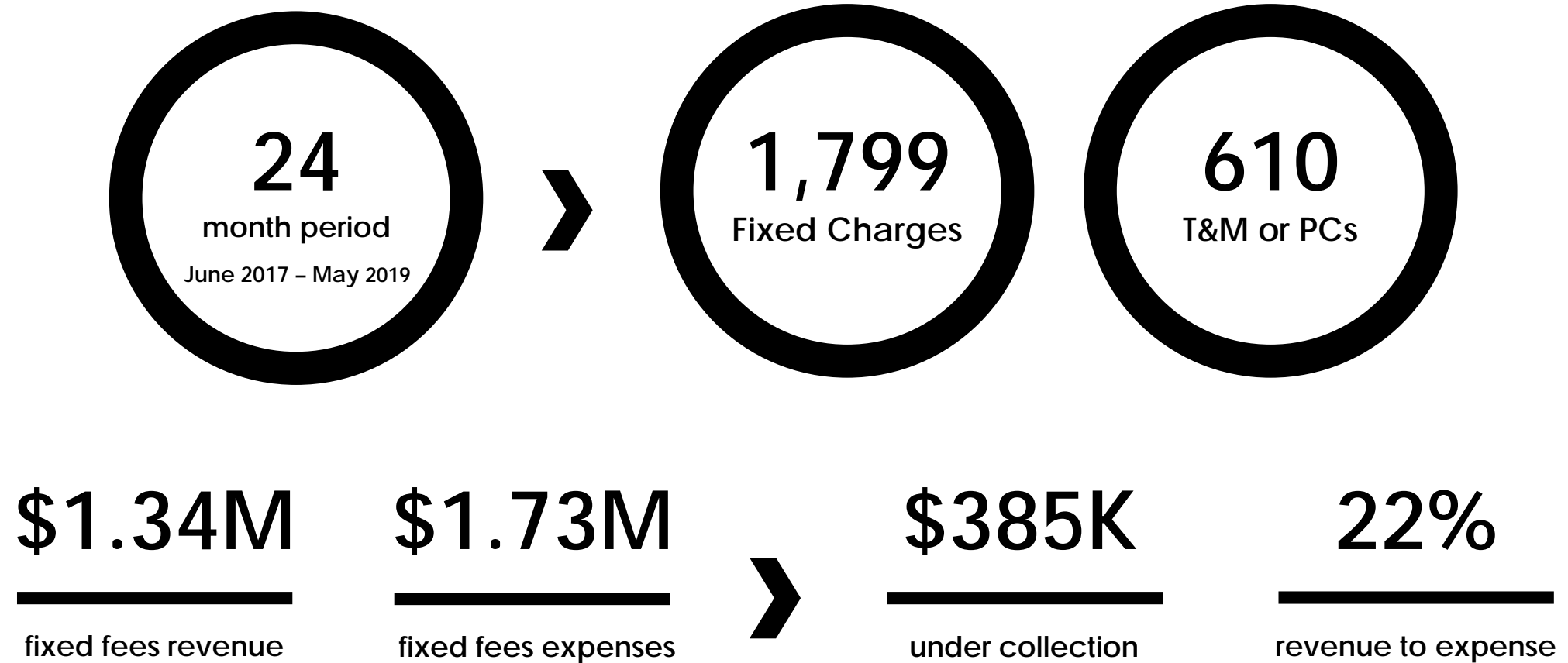


Proposal

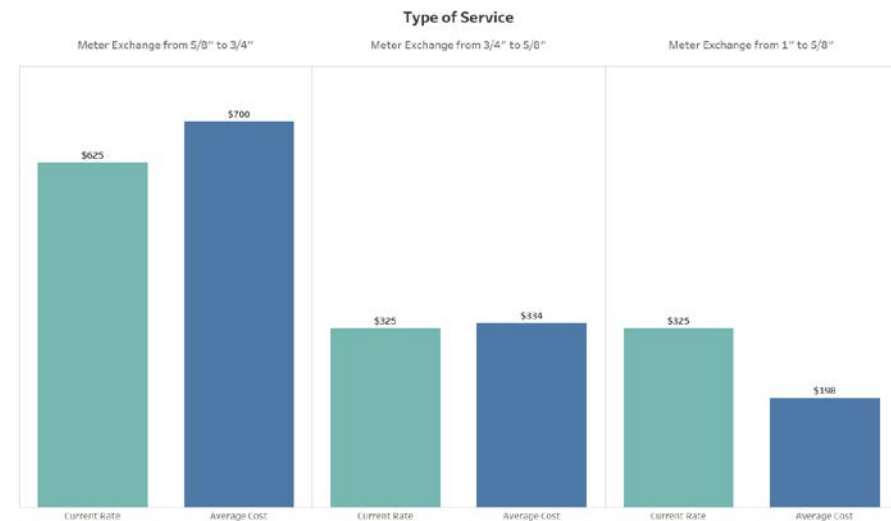
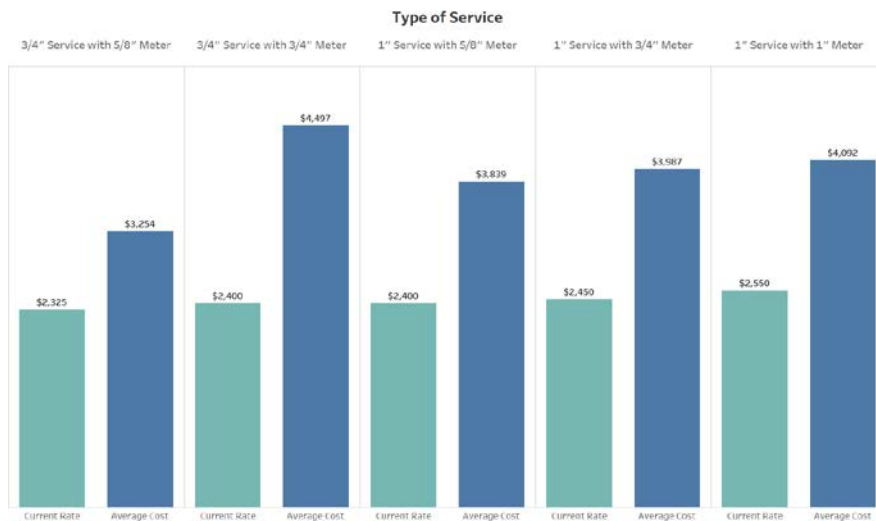
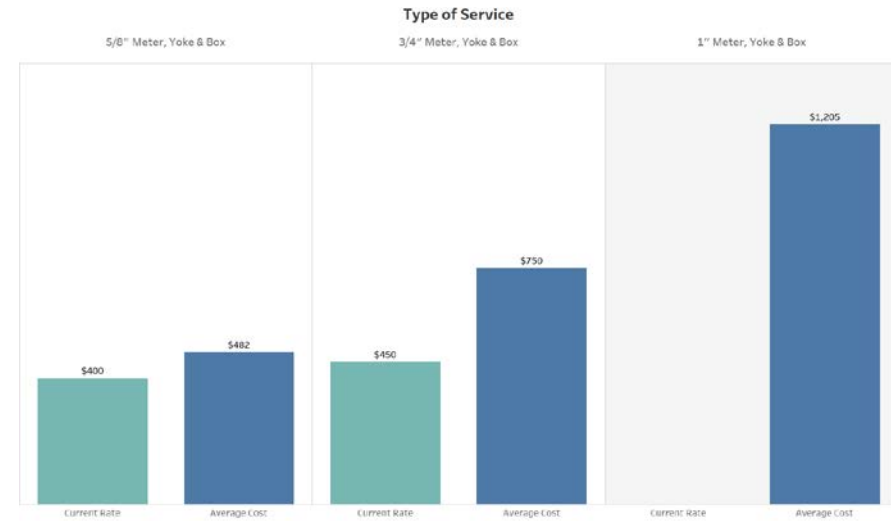
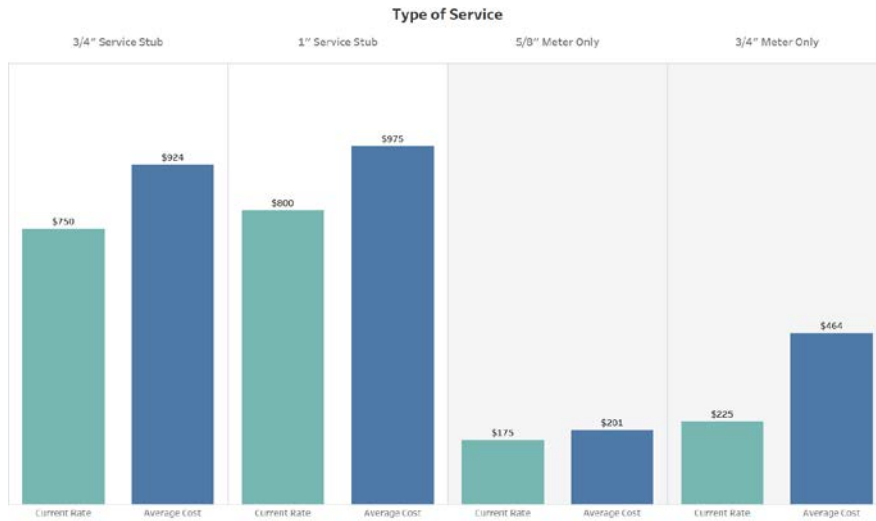
Design fees to adequately recover expenses, reduce the manual process, and improve customer service

What was the analysis?

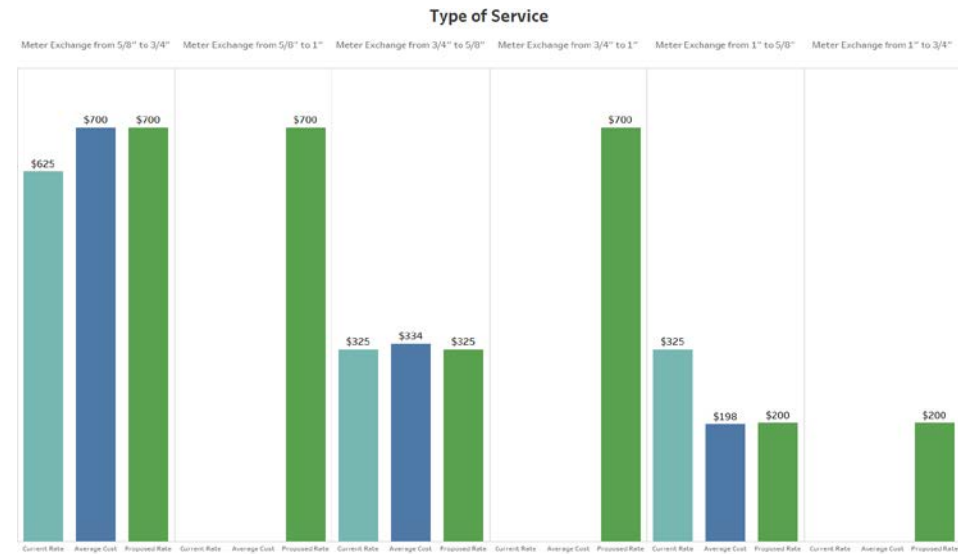
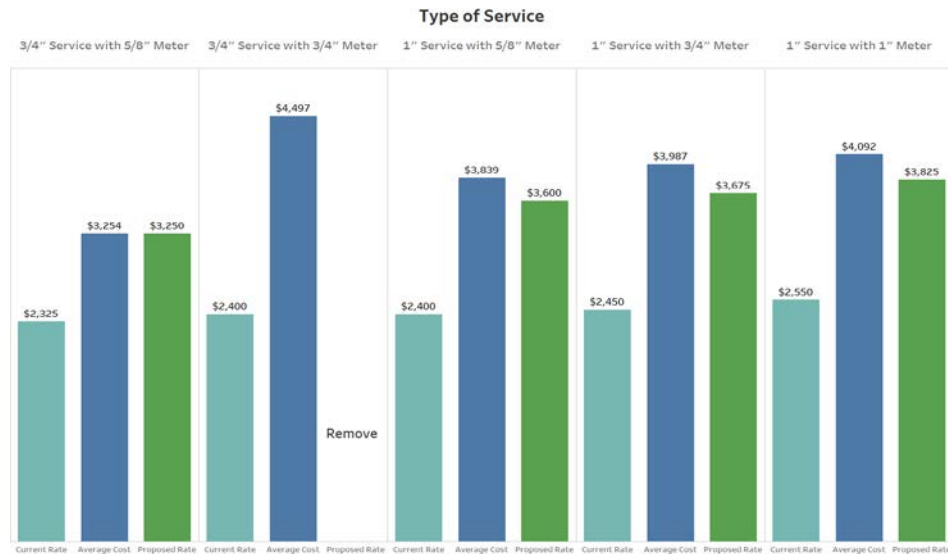
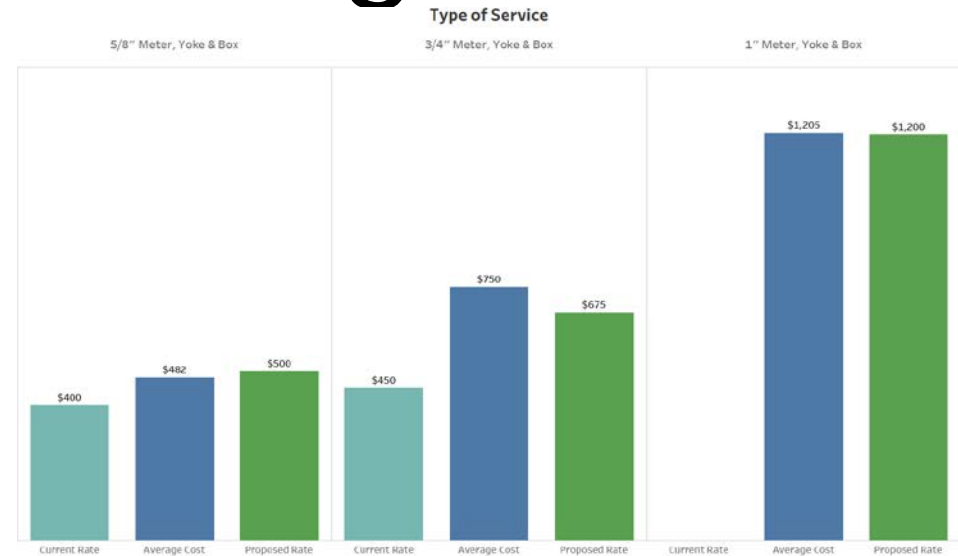
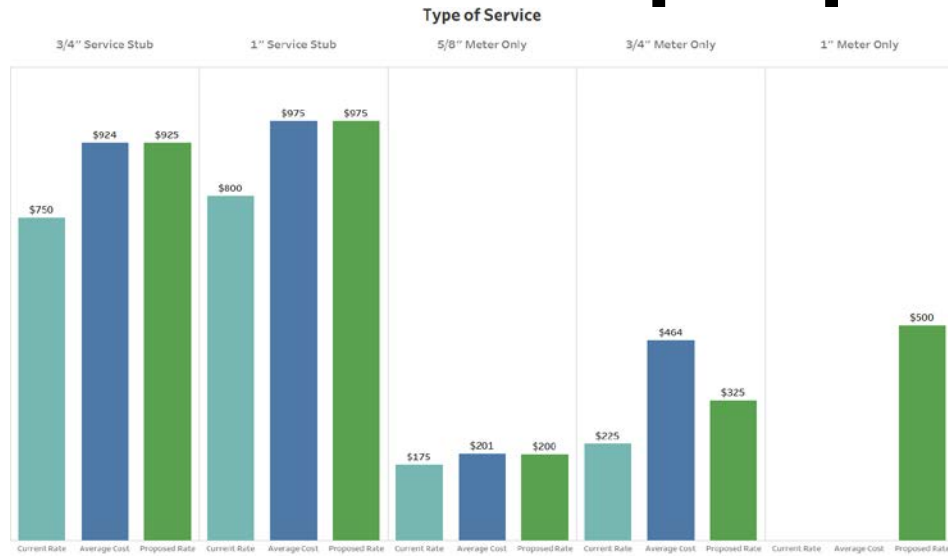
Reviewing all water service installations in order to draft a new proposal.



What were the results?



What are the proposed charges?



What are the proposed charges?

Service	Type	2019	2020	2021	2022	2023	2024
3/4" Service Stub	Stub	750	925	950	980	1,010	1,040
1" Service Stub	Stub	800	975	1,000	1,030	1,070	1,100
5/8" Meter Only	Meter	175	200	210	210	220	230
3/4" Meter Only	Meter	225	350	410	480	560	660
1" Meter Only	Meter		500	520	530	550	560
5/8" Meter, Yoke & Box	MYB	400	475	490	500	520	530
3/4" Meter, Yoke & Box	MYB	450	675	720	780	830	890
1" Meter, Yoke & Box	MYB		1,200	1,240	1,280	1,320	1,360
3/4" Service with 5/8" Meter	Service	2,325	3,250	3,350	3,450	3,550	3,660
3/4" Service with 3/4" Meter	Service	2,400			Remove		
1" Service with 5/8" Meter	Service	2,400	3,600	3,800	4,010	4,230	4,460
1" Service with 3/4" Meter	Service	2,450	3,675	3,900	4,140	4,400	4,670
1" Service with 1" Meter	Service	2,550	3,825	4,040	4,270	4,510	4,760
Meter Exchange from 5/8" to 3/4"	Exchange	625	700	720	740	760	790
Meter Exchange from 5/8" to 1"	Exchange		700	720	740	760	790
Meter Exchange from 3/4" to 5/8"	Exchange	325	325	330	340	360	370
Meter Exchange from 3/4" to 1"	Exchange		700	720	740	760	790
Meter Exchange from 1" to 5/8"	Exchange	325	200	210	210	220	230
Meter Exchange from 1" to 3/4"	Exchange		200	210	210	220	230

What is the impact?

Understanding how the proposed charges will affect future water service installations.



Fixed Charges

Attempt to recover 100% of the cost of water service installations

More predictability with construction charges



T&M

Reduces 39% of smaller T&M water service installations by shifting to fixed charges

Reduces processing time by 1-2 weeks per service



Proposal

Cap increases to no more than 50% of existing rates and implement graduated step increases

Design 5 year schedule indexed to an annual escalation of 3%*

* The annual adjustment of 3% is the average ENR CCI rate over the last 5 years.

How has this been communicated?

Presenting to interested parties and requesting feedback along the way.

2 

wholesale customer
meetings

5 

individual wholesale
meetings

14 

internal tacoma water
meetings

4 

communication
channels

4 

public informational
sessions

2 

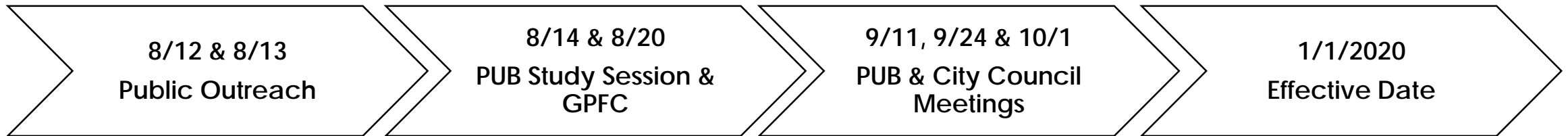
public utility board
study sessions

2 

gpfc meetings

What's next?

Formal approval will be requested of the PUB and City Council with a target implementation date of 01/01/2020.



Contact

Lyna Vo

Marc Powell



Email

lvo@cityoftacoma.org

mpowell@cityoftacoma.org



Phone

253.441.4292

253.502.8752



TACOMA POWER

TACOMA PUBLIC UTILITIES

LONG-RANGE FINANCIAL PLAN

Rates, Planning & Analysis

August 14, 2019



City of Tacoma

WASHINGTON

The City of Tacoma, Washington (the "City"), Light Division, doing business as Tacoma Power ("Tacoma Power"), is a municipal corporation under the Constitution and laws of the State of Washington. Tacoma Power of the City's Department of Public Utilities operates the City's electrical generation, transmission and distribution facilities and its telecommunication system.

A Note Of Caution:

The information included in this Long-Range Financial Plan is limited in scope and does not include all of the information relevant to bonds or notes issued by Tacoma Power, or all of the financial information relevant to Tacoma Power. This Long-Range Financial Plan is provided for information and convenience only, is not a guarantee of results, and is dated and speaks only as of its date. Tacoma Power does not undertake to update, and expressly disclaims any duty to update, this document. Unaudited financial information used in this document, such as for fiscal year 2018, is preliminary and subject to change. This Long-Range Financial Plan makes forward-looking statements by using words such as "project," "forecast," "intent," "may," "will," "should," "expects," "believes," "anticipates," "estimates," or others. Any forward-looking statement or projection, however, is subject to uncertainties and inevitably some assumptions regarding future trends will not be realized and unanticipated events and circumstances may occur. A variety of risks and uncertainties affecting Tacoma Power's business and financial results -- such as general economic and business conditions and various other factors that are beyond our control -- could cause actual results to differ materially from the projected results stated in the forward-looking statements in this Long-Range Financial Plan.

Further, this Long-Range Financial Plan is not an offer to sell or a solicitation of an offer to buy Tacoma Power bonds or notes. Any investment decisions regarding Tacoma Power bonds or notes should only be made after a careful review of the complete official statement for those particular bonds or notes. Copies of the official statements related to Tacoma Power's bonds are available at <http://bit.ly/tpwr-investorinfo>, or www.emma.msrb.org. The information contained in such official statements is dated as of specific dates, speaks only as of those dates, may be out of date due to the passage of time or subsequent events, and may include forward-looking statements. Tacoma Power is not undertaking to update, and expressly disclaims any duty to update, the information.



Welcome!

We wrote this document to help you understand many of the key issues affecting the power industry, power utilities, and the future financial performance of Tacoma Power. The purpose of this Long-Range Financial Plan (LRFP) is to help serve as a guide for maintaining low rates while also preserving the utility's financial strength and flexibility. Our goal is to make financial decisions that allow us to provide safe, reliable, and environmentally responsible electric and telecommunications services now and into the future. Making short-sighted decisions, without considering the long-term implications, can put this goal at risk.

This LRFP is available for our customers, employees, the Public Utility Board, City Council, members of the public, and any stakeholder who is interested in learning a little more about us.

This Long-Range Financial Plan

The LRFP is one element of our annual strategic planning process. It identifies and discusses financial risks and opportunities facing the utility in the next ten years. Once we identify the risks and opportunities, we create financial scenarios and a “base case” scenario of the most likely financial outcome. By creating a base case and potential financial scenarios, we can outline strategies to manage future challenges with the objective of providing the most value for the utility's ratepayers at the lowest possible cost.

The strategic planning process is also guided by our biennial budget, rate design, and specific financial policies and goals that are part of Tacoma Power's Electric Rate and Financial Policy discussed further in this document.



Please Keep in Mind

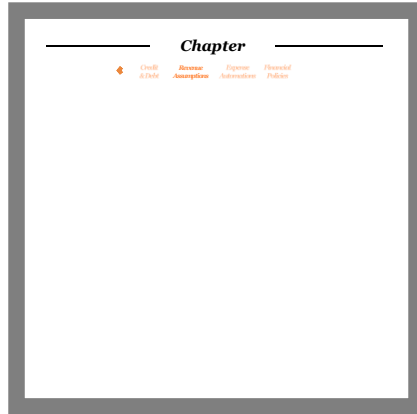
An important factor to keep in mind is this document is for informational purposes only, and is not a guarantee of results. Tacoma Power's financial position and the information (including key assumptions) used throughout the document changes (improves or degrades) every day. Our current forecast for this document goes through 2029, but that does not mean that the projections for each of the years preceding will not have changed by the time you read through it.

For this reason, the LRFP is dynamic and continually changing. We expect to update this LRFP annually and make it available on our website:

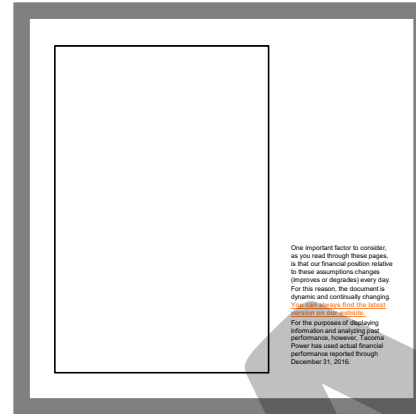
<http://bit.ly/tpwr-lrfp>.

For the purposes of displaying information and analyzing past performance, Tacoma Power has used unaudited financial performance reported through June 30, 2019.

Bread Crumb Trail



Glossary Links



How to Use This Document

Use these navigational tools throughout the document to improve your overall experience

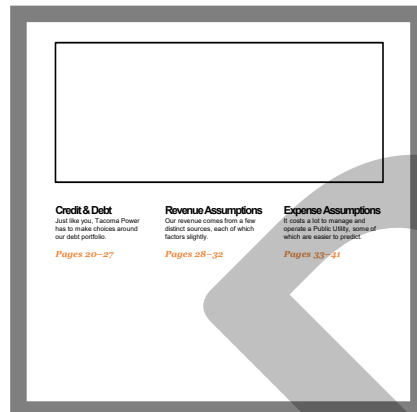
Bread Crumb Trail

Prevents you from getting lost in the document. Click on the chapter headings to jump forward or back, or use the back arrow to return to the top

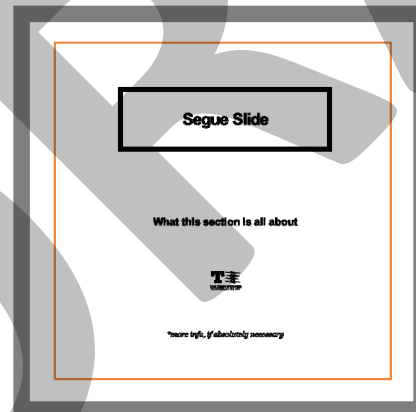
Glossary Links

Gives you quick access to the glossary to help clarify any unfamiliar terms

Jump Markers



Segue Slides



Jump Markers

Hyperlinks that let you jump directly to sections of interest

Segue Slides

Bold chapter dividers that make it easy to navigate through the document to find what you need

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Rate Projections
Financial policies
Reserves
Credit ratings
Historical actions
Opportunities
Risks

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1. The Highlights

The "executive" version, for people who only need the highlights

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Key differences from 2018 Plan

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3. For Beginners

Start here if you're new to long-range financial plans

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4. Background

Learn all about the policies, projected revenues and expenses that went into this plan

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5. The Base Case

The base model against which we analyzed and compared every scenario in the Long-Range Financial Plan

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6. Risk Factors

The various internal and external factors that impact Tacoma Power

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8. Funding the Plan

Picking a financial plan to fund the most likely scenario – the base case

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A little more detail on what is in the scenarios included in the plan

[Pages 103-112](#)

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Section 1 The Highlights

An executive summary of
the 2019 Long-Range Financial Plan



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Overview

On the [first page](#), you learned that this document more simply describes a number of complicated subjects. We hope to make them easier to understand and demonstrate their unique relationship to one another. Before we get into any of the details, here is a quick overview of how our business operates.

*Our **mission** is to provide safe, reliable, and environmentally responsible electric and telecommunications services now and into the future.*

To fulfill this mission, we sell electric and telecommunications services to customers in the City of Tacoma and Pierce County. Selling these services provides us with revenue. As a cost-of-service utility, we charge our customers based on what it costs to provide the services they need. We generally match our revenues to our expenses when we set budgets. When we collect more revenue in a given year, we use that surplus to reduce the amount collected from customers in future years. We also take proactive steps to account for the risks inherent in our business and develop strategies to plan for the future. This LRFP helps us with that.

Many customers don't know that whenever they turn on a light or plug in an appliance, a generator connected to the electric grid must increase its output to provide the needed electricity. This happens in real-time. Providing these services is a 24-hour a day and 365-day a year business. We don't want our customer's lights to ever go out and if they do, we do everything we can to get the lights back on quickly.

The amount of revenue the utility will make each year is uncertain. We can't predict how often you will turn your lights

on and off or know exactly how much electricity you will use. [Section 4](#) has more detail about how we try to plan for this uncertainty in revenue.

Our customer's power is created by turbines that are located at [hydroelectric](#) facilities that we operate and maintain and by power we purchase through contracts with other providers. Almost all of Tacoma's power is created by passing water through a generator, often co-located with a dam that stores water. The source of the stored water is both rainfall and snowmelt, which drain into the reservoirs or lakes behind the dams. Trying to predict how often and when it will rain adds a layer of complexity to our business. See [Section 6](#) for more detail on how we plan for this uncertainty.

In providing power services, the utility incurs a number of expenses, including the people that work here and the trucks and tools used to maintain the electric system. The electric utility business is [capital](#) intensive. This means we have large assets that are expensive to construct, operate, and maintain. Tacoma Power has over \$1 billion in assets and some have been around for a long time. To fund repairs and replacement, we use a combination of cash and [bonds](#). Issuing bonds for capital projects allows us to spread payments over the life of assets, instead of paying in full, up-front. This more equitably spreads the cost of long-lived assets between current and future customers. To receive the best interest rates when we issue bonds, we must maintain a certain level of cash and the ability to generate sufficient revenue to cover our expenses. In this LRFP, you will find more about how we manage all of these details and how they impact the rates our customers pay.

Financial Metrics

What are financial metrics?

The word "metrics" refers to measurement. Financial metrics are one way to measure how well we are managing our resources. Each financial metric conveys a message about one aspect of the utility from a financial perspective. Metrics can be used to compare performance across utilities, identify strengths or weaknesses, and set targets for financial strength. Tacoma Power primarily looks at the three metrics below when projecting future rate increases and has targets, listed in the chart to the right, for maintaining our financial strength. You can find more detail about them in [Section 4](#).

Tacoma Power Metrics	2014	2015	2016	2017	2018
<i>Days of Liquidity</i> (Target: >180 Days)	335	215	236	210	206
<i>Debt Service Coverage Ratio</i> (Target: >2.0x)	1.90x	2.01x	2.31x	2.82x	3.06x
<i>Debt Ratio</i> (Target: <50%)	37%	29%	26%	29%	28%

Days of Liquidity

Liquidity is another way to describe the amount of operating cash we have available. We measure this by the number of days cash we have available to operate the utility. This helps determine Tacoma Power's ability to cover necessary expenses.

Debt Service Coverage Ratio

The debt service coverage ratio measures how many times we can pay the annual interest and principal payments on our debt, or bonds, with our available cash flow for a given year. We target having at least twice as much cash flow needed to pay our annual debt obligations each year.

Debt Ratio

The debt ratio is the proportion of our assets that are financed by debt, or bonds. The lower the percentage, the lower the amount of [debt service](#) payments we are required to make. This provides us with financial flexibility.

Why are Financial Metrics Important?

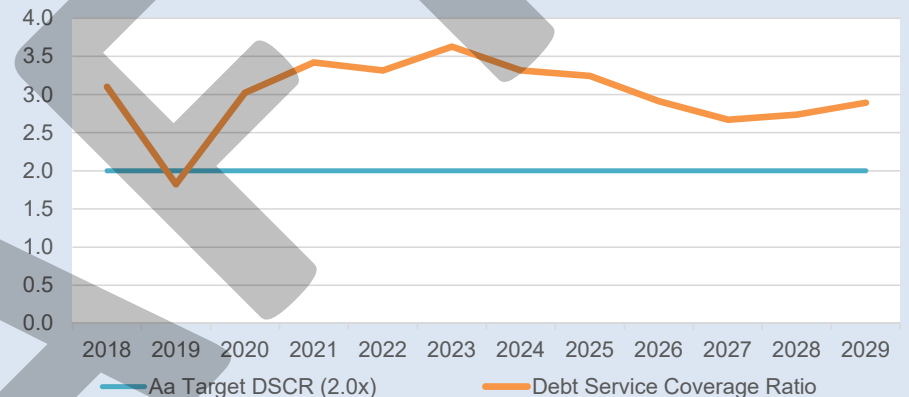
Financial metrics, such as our [debt service coverage ratio](#) and [days liquidity ratio](#) are important because they indicate our ability to meet our financial obligations as a business. Financial metrics are comparable across other utilities and are used by [credit rating agencies](#) as part of their rating process when they evaluate us. Some rating agencies have more stringent requirements than others and we adjust our calculations to be better than the minimum levels. We target metrics that help keep us in the AA rating category.

We use these ratings when we issue bonds to help pay for capital improvements. Investors buy Tacoma Power bonds and we pay those bonds back over a period of up to 30 years. (See our existing debt repayment profile on [page 54](#).) To get the best interest rates possible when we issue bonds, we must maintain healthy financial metrics. Our credit rating impacts the interest rates paid on borrowed funds. As a result, the better our [credit rating](#), the less we will likely pay when we issue debt. Being financially healthy, like we currently are, benefits customers and provides flexibility to address unexpected challenges.

The charts to the right illustrate a possible projection for our future debt service coverage levels and liquidity levels. These are subject to various assumptions, including projections for rate increases, expenses, and revenues which are explained further in [Section 4](#).

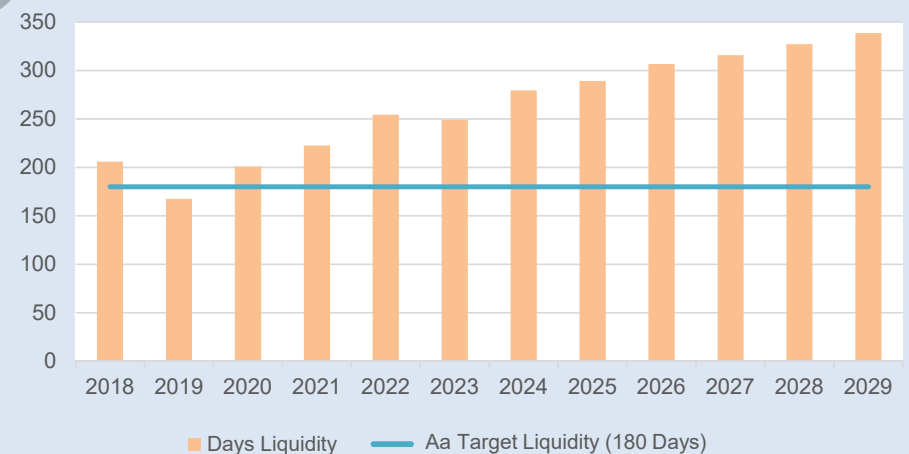
Debt Service Coverage Ratio

Target = 2.0x



Liquidity Projections

Target = 180 Days

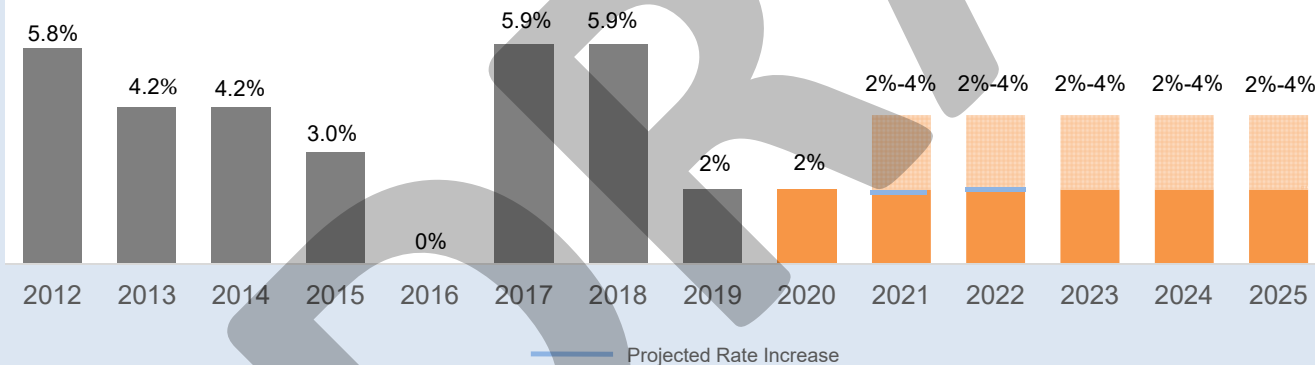


Past Actual & Projected Future Rate Increases

Before explaining anything else, we've put our current projections of rate increases for the next six years here, right up front. This document explains how we came up with these projections.

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

Light shading in future years represents uncertainty associated with revenues and expenses, mostly due to potential for adverse* or critical water conditions, changes to sales projections, and future debt service.



The rate path shown here represents our best estimate at this time of how the future will unfold. We call this our base case. The further out in time we forecast costs and revenues, the more uncertainty there is surrounding these estimates. Therefore, we have modeled some scenarios to address potential future conditions that may impact us. The results of several scenarios can be found later in the document, in [Section 7](#).

These projections, as well as other parts of this plan, will change over time. Actual rate increases may fall outside of this range and are dependent several factors such as market conditions, financial performance, and the actions Tacoma Power will take in future years.

* If you are not familiar with any of these terms, there is a [Glossary](#) in the back that defines some of these key concepts

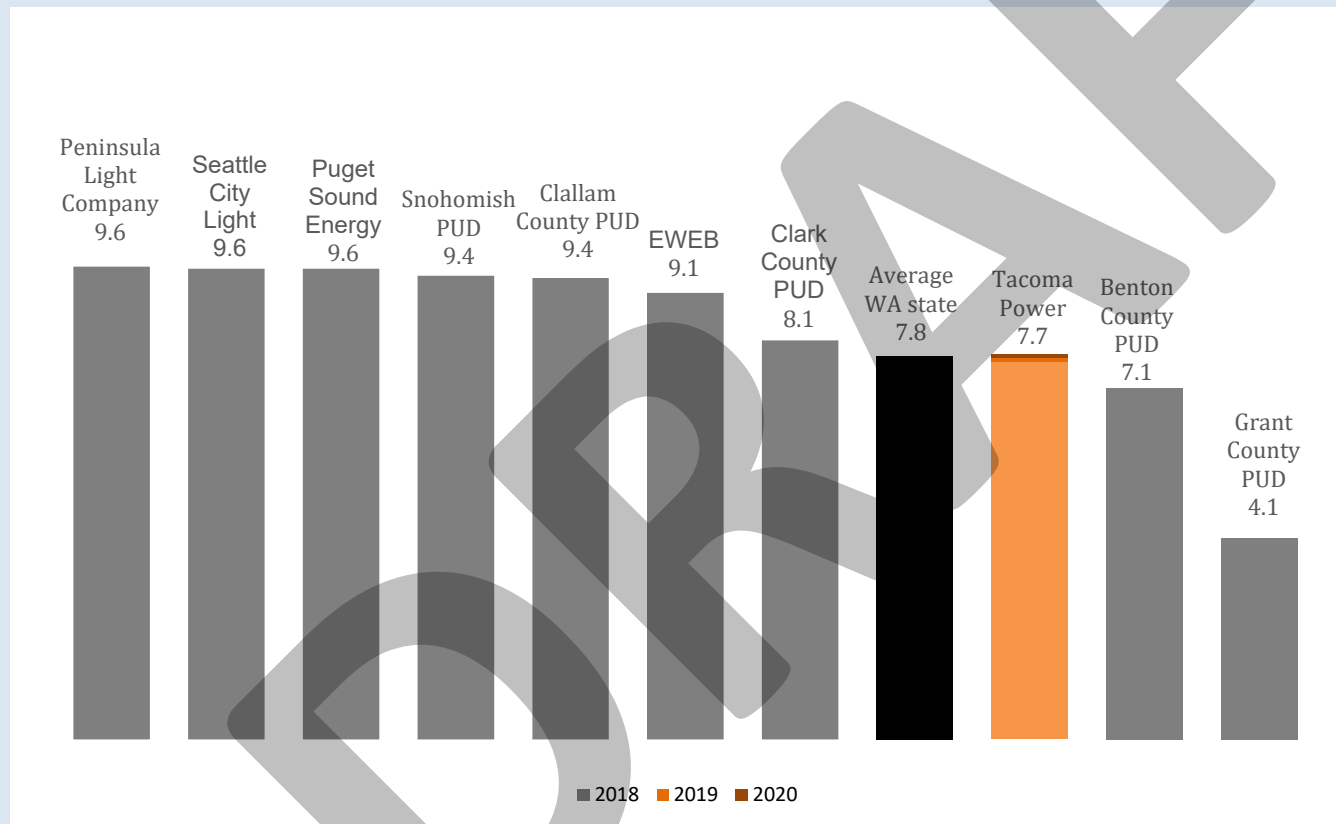
Rates Remain Low and Competitive

How do our rates compare to other power providers in the Northwest?

Our rates remain low relative to our peers. This table compares monthly electric rates of public and private utilities in our region to those of Tacoma Power.

We are a municipal utility that establishes rates only to recover costs, not to create a profit for shareholders. We set rates with the goal of minimizing rate impacts to customers while maintaining the safety and reliability of the electric system. Tacoma Power has been able to maintain low rates in comparison to state and national averages. Most other utilities face many of the same challenges described in later sections of this document and we expect to remain price competitive in the future. Rates are established by the Public Utility Board and approved by the Tacoma City Council.

Comparative System Average Rates (cents/kWh)



Tacoma Power shaded area represents the additional cents per kWh from a 2% annual rate increase in 2019 & 2020.

Source: ELA 816

Why Rates Go Up

Your next logical question might be, “how did you come up with those rate increases?” Or perhaps, “Why would the rates need to go up at all?”

We can’t just point to one factor. Determining what a rate increase needs to be takes a thorough understanding of how the utility works and what it needs to operate successfully.

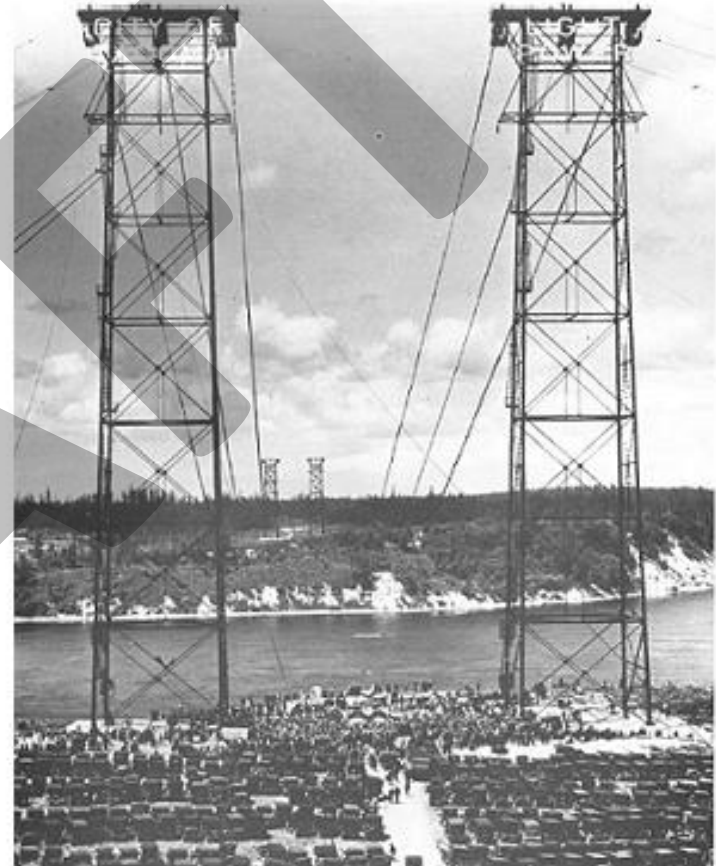
Here are a few of the many factors that impact future rates. These examples and others need to be considered when determining what the rate increases need to be:

Increases in Operating Expenses and Purchased Power Expenses

See [Section 4](#) on the [Background](#) to get a better understanding of these.

Decreases in Wholesale Revenue due to changing market conditions

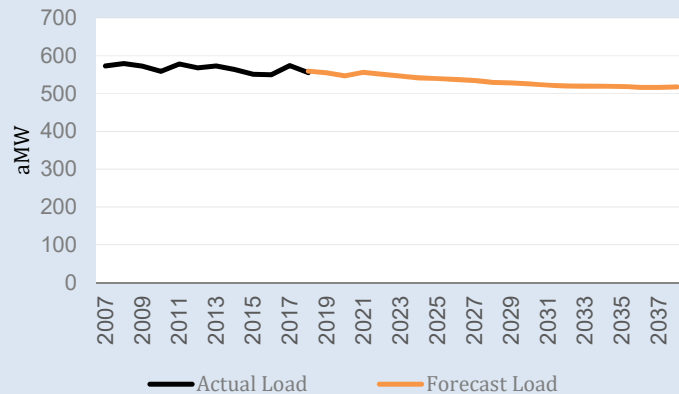
See [Section 6](#) on the [Risks](#) to get a better understanding of some of the things affecting our revenue.



This is a picture of the 1926 commissioning of the transmission lines connecting to our Cushman hydro project. Our utility has operated since 1893 and has a lot of infrastructure to maintain. We maintain and replace our assets with steady capital investments. You can find out more about that those capital investments in [capital expenses of Section 4](#). For determining how we fund capital investments, see [Section 8](#).

Declining Retail and Wholesale Revenue

Load Forecast with Conservation

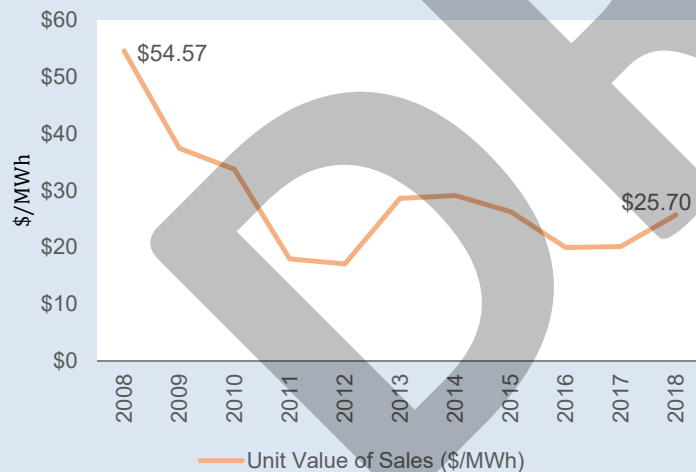


*This chart shows a downward projection for our load. **Load** refers to energy consumption. Our system average load is projected to decline at a rate of approximately 0.8% per year, reflecting planned conservation measures.*

The charts to the left show two major impacts to our revenue: declining retail load and declining wholesale revenue. You can read more about each of them in the explanation on revenues in [Section 4](#).

The top chart portrays our most recent **load forecast**. We have seen increases in conservation and declines in customer demand for electricity, both driving a decrease in our expectations for overall usage, which creates downward pressure on revenue.

Annual Value of Wholesale Electric Sales (\$/MWh)



This chart shows a downward trend in the value for each MWh sold, from \$54.57/MWh in 2008 to \$25.70/MWh in 2018. Notably, 2018 is up from 2017, which has created benefits in the 2019 LRFP outlook.

Tacoma Power is lucky enough to be able to sell extra generation to other utilities in most years. The more wholesale revenue we have, the more we can reduce future retail rate increases. The bottom chart illustrates the declining value for each MWh of electricity sold in the wholesale electric markets. There are many drivers for this decline which you can read about in the [Section 6: risk factors](#).

Can the Projected Rate Increases Change?

Managing the future

The cost of electricity in Washington is just about the lowest of any state in the nation. Additionally, Tacoma Power customers have access to clean, renewable, and reliable electric service at a cost lower than many of our local peers (see [page 15](#) and [page 33](#) for a comparison).

Despite the low rates we currently have, we don't feel any better about the projected rate increases than you do. We devote a lot of time and effort into developing and executing strategies to mitigate risk, reduce expenses, and increase revenues.

The data in this LRFP feeds directly into Tacoma Power's Strategic Plan. The picture on the right is our Strategy Map – a high level summary of our Strategic Plan. In that plan, we are working on executing strategies we believe will help us reduce future rate increases. A few of the objectives that directly relate to these strategies are Optimize Wholesale Revenue and Maintain Our Financial Strength. The Strategic Plan will be updated in the second half of 2019.



Active Debt Management

Managing Debt Service has produced significant savings

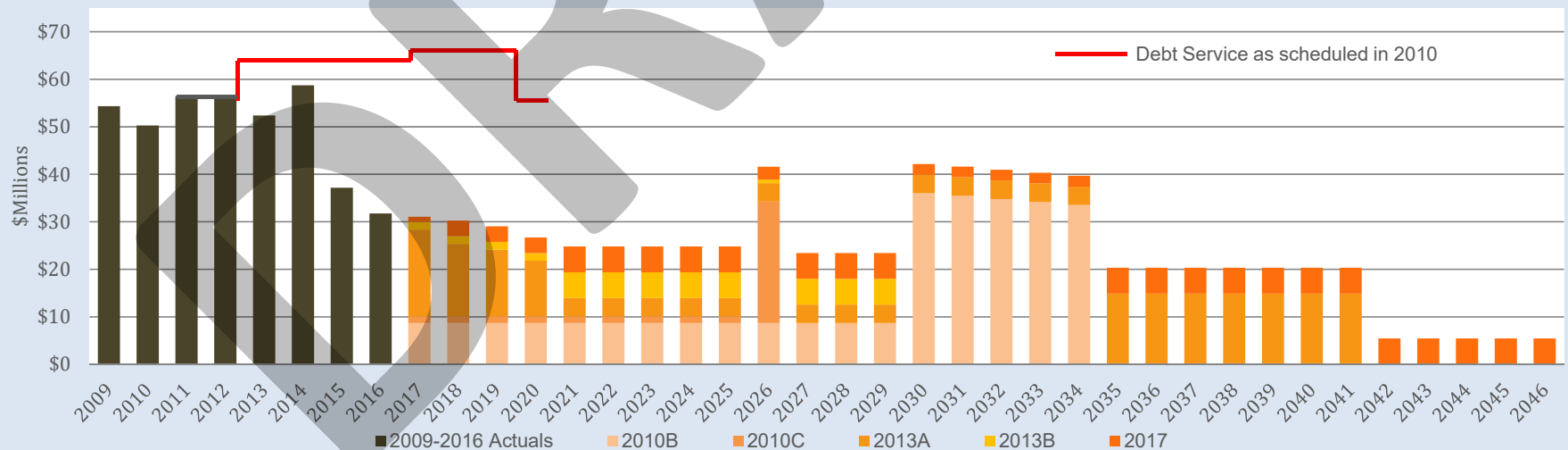
Tacoma Power sells bonds to help fund capital improvements. Much like a home mortgage, we can structure this debt to pay it back over 30 years or other intervals. You can see from our existing profile below that bonds we have issued in different years has been structured in different ways. We actively manage this debt profile and have made a number of changes since 2009.

Between 2009 and 2013, Tacoma Power defeased \$79 million and refunded \$137 million in outstanding bonds. In 2015,

Tacoma Power used \$122 million in cash to call the 2005B Bonds. You can read more about this on [page 57](#). Then in 2017, approximately \$27 million in debt service scheduled for payment in 2019 and 2021 was defeased. In fact, in 2010 our debt service payment in 2018 was projected to be over \$66 million. After the many changes we have implemented in the last few years, our debt service payments this year will be less than \$31 million.

This represents significant bill savings for Tacoma Power's current customers. In 2016, we were able to not have a rate increase at all and this is largely because of the reduced debt service payments.

Historical and Scheduled Debt Service



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Section 2 2019 LRFP – What's Changed?

A summary of what is different from last year's plan



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The 2019 Long-Range Financial Plan – What's Changed?

The assumptions underlying the projections shown in this 2019 update to the Long-Range Financial Plan (LRFP) are similar to the LRFP published in May of 2018, as are the overall Plan outcomes. A few notable changes reflected in the 2019 Plan are listed below.

- The 2019 LRFP incorporates actual financial results as of June 30, 2019.
- Wholesale market price forecasts are as of July 29, 2019.
- 2019 has proved to be a tough water year across the region. We are approaching some of the lowest yield conditions we have seen over the past century, which puts upward pressure on costs in the near-term.
- BPA has reduced its estimate for the planned 2021-2022 rate increase.
- We anticipate issuing bonds in 2021, a year later than in the previous plan. The updated [Financing Plan](#) is summarized at the end of this section.
- A \$20 million Surety debt service reserve policy expires January 1, 2020 and will either need to be extended or funded with cash. This Plan assumes the cash funding impacts.
- Future forecasts of Click! revenues and expenses have changed to incorporate assumptions of a public-private partnership beginning in 2020.
- Tacoma Power is making plans to enter the California Energy Imbalance Market in 2021. This Plan reflects the current projected, associated expenses and revenues.
- The expected costs of the Advanced Metering Infrastructure (AMI) system and meters have been updated and include the implementation cost to change to monthly billing.

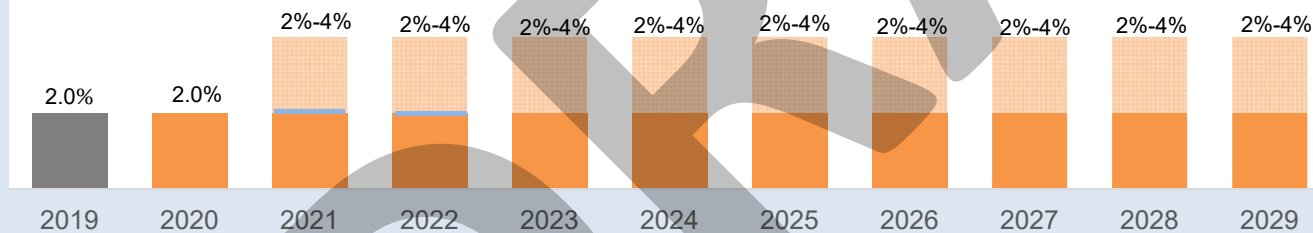
The financial outlook for the utility continues to be strong and the projected Base Case rate impacts over the coming decade are in line with last year's projections.

How the 2019 Long-Range Financial Plan Compares

2019 Rate Increase Projections

No changes in the 2019 estimated rate impacts from 2018 projections

Light shading in future years represents uncertainty associated with revenues and expenses, mostly due to potential for adverse or critical water conditions, changes to sales projections, and future debt service.*



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

Projected Rate Increase

Summary of Impacts

Two key drivers of the Plan are the utility's liquidity and debt-service coverage metrics.

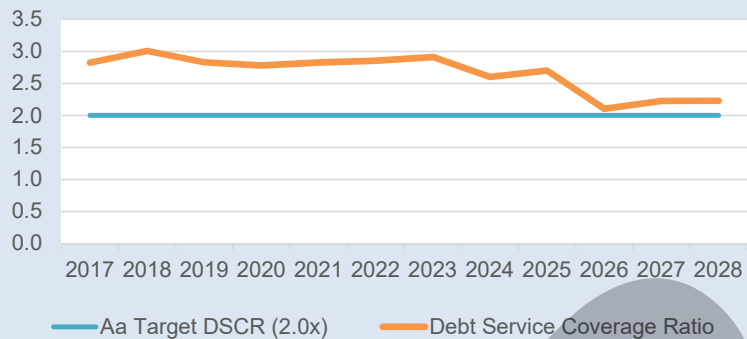
While there is some change in the liquidity profile and debt service coverage projections from 2018 to 2019, we are still meeting all our financial targets and are projecting no net change to rates in the base case 10-year plan.

A year-over-year comparison of both key financial metrics is shown on the next page.

How the 2019 Long-Range Financial Plan Compares (cont.)

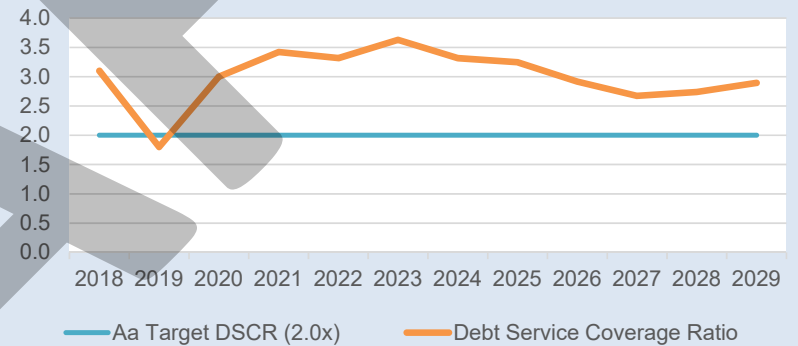
2018 Debt Service Coverage Ratio

Target = 2.0x



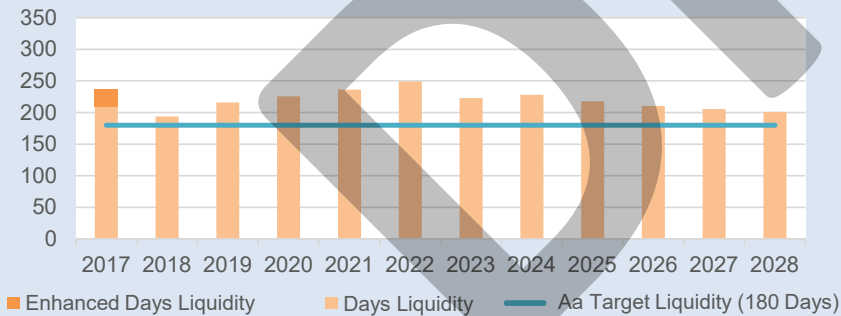
2019 Debt Service Coverage Ratio

Target = 2.0x



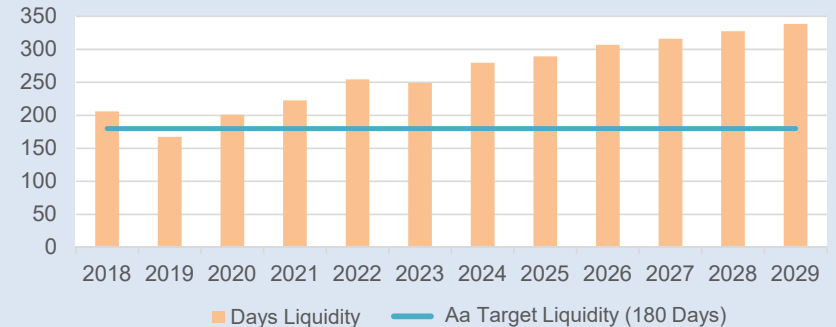
2018 Liquidity Projections

Target = 180 Days



2019 Liquidity Projections

Target = 180 Days



Proposed Financing Plan

The 2019/2020 financing plan summarizes the key activities the Tacoma Power is planning to pursue over the next two years. While the financing plan has the same basic components that were incorporated in the 2018 LRFP, timing and other logistics can be impacted by changing utility financials and market conditions.

The Financing Plan elements shown below will be brought before the Public Utility Board and City Council for review and approval in the coming months.

- Request amendment of the Note Purchase Agreement to increase the current limit to \$150 million and to extend it for one year through August 2021.
- Request to extend the existing Debt Service Reserve Surety Policy expiration date and modify the Surety Policy limit, if necessary
- Request Board approval to enact a debt service reserve Springing Amendment that will reduce Tacoma Power's reserve account requirement

In 2021 we anticipate issuing Tacoma Power Revenue Bonds to pay down the balance of our existing short-term financing agreement. At the same time, we expect to retain and utilize a new short-term borrowing instrument to continue interim financing of capital projects, similar to the note purchase agreement we have in place today.

Financing Plan Highlights

Proposed extension of short-term financing line:

August 2020 - August 2021

Purpose:

Interim Financing of Capital Projects

Proposed increase of short-term financing line:

From \$100 million to \$150 million

Purpose:

Interim Financing of additional Capital Projects

Expected 2021 bond issuance:

\$150,000,000

Purpose:

Long-term Financing of Capital Projects

Surety Bond:

\$20 million insurance coverage expires January 1, 2020

Issue:

If current insurance policy can not be extended, cash funding will be required

Section 3 LRFPs for Beginners

A simple guide to long-range financial plans,
why they're important, and how they work



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The Basics

Why a LRFP?

A Long-Range Financial Plan (LRFP) is an important document used by businesses to guide their decision-making over a span of multiple years. It helps keep the business aligned with its broader goals and helps prepare for future impacts.

This LRFP influences budget planning, investments, and other aspects of financial strategy. It is also an important tool for communicating these decisions to stakeholders, customers, and other groups.

We have used the preparation of this document as a tool to conduct research and analysis to develop potential scenarios that may affect our business. We use what we learn from such analyses to improve business decisions.

It is our intention to use the LRFP as a key input in our Rate and Budget review and approval process. We plan to update this LRFP annually and share with policy-makers and the public.

What goes in an LRFP?

A long-range financial plan typically includes:



**Research
and
trends**



**Strategic
planning**



**Decision-
making
tools**



**Action
steps**

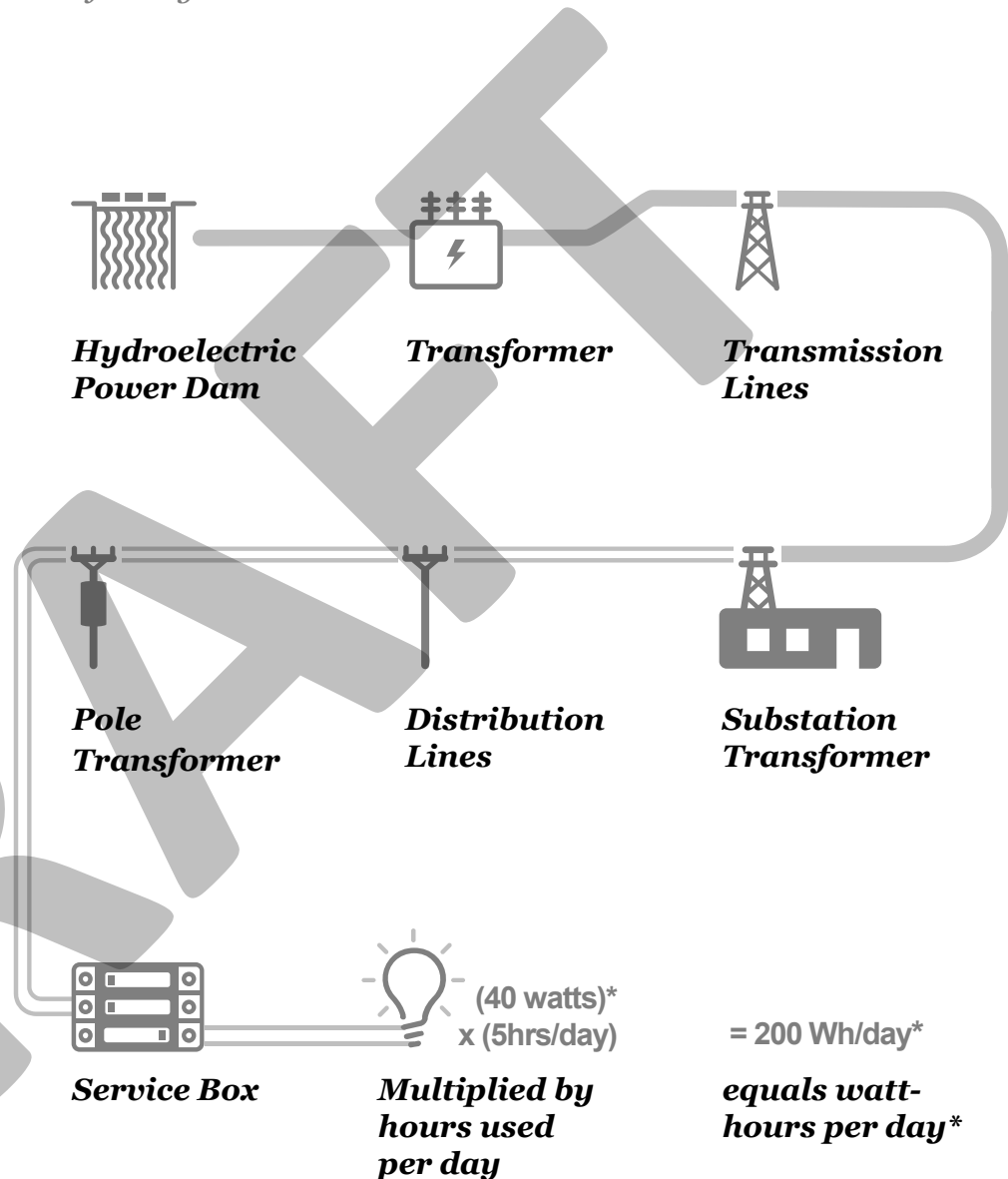
How Does Electricity Work?

What happens when I flip on my light switch?

Our electricity is generated by turbines located at hydroelectric facilities, transported onto the electric grid where it travels along a system of circuits, and is ultimately delivered to a variety of homes and businesses.

How do you measure electricity use?

The math to determine watt-hour usage is simple... It's the number of watts a piece of equipment uses multiplied by the number of hours it is used.



*We usually measure electricity in kilowatt-hours (kWh) which is the same as one thousand watt-hours. On an annual basis this may turn into megawatt-hours (MWh) or one million watt-hours. An average residential customer uses approximately 977 kWh a month.

Who Exactly is Tacoma Power?

What kind of company is Tacoma Power?

Actually, Tacoma Power is not a company in the legal sense. Tacoma Power was established in 1893 when the citizens of Tacoma voted to buy the privately owned Tacoma Light & Water Company. Local citizens believed public ownership and local control would provide a higher quality of service. Tacoma Power is a city-owned department that provides electricity to approximately 179,000 customers in the City of Tacoma and surrounding area, including the local military base.

What's the difference between a Public Utility and an Investor-owned Utility?

Publicly owned utilities are “non-profit” utilities managed by locally elected officials and public employees. Their rates are set to recover costs and not to return a specific profit margin. Conversely, investor-owned utilities are privately owned and set rates to recover costs plus a reasonable return to be earned by their investors.

Who Runs Tacoma Power?

Tacoma Power is the light division of Tacoma Public Utilities (TPU) and is governed by a five-member [Public Utility Board](#). The Tacoma City Council appoints the volunteer board members and they serve staggered five-year terms, unpaid. Board meetings and discussions are open to the public for comment and televised live on TV. The City Council has final authority over Tacoma Power's budgets, rates, financing, and other matters.

Who is responsible for the day-to-day operations?

The Board and Council appoint the Director of Utilities as the Chief Executive Officer to oversee the operations of Tacoma Public Utilities including Tacoma Power, Tacoma Water, and Tacoma Rail. Jackie Flowers was appointed TPU Director effective August 1, 2018. Chris Robinson is the Superintendent and Chief Operating Officer of Tacoma Power. He oversees the day-to-day operations of Tacoma Power along with his Senior Leadership Team.

Supporting Our Customers

How much electricity does Tacoma Power produce?

Average use per household is about 11 [megawatt-hours](#) per year. For all customers, Tacoma Power produces approximately 4.7 million megawatt-hours per year. Our power supply is made up of approximately 90 percent hydroelectric power. Forty percent of our power supply is provided by our own hydroelectric power facilities. The remaining power supply is purchased through long-term contracts with other power supply companies, such as the Bonneville Power Administration.

What programs are available for people ready to conserve or reduce electricity use?

Tacoma Power offers programs for conservation and customer-owned electricity generated by [renewable resources](#), such as solar and wind. Customers with eligible generation systems may receive up to \$5,000 annually. In addition to this financial incentive, annual electricity production from the renewable energy system would offset electricity the customer would otherwise purchase from the utility, lowering their electricity bill. You can find out more about our conservation programs at knowyourpower.com.

How does Tacoma Power support low-income customers?

Tacoma Power offers financial assistance programs to low-income customers that live in a home with permanent electric heat. Qualifying low-income customers can receive up to a 30 percent discount on their power bill. You can find out more about our bill payment assistance programs at <http://bit.ly/tpwr-billassist>.

How does Tacoma Power support the surrounding community?

The utility supports more than 40 annual giving and volunteering opportunities for employees. We help with the most pressing community needs by building houses, repacking food, and helping seniors stay safe, warm and dry in the homes they own. The volunteer program promotes a highly engaged workforce by developing employees' leadership skills and awareness of the community. See more on our community involvement page: <http://bit.ly/tpwr-community>.

How is My Electric Bill Determined & How do We Compare?

How are rates set?

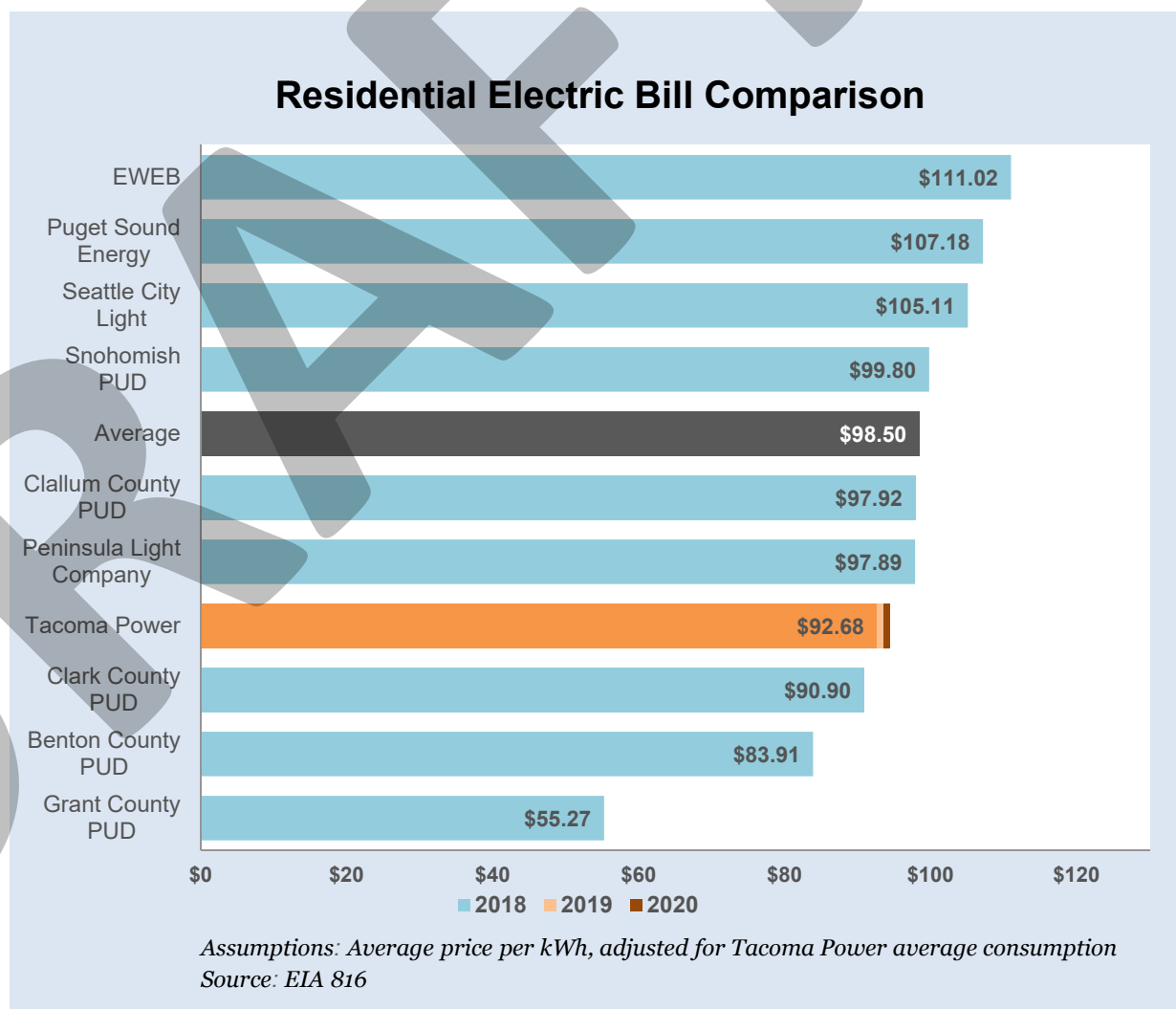
The price of electricity that our retail customers pay is set to recover all operating and maintenance expenses, debt service, taxes, and a portion of capital additions and improvements made to the electric system. Tacoma Power recommends rate adjustments with a goal of minimizing impacts to customers while maintaining the safety and reliability of the power system.

How often are rates updated?

Rate forecasts are updated every other year when the City of Tacoma prepares the biennial budget. Budget-setting is a year-long process. It includes steps including reviewing and projecting revenues, prioritizing expenses, and identifying ways to operate as efficiently as possible.

Who approves the rate increase?

The Tacoma Public Utility Board sets the electric rates for Tacoma Power, subject to final approval by the Tacoma City Council.



What about the Actual Bill?

**Address(es)
served on
this account**

**Summary of
charges from
Tacoma Public
Utilities**

**Summary of
charges from
Environmental
Services
(Tacoma
residents)**

**The Warm
Home Fund is
an easy way
to donate to
people in need**

MyTPU.org/MyAccount
(253) 502-8600
3628 S. 35th St. | Tacoma, WA 98409

Account # 123456789

Amount Due
\$443.93

Due Date
9/12/16

EDGAR ALLAN DOE
For service address 123 Amity Ave. | Tacoma, WA 98409

Billing period – Jun. 24 to Aug. 23
(60 days)

	Electricity	\$161.13
	Average cost per day \$2.68	
	Drinking water	\$79.24
	Average cost per day \$1.32	

Environmental Services

	Wastewater	\$93.48
	Average cost per day \$1.56	
	Solid waste & recycling	\$61.14
	Average cost per day \$1.02	
	Surface water	\$48.94
	Average cost per day \$0.82	

Total Current Charges **\$443.93**

Pay online at MyTPU.org/MyAccount
or make checks payable to City of Tacoma and mail to
P.O. Box 11010 • Tacoma, WA 98411-1010

☐ Check if your payment
includes a donation to the
low-income assistance
program. Thank you!

Amount \$ _____

EDGAR ALLAN DOE
123 AMITY AVE
TACOMA WA 98409

Previous Amount Due \$484.96

Payments -\$484.96

Balance \$0.00

Current Charges Due 9/12/16 \$443.93

Amount Due **\$443.93**

What do you think of the new design?
Whether you love it or hate it, we want to know what
you think about your redesigned utility bill. Please visit
MyTPU.org/Billsurvey to share your thoughts.

Take action
Log on to: MyTPU.org/MyAccount to update your
phone number.
Current information will help us provide better
service during power outages and other events.

Account # 123456789

Amount Due
\$443.93

Due Date
9/12/16

Amount Paid
\$ _____

**Clearly labeled
bill information**

**Easy-to-
read billing
summary**

**Account
updates and
important
notifications**

**Detachable
stub for you to
easily mail
your payment**

Do all customers pay the same amount?

There are different customer types and ways in which the customers use the Tacoma Power system. The majority of our customers are considered residential customers, but there are also small commercial, large commercial, high voltage, and industrial customers too. Each type of customer pays a different amount based on how much it costs the City to make and deliver electricity to where those customers receive it.

What's really driving our costs?

Electricity prices generally reflect the costs to build, generate, purchase, finance, maintain, and safely operate the electricity grid. Tacoma Power has been able to maintain low rates in comparison to state and national averages, while at the same time covering all operating and maintenance expenses, and providing reliable services that customers want and need.

Sample bill

Credit: How does it Work for Tacoma Power?

Maintaining an electrical system is expensive and comes with high capital costs. Utilities fund a part of these systems by selling [bonds](#) to individual and institutional investors. In order to evaluate the value of these bonds, investors look to credit rating agencies including Moody's Investors Service, S&P Global Ratings (S&P), and Fitch Ratings for analysis.

Similar to how the [credit rating](#) agencies provide a credit rating used by lenders when you buy a car or house, each of these rating agencies has its own methodology, process, and scale for rating the investment quality of a utility. The rating agencies consider historical and projected financial performance, but their analysis goes beyond financial information and into items like economic indicators, reserve funds, power supply contracts, and management decisions.

You can find out more about all of these things in the later details of this document. Moody's has published information about their rating methodology which you can read more about on [page 53](#).

Rating agencies are interested in different things

	Moody's*	S&P	Fitch
Investment Grade	Aaa	AAA	AAA
	Aa1	AA+	AA+
	Aa2	AA	AA
	Aa3	AA-	AA-
	A1	A+	A+
	A2	A	A
	A3	A-	A-
	Baa1	BBB+	BBB+
	Baa2	BBB	BBB
	Baa3	BBB-	BBB-
Non-Investment Grade Speculative	Ba1	BB+	BB+
	Ba2	BB	BB
	Ba3	BB-	BB-
	B1	B+	B+
	B2	B	B
	B3	B-	B-
	Caa1	CCC+	
	Caa2	CCC	
	Caa3	CCC-	CCC
	Ca	CCC	
	C		DDD
		D	DD
			D

This table compares the different rating scales for the three credit rating agencies, with Tacoma Power's current rating highlighted.

— Target Current Tacoma Power Rating

* Moody's current rating for Tacoma Power only applies to Bonds issued before 2017.

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Section 4 Background

A look at the history, trends, research, policies,
and other factors that went into this Financial Plan



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The Foundation

These are the sections that are the backbone of the LRFP's integrity.

We've grouped them into three sub-sections:

Expense Assumptions

It costs a lot to manage and operate a utility. Some of those expenses are easier to predict and manage than others.

[Pages 40–47](#)

Revenue Assumptions

Our revenue comes from a few distinct sources. Each of these factor into our financial planning in slightly different ways.

[Pages 48–52](#)

Credit, Debt, & Reserves

Just like you, Tacoma Power has to make choices about how to manage its debt in order to maintain a strong credit rating.

[Pages 53–61](#)



Tacoma Power Expense Overview

Purchased Power and Renewable Energy Credits

Approximately 60 percent of Tacoma Power's electricity comes from power that we purchase from others. Most of this is through a long-term contract with the Bonneville Power Administration. We also purchase Renewable Energy Credits (RECs) to help comply with the Energy Independence Act detailed on [page 76](#).

Personnel

Personnel costs include more than just the wages for our employees. Associated costs such as medical coverage and other benefits are also included.

Capital

Capital projects are funded by a combination of bonds and available revenue. Each biennium, the utility determines the appropriate amount to fund from each source.

Taxes

Tacoma Power is subject to a number of taxes and franchise fees. The largest two are the 7.5 percent Gross Earnings Tax (GET) paid to the City of Tacoma and the 3.873 percent State Public Utility Tax.

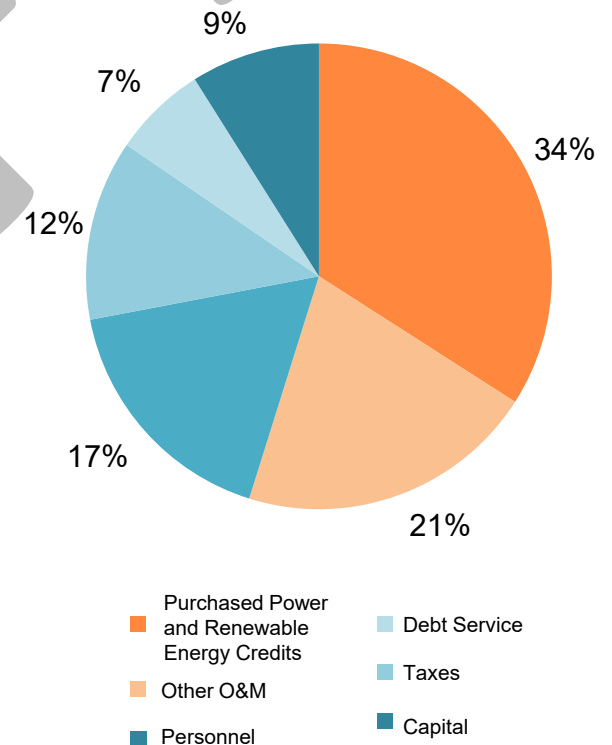
Other O&M

The majority of remaining expenditures are captured in Other Operations and Maintenance costs. This includes things like office supplies, safety equipment, legal and professional service contracts, allocations to general government, non-capital project expenses, and administrative costs not directly attributed to personnel.

Debt Service

Capital projects are partially funded with bonds or notes, which will need to be repaid. These payments are referred to as debt service, which is discussed in the Credit, Debt, & Reserves subsection beginning on page 54.

% Expenses by Type
(FY 2018)



2018 Total Expenses
\$444,649,286



Purchased Power and Renewable Energy Credits

Tacoma Power purchases a portion of the power needed to serve our customers through [Power Purchase Agreements](#). Each agreement has different terms and conditions that determine things such as the length of the agreement and the cost associated with it. The largest of these agreements is with Bonneville Power Administration (BPA) which expires in 2028. BPA has a formal rate case process every two years to determine the costs its customers will pay.

Another large portion of expenses in this category are transmission purchases. Tacoma Power has contracts that allow for the transfer of power through high-voltage transmission lines to serve Tacoma Power customers. These purchases also support our ability to buy and sell wholesale power from and to other utilities.

Similar to the Power Purchase Agreements, the transmission contracts have different terms and conditions, such as the length of the agreement and the associated costs.

Finally, Tacoma Power purchases Renewable Energy Credits (RECs) as a means of helping to comply with Washington State's [Renewable Portfolio Standard](#) and supporting the development of new renewables, such as wind or solar power, in the region. Tacoma Power needs to supply 9% of its [load](#) from qualified renewable sources in 2018. Our current compliance with this requirement is detailed on [page 77](#).

Power Purchase and REC Expense Components	% of Expenses in 2018
BPA Contract Purchases	75%
Priest Rapids Contract	0%
Columbia Basin Hydro	4%
Portfolio Purchases	6%
Transmission	13%
Renewable Energy Credits	2%

Overview of Tacoma Power's power purchase agreements

2018 Purchased Power and REC Expenses **\$151,489,859**



Personnel Expenses

With more than 179,000 customers across more than 180 square miles of service area, Tacoma Power requires a significant investment in staff and resources to make sure our customers will have low-cost, reliable electric services for years to come.

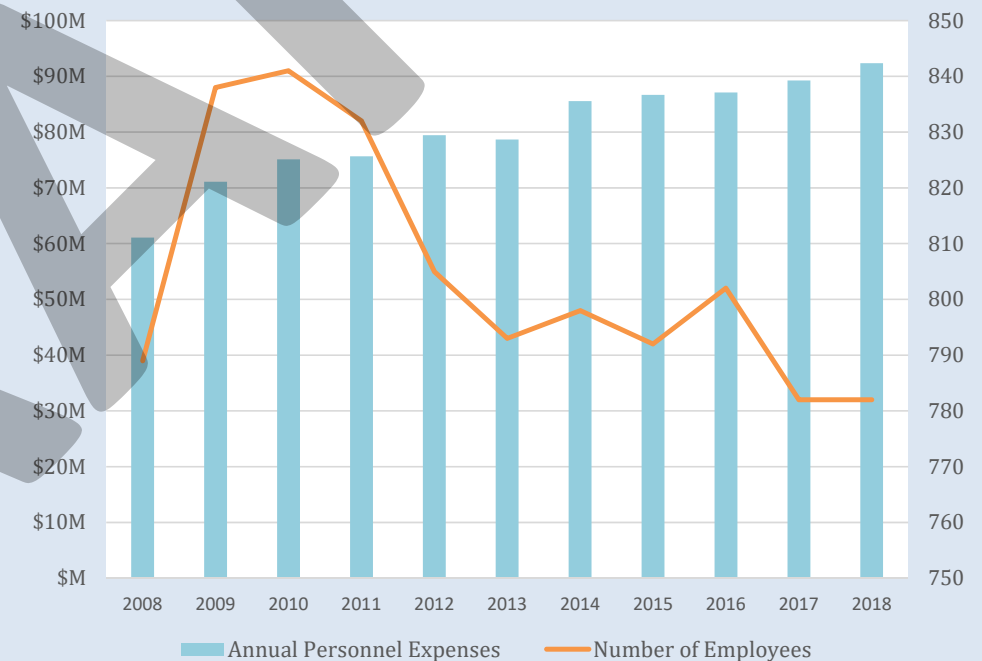
Currently we have approximately 814 employees. The number of full-time staff positions changes depending on the needs of the utility. In a given year, our plans to complete specific projects (or even the priority of those projects) can change from previous years. Our needs may even change depending on the season of the year. For example, we hire several temporary workers in the summer months to help operate our park facilities.

In this LRFP, we have forecast personnel expenses using the last five years as a proxy for future trends. This includes more than just salary. We also consider such things as increasing medical and benefit expenses, changing labor contract requirements, as well as anticipated wage increases for employees.

Over the last five years, personnel expenses have increased an average of 1.6% per year.

Annual Personnel Expenses

2018 Personnel Expenses: 92,369,767





Capital Expenses are a large part of our annual budget.

Construction projects are capitalized (recorded as an asset on our balance sheet) when we place that asset in service. These assets have a defined benefit in future years and depreciate over time. For example, when a new power pole is placed in service, it is expected to be there for 40 years or more. When the asset is capitalized, the benefits are spread out over the 40-year life of that asset. Tacoma Power has over \$1 billion in assets and having been around since 1893, we have quite a few aging assets that must be repaired or replaced.

Capital Expenses include such things as:

Buildings

Technology

Infrastructure



Planning for Capital Expenses

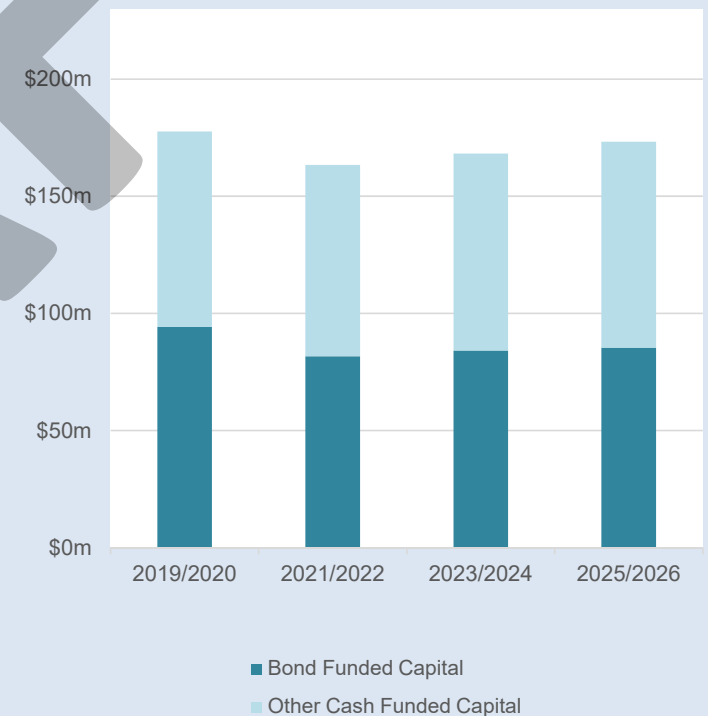
Tacoma Power's fish facilities are a good example of capital projects in the last biennium. To help meet the licensing requirements for owning and operating our hydroelectric dams, we built two new fish hatcheries near the Cushman hydroelectric facility. In fact, we have several restoration or habitat improvement projects that have either just been completed or are in process at each of our facilities.

A portion of our capital assets are in a special class referred to as [Additions and Replacements](#) (A&R). These are items necessary for the ongoing upkeep and maintenance of existing assets. An example of an A&R would be to replace a power pole that has reached the end of its life.

Most major projects are funded with long-term bonds, while assets with a shorter life or recurring additions and replacements are typically funded with revenue from Tacoma Power's cash fund. The graph to the right shows our current projections for capital expenses in the future. See [Section 8](#) for more detail on how we make this determination.

Each year, we forecast our ten-year capital plan by analyzing current and future projects that we're likely to pursue. The actual capital budget in each biennium is reviewed and projects are ranked by priority through the work of a [Capital Steering Committee](#) (CSC). The CSC meets regularly to review progress on capital projects, discuss new capital projects and determine the best way to fund these projects.

Current planned capital improvements





Preliminary Capital Expenses for 2019–2020

There are over 100 projects in our portfolio of capital improvements for the 2019 / 2020 biennium. This is typically referred to as our [Capital Improvement Program \(CIP\)](#).

Current projects in the program include:

Fish Facility Improvements

Dam Seismic Upgrades

Aging Transmission Tower Replacements

Energy Management System Upgrade

Technology Upgrades

The following table is an overview of all of the projects submitted for the 2019/2020 biennium.

Project Type	Estimated Cost	Project Focus Description
Regulatory Projects	\$14,713,000	Federal & State mandates including FERC, NERC/WECC and I-937. Projects include Dam safety related to seismic upgrades, Energy Conservation program, and compliance with environmental regulations for disposal of spoils
Natural Resources	\$7,447,000	Construction of fish collection and passage systems to establish and support fish runs upstream of the Hydroelectric dams as required by FERC
Prevent Asset Failure	\$7,336,000	Hydro facility and equipment maintenance and Transmission & Distribution structures and equipment replacement
Prevent Asset Failure and Asset Upgrades	\$27,492,000	Modernization and improvement of equipment to prevent failure and meet current needs
System Reliability and Upgrades	\$9,587,000	Upgrade and redesign of the Distribution system, Transmission system, and Substation facilities
Technology Projects	\$16,729,000	Upgrade of existing technology tools and platforms, and development and installation of new technology systems
Additions and Replacements	\$54,665,000	Ongoing replacement of infrastructure necessary for the operation of power system
Other	\$11,754,000	Facility improvements, service division projects and unanticipated capital
Total	\$149,723,000	



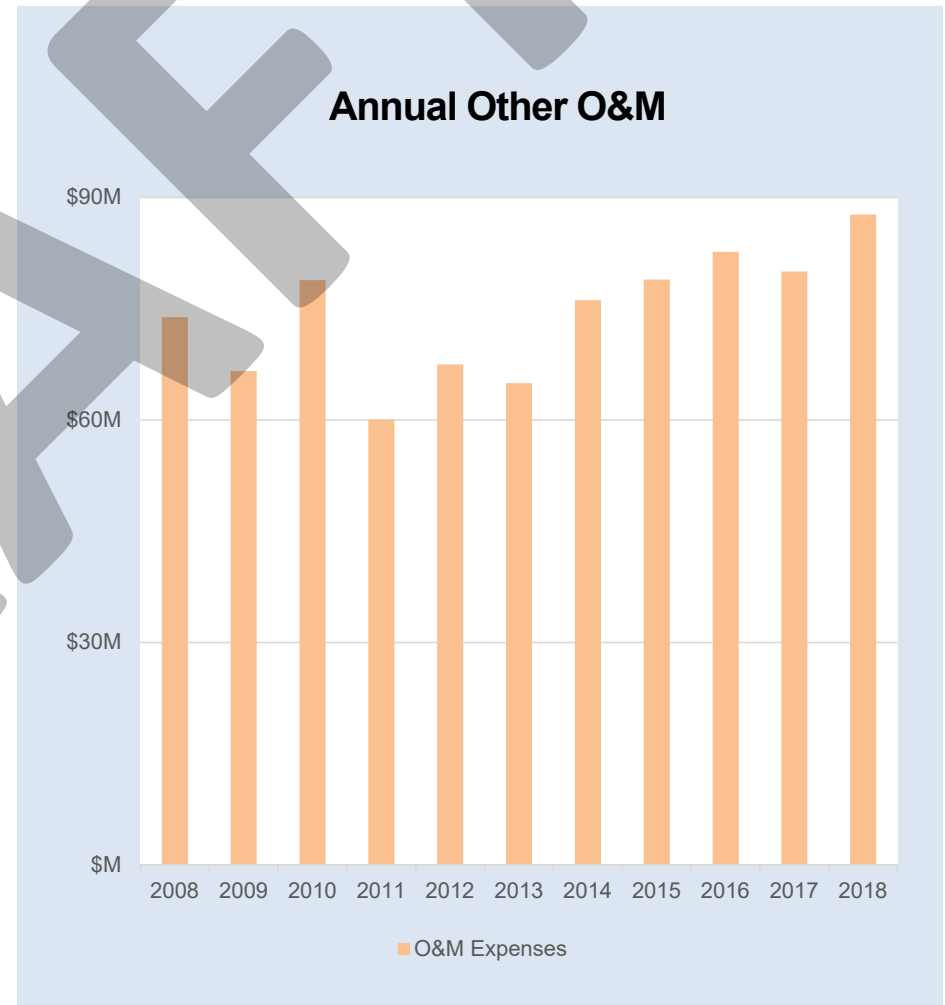
Operations & Maintenance Expenses

Operations & Maintenance (O&M)

Operations & Maintenance expenses (O&M) reflect day-to-day activities and costs necessary to run the business. Costs include items such as supplies, training, travel, external contract services, and labor not related to a capital project. O&M budgeting is made up of two categories: Labor and Other O&M.

Other O&M

OO&M varies from year-to-year and is influenced by the type of projects we pursue. Some projects rely heavily on the assistance of outside organizations while others can be accomplished with current staff. Some projects are considered capital projects, funded by issuing bonds that are paid back with future dollars. Other projects rely solely on OO&M expenses to be completed using current funds, or cash.





Taxes

Yes, we have to pay taxes too. There are two primary taxes Tacoma Power pays. The first is called Gross Earnings Tax, and the current rate is 7.5% of the utility's gross earnings. We pay this tax to the City of Tacoma and it is approximately \$30 million per year. The amount changes up or down depending on how much revenue Tacoma Power earns each year.

The Gross Earnings Tax is a source of revenue for the City of Tacoma to help the City maintain infrastructure and provide services critical to the quality of life, health, and safety of

residents. An increase of 1.5% was approved by voters in 2015. That additional 1.5% will help the City of Tacoma to make needed street repairs around the City.

Secondly, Tacoma Power is subject to a State Public Utility Tax of 3.873%. This is approximately \$18 million per year.

Since our customers pay 100% of our costs, taxes are also a part of the rates we charge.





Tacoma Power Revenue Sources

Retail Rates

The vast majority of Tacoma Power's revenue comes from the retail rates we charge our customers, which are based on different rate classes. Revisions and updates to rates and rate classes are approved by the Public Utility Board and Tacoma City Council.

Click! Network

Click! Network is an operating section of Tacoma Power that generates revenue through cable and broadband services.

Other Revenues

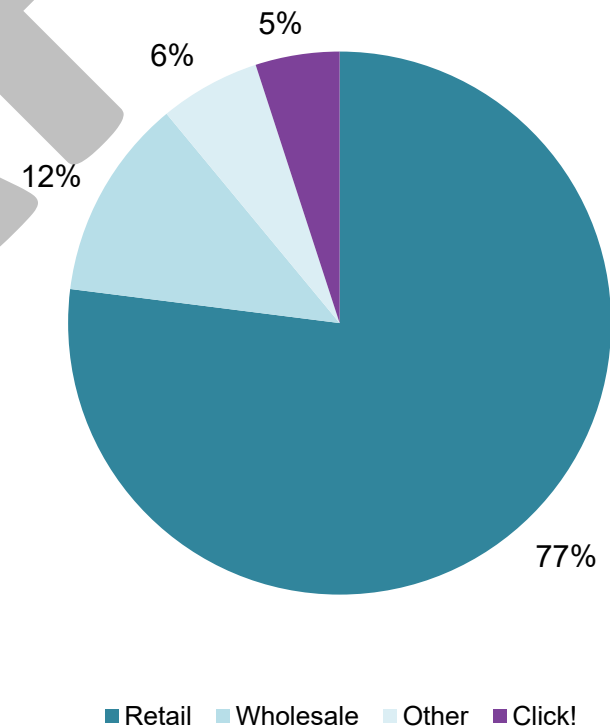
Revenue received from all other Tacoma Power operations includes such things as parks and camping fees, service fees, electric property rental fees, and wholesale transmission sales.

Wholesale Revenue

We also generate revenue by selling surplus energy into the wholesale electric market. The amount we receive for these sales depends upon the time and quantity of energy sold as well as the market price of electricity. Similar to how the price of other commodities like natural gas, oil, or gold move up and down, the price for electricity changes constantly.

These variations can result in significant differences in the amount of wholesale revenue received each year. We explain some of the things that affect the market price for electricity [Risk Factors, Section 6](#).

% Revenue by Source
(FY 2018)



2018 Total Revenue
\$464,406,342

Customer Classes

Different Customers Need Different Types of Services

Tacoma Power is a “cost of service” utility, which means that we charge our customers for what is needed to maintain, operate, and deliver electric services to where our customers need them. Staff performs a Cost of Service Analysis to determine the appropriate portion of revenue to recover from each customer class based on the types of services and infrastructure needed to deliver power to them.

Approximately seventy-five percent of our revenue comes from retail sales, and these consist of several different customer classes. These classes allow for a general allocation of the appropriate costs based on the different service needs of each customer type. For example, the electric services needed to operate a traffic light are very different than the needs of Joint Base Lewis-McChord or a residential customer. Another example is how our industrial customers do not use the distribution portion of our electric system so their rates do not include the costs to operate and maintain this portion of our system. Each customer rate class has different rate structures and methods to calculate the monthly bill.

Customer Classes	% of 2018 Retail Revenue	% Customers by Class
Residential	49.1%	89.1%
Small General	8.2%	8.9%
General	29.5%	1.4%
High Voltage General	5.8%	0%
Contract Industrial	6.6%	0%
Lighting	0.8%	0.5%

2018 Total Retail Sales

\$355,877,070

This table illustrates the percentage of total retail revenue contributed by each customer class for retail revenues in 2018.



Forecasting Retail Growth

In order to forecast future revenue, we produce an annual load forecast. “Load” is a term used to represent the amount of power consumed by our customers. You can see from the chart that the latest forecast is projecting declining consumption.

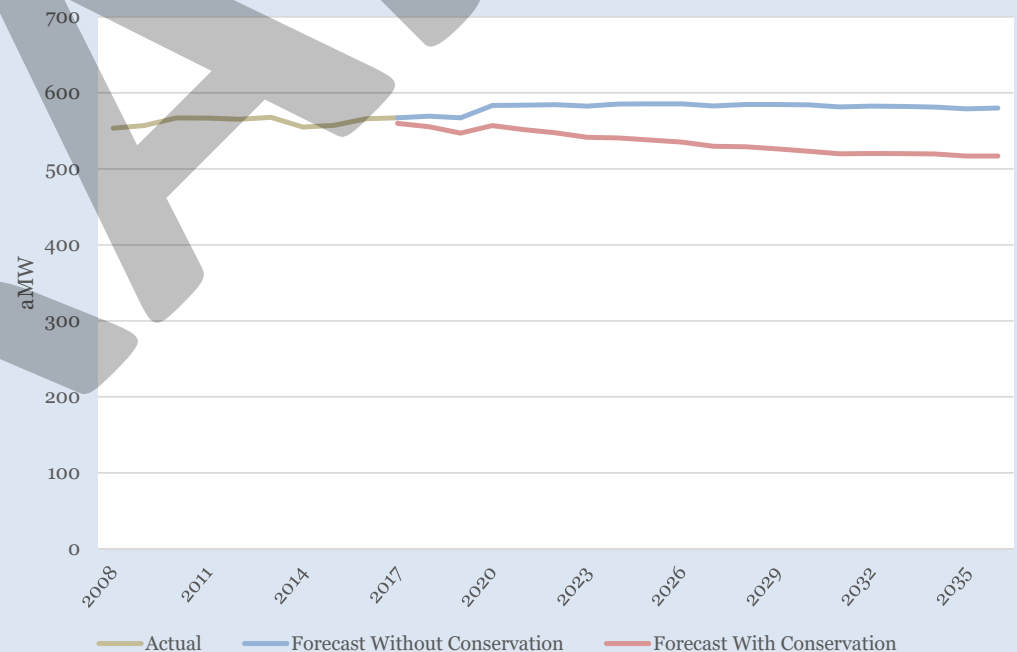
The blue line in the chart reflects our retail load forecast before accounting for future expected conservation measures. The orange line represents our current forecast accounting for conservation investments we expect to make. The tan line reflects the actual load we have seen in the past.

In total, Tacoma Power’s system average load is projected to decline at a rate of approximately 0.4% per year, accounting for conservation. This includes information on the probability of new loads entering the service area. We use this forecast for the base case analysis described in the next section. When total system load is declining, it can put upward pressure on rates due to the large portion of fixed costs a utility company bears.

Several factors could change the current trajectory, such as the overall economic conditions of the area, the availability of incentives for developing industries, or the addition of new large loads to our service territory.

2018 Retail Consumer Load Forecast

2018 Load Forecast
with and without conservation





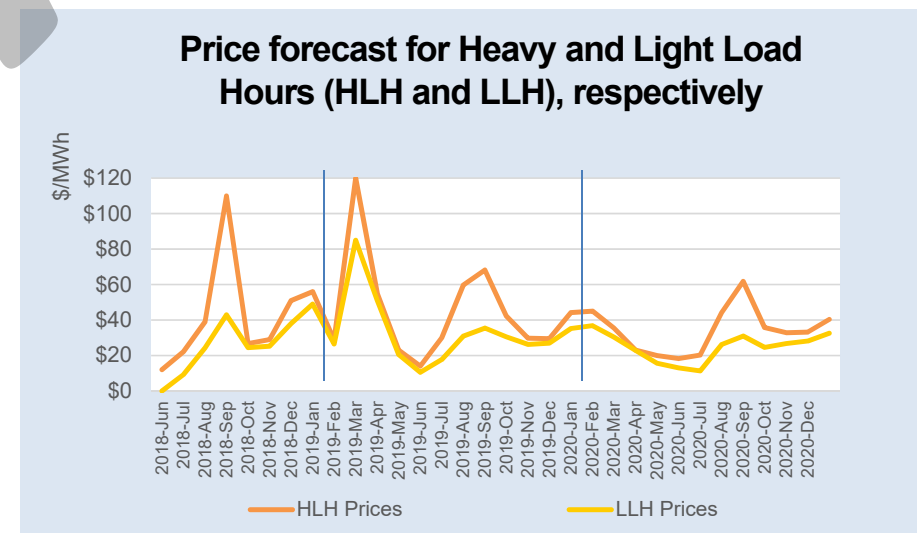
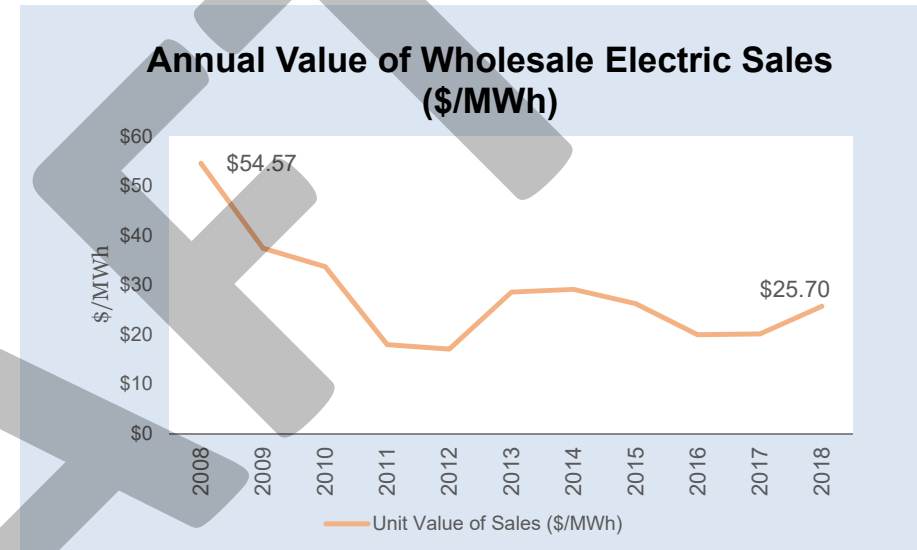
Reducing Rate Increases with Wholesale Revenue

Sometimes we have an opportunity to sell surplus electricity in the wholesale electric market. We can have surplus for many reasons, including greater than normal rainfall in a given year. This allows us to generate more power than our retail customers need, creating a “surplus” of power. We then sell this surplus power to other electric companies, or market participants, at the current market price for wholesale power.

We use the revenue from such surplus sales to offset future rate increases. This is one of the many ways we work to keep retail rates lower than they otherwise would be for our customers. Unfortunately, due to the lower market prices for wholesale electricity in recent years, our revenue from this source has been decreasing over time.

The potential value here is dependent on two factors that are out of our control: how much surplus electricity we have, and the price the market is willing to pay for that electricity. That makes forecasting our wholesale revenue a challenge. We do have a hedging strategy in place to help manage these risks.

Twelve percent of our total revenue came from wholesale sales in 2018. Ten years ago, this number was 24 percent. This decrease is primarily due to the declining average value for each MWh sold. This price decline has come from factors such as the growth in new renewable resources including wind and solar, in addition to lower natural gas prices resulting from fracking. Reasons for this decline are further explained in [Section 6](#). The illustration shown here provides a representative price forecast for [Heavy and Light Load Hours](#), which is how wholesale energy is often sold.





Click! Network Revenue

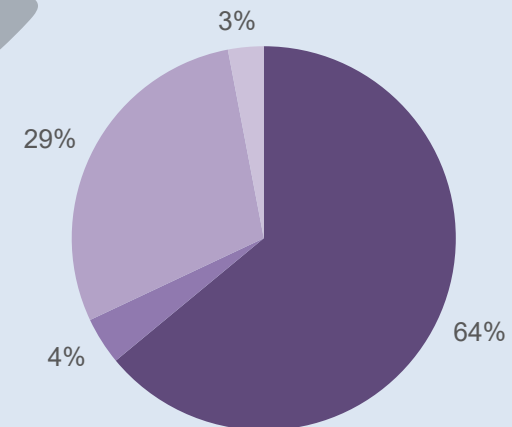
Click! Network is an operating section of Tacoma Power and generates revenue from retail cable TV and wholesale high-speed internet services. The chart to the right shows the breakdown between different cable and internet revenue components.

Click! is presently developing a new business plan for future operations. Click! represents approximately six percent of Tacoma Power's total revenue per year and this revenue offsets a large portion of Click! costs. However, programming costs have increased dramatically, and changes in how people consume programming have occurred. For example, many people have moved from subscribing to traditional cable to watching shows online or through services like Netflix.

To address these changes, Tacoma Power is presently in negotiations to create a public-private partnership that would allow for an irrevocable right of use for this broadband system by a third-party provider. Tacoma Power, its Public Utility Board, and the City Council are all committed to finding a long-term, financially-sustainable outcome for this community asset.

Click! Revenue Components

■ Cable TV
■ Internet Service Provider Contracts
■ Network
■ Misc.



2018 Click! Revenue
\$25,361,297



Credit, Debt, & Reserves

Tacoma Power Credit Rating

Recall from [page 35](#), Tacoma Power is rated by three different rating agencies. Moody's Investors Service is one of the rating agencies that have published their methodology for analyzing utilities like Tacoma Power. Understanding their methodology helps interpret the rating agency process and align financial metrics with the agency's rating scale.

The items in the table to the right comprise the financial strength portion of Moody's rating. The financial strength components constitute a 30% weight toward the final rating and the scale is for a rated public power utility with generation.

In 2015, Tacoma Power used cash reserves to call the \$122 million debt service of the 2005B series of Bonds. This reduced our outstanding debt and helped improve our financial strength. The next few pages further illustrate how this transaction impacts the utility.

For more detail on how we set targets in these areas and manage to them, see the discussion of days liquidity and debt service coverage ratio in the [next section](#).

	Aaa	Aa	A
<i>Adjusted Days Liquidity</i>	≥ 250 Days	249 to 150 Days	149 to 90 Days
<i>Adjusted Debt Service Coverage Ratio</i>	≥ 2.5 x	2.49 x to ≥ 2.0 x	1.99 x to ≥ 1.5 x
<i>Debt Ratio</i>	< 25%	25% to < 50%	50% to < 75%

Adjusted Days Liquidity: Ratio of Current Days Cash on Hand, and the ability to cover expenses with cash.

Debt Service Coverage Ratio: Ratio of cash flow available to pay debt service, relative to the annual debt service owed.

Debt Ratio: Ratio of total debt outstanding as a percentage of total Assets.

Tacoma Power	2014	2015	2016	2017	2018
<i>Days Liquidity</i>	335	215	236	210	205
<i>Debt Service Coverage Ratio</i>	1.90x	2.01x	2.31x	2.82x	3.06x
<i>Debt Ratio</i>	37%	29%	26%	29%	28%



Debt Repayment Schedule

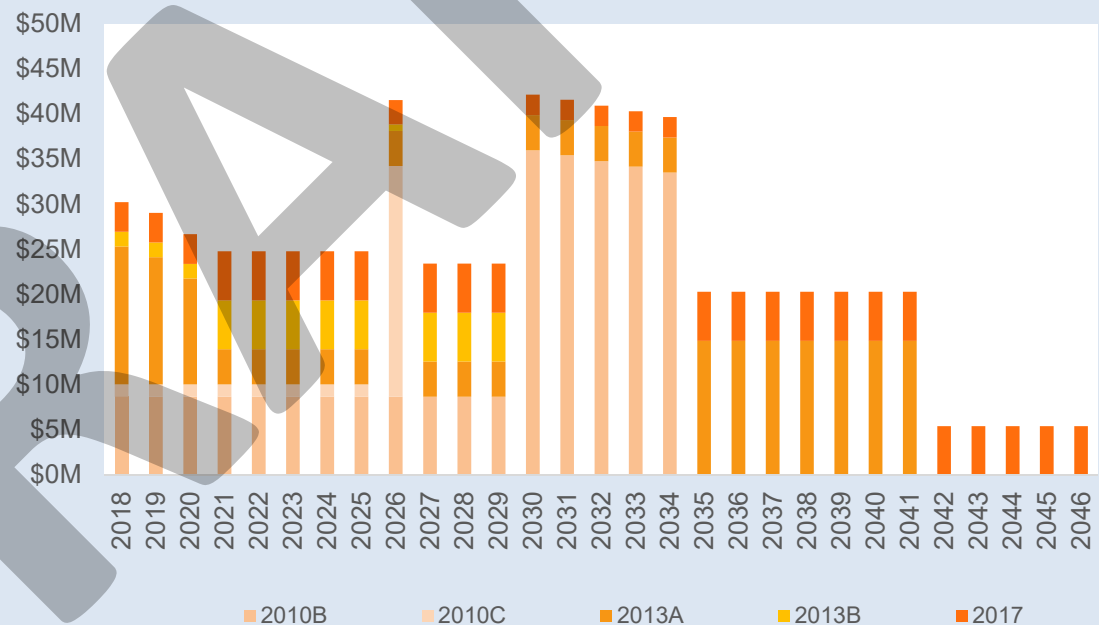
You'll probably notice that this chart isn't quite as flat as a 30-year mortgage. We'll discuss those spikes in the next few pages and again in [Section 8: Funding the Plan](#).

We sell bonds to investors to help fund capital expenditures. You'll notice in the chart that there are A's, B's, and C's after the year the bond was issued. This means that when we issued the bonds we sold them in different "tranches", which means separate portions with different terms, conditions, and purposes.

When we make payments on our bonds, we pay a principal payment and an interest payment. These payments are due on January 1 and July 1 each year. The chart shows the combined annual principal and interest payments by bond. Closely managing the timing and payments of this portfolio helps maintain our financial strength.

Debt Service Overview

This chart shows the combined principal and interest payments due by Bond and arranged by year.*



* Debt Portfolio shown on an [accrual](#) basis. The combined principal and interest payments due in the chart do not include subordinate bonds or notes, including payments under the Wells Fargo Note Purchase Agreement.

What is a Financing Plan?



A financing plan outlines steps to fund the most recently approved budget; maintaining and improving our financial strength.

Implementing a Financing Plan can lead to many important results, such as:

Increases or reductions to our total outstanding debt.

Changes to debt service payments, both timing and amounts.

Identification of future challenges, such as spikes in the debt repayment schedule that need to be addressed.

Ability to finance capital projects, both on an interim basis and through long-term bonds.

The next few pages show how the last two financing plans have impacted the utility.



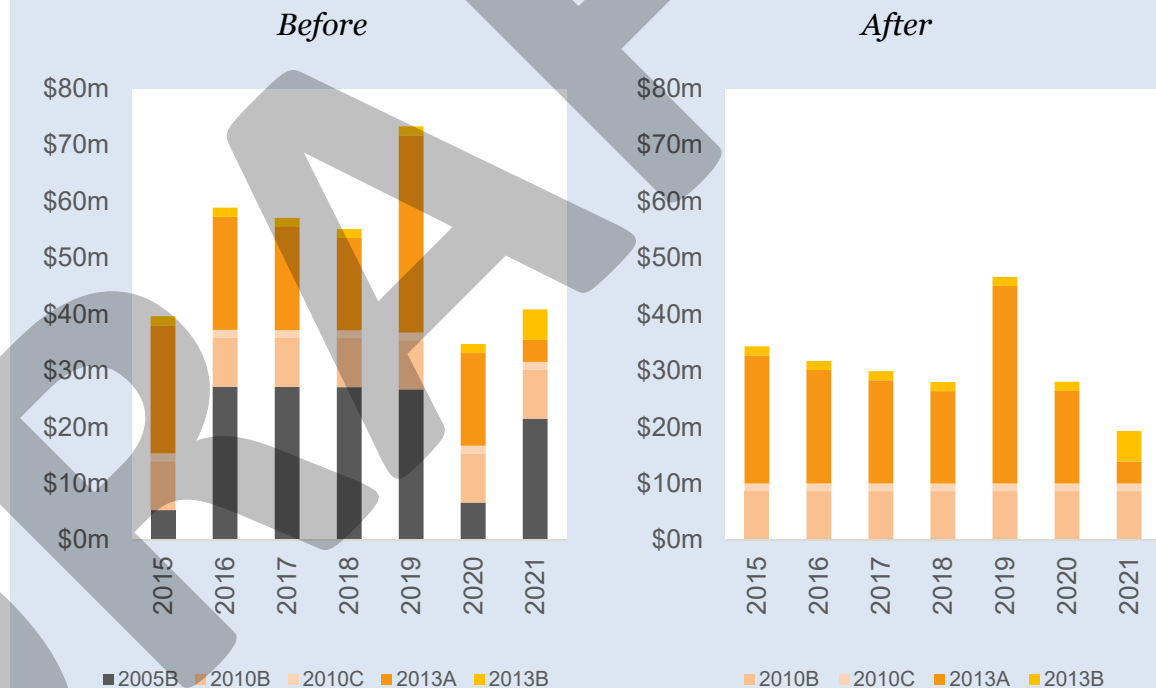
Reducing Outstanding Debt

We called the remaining 2005B Bonds on July 1, 2015 using cash reserves totaling \$122,135,000.

This is an example of how Tacoma Power has used surplus revenue from wholesale power sales to benefit our customers.

The debt reduction in 2015 lowered the amount needed to maintain our Debt Service Coverage Ratio and reduced the size of future rate increases. As a result, in 2016 we were able to keep our rates constant with a 0% rate increase, despite the pressures of declining revenues and increasing expenses.

The 2015 Financing Plan reduced Tacoma Power's outstanding debt by 24%





Spikes in the Debt Repayment Schedule

The spikes shown in the charts are from the specific terms and conditions associated with the year a bond must be repaid.

The first spike is related to a large principal payment due on January 1, 2020, for the 2013A Bonds. Tacoma Power issued the 2013 Bonds in two tranches (2013A and 2013B). The bonds were used to fund capital improvements during the 2013/2014 biennium and refund previous long-term bond issues.

This single-year large principal payment, due in 2020, represented a notable challenge in our debt repayment schedule. We would need to significantly increase our revenue in that single year to maintain a reasonable debt service coverage ratio. In order to deal with this spike, Tacoma Power received approval from the Public Utility Board and City

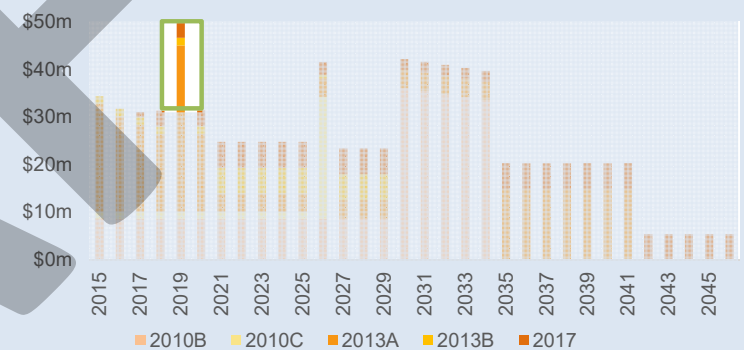
Council and defeased \$27.155 million in debt service payments.

The next repayment spikes begin in 2026, all related to the 2010 Bonds which were issued through a government program called Build America Bonds (2010B) and Clean Renewable Energy Bonds (2010C).

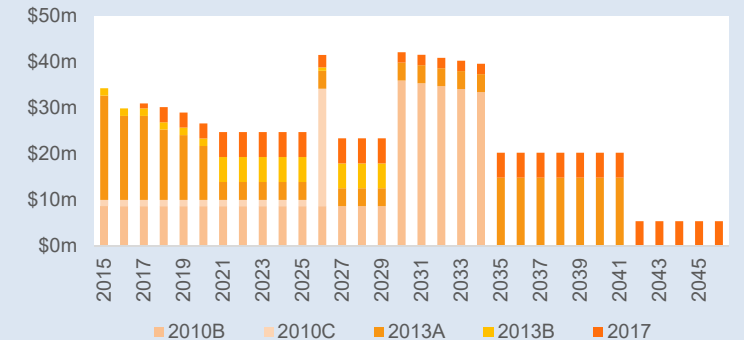
We have already started thinking about how best to address these spikes and have incorporated a strategy in this Long-Range Financial Plan.

Opportunities and Challenges in Existing Debt Service

Before the defeasance in October 2017



After the defeasance in October 2017





Leveraging Short-term Debt

When did we start taking on short-term debt? It was part of a plan to diversify and reduce our overall debt. In 2015 we implemented two short-term variable rate Note Purchase Agreements to provide up-front interim financing for capital projects and additional liquidity if needed.

That plan included paying the remaining outstanding principal and interest payment on the 2005A Bonds and exercising an option to call the remaining 2005B Bonds. We used funds available in our reserve funds to complete this process.

\$100 million Note Purchase Agreement with Wells Fargo

In 2015, we issued a short term 3-year line of credit from Wells Fargo in the amount of not to exceed \$100,000,000 outstanding at any time. This agreement provides up-front interim financing for capital projects and defers the issuance of long-term bonds.

Tacoma Power drew \$80,250,000 under this line of credit in 2016 and used proceeds of long-term bonds issued in 2017 to pay \$80 million back to Wells Fargo, returning our balance to \$250,000 – the minimum account balance required. In May 2018, we extended this line of credit to August 8, 2020 and drew another \$75 million to fund a portion of our 2017-2018 biennium capital spending. In this way, we have been able to save our customers millions of dollars by not paying interest on borrowed money before we need to spend it.

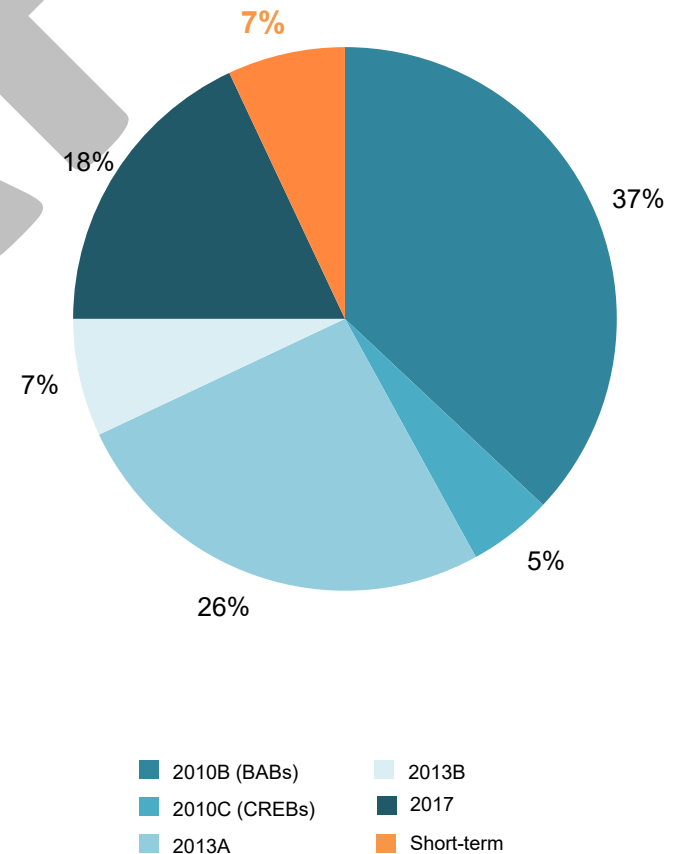
\$25 million Note Purchase Agreement with Key Bank

In 2015 we also issued a short-term 3-year line of credit with Key Bank to serve as an additional source of liquidity. Tacoma Power never made a draw on this line of credit, which expired in May 2018.

How short-term debt compares with the long-term bonds

Debt Service Percentage of Total as of December 31, 2018

Short-term debt





Short-term Debt: Wells Fargo

Historically, we've used the proceeds of long-term bonds to fund capital improvements, but that strategy can result in long periods of time before the funds are fully spent. (Sometimes projects get delayed or priorities change after bonds have been issued.)

That's not ideal, because Tacoma Power is paying interest to bondholders on the borrowed money. Although unspent funds earn a small amount of interest while they are waiting to be spent, it's often less than the interest expense we are paying on the bonds themselves.

To address this, a short-term Note Purchase Agreement, or funding arrangement was put in place in 2015 with Wells Fargo. This tool gives us the opportunity to pay a low fixed-rate commitment fee on the unspent funds and a variable-rate fee on the funds that are spent. The combined rate of these fees is lower than the difference between the interest we previously earned on unspent bond funds and the interest we paid to bond holders.

Here's why that's a good strategy: Tacoma Power expects to spend approximately \$100 million on bond-funded [Capital Improvement Projects \(CIP\)](#) in each future biennia. When we've drawn the full amount we need for these projects using the Wells Fargo agreement, like a line of credit, we'll issue long-term bonds to reimburse the Agreement with Wells Fargo. This fixes the interest rate for the remaining life of those capital projects. Then we can use the line of credit (again) to fund the CIP approved for future biennia.

*In other words, this Agreement helps keep us from paying unnecessary interest on funds we're not ready to use yet. Between 2015 and 2018, we estimate approximately **\$14 million** was saved as a result of this Agreement.*

Wells Fargo Drawdown Direct Purchase Agreement

Commitment Amount:
\$100,000,000

***Drawn Amount:**
\$250,000

Start Date:
May 12, 2015; extended on
May 11, 2018

Term:
Due August 8, 2020

Purpose:
Interim Financing of
Capital Projects

*Our variable rate Note
Purchase Agreement with
Wells Fargo allows us to
fund capital projects on an
interim basis.*

*Tacoma Power used the proceeds from the 2017 Bond issuance to return the drawn amount of \$80,250,000 back to \$250,000 on September 1, 2017.



Reserve Accounts

Bond Reserve Fund

When issuing bonds in previous years, Tacoma Power established a Bond Reserve Fund. The fund was created to pay for outstanding bond interest and principal payments in the event that the utility is unable to pay from revenues. The Bond Reserve Fund does not contribute to any of Tacoma Power's financial metrics, like days liquidity discussed in the [next section](#).

The fund may contain a combination of cash, investments, and [surety policies](#) and the size of the fund must remain sufficient to meet the Reserve Account requirements until the bonds are paid in full. The determination for the size is based on the lesser of the following two requirements:

1. the maximum annual debt service payment in the debt portfolio, or
2. 125% of average annual debt service payments in our debt portfolio.

Tacoma Power's Bond Reserve Fund is sufficiently funded through 2020 when an existing surety policy will expire. The Plan outlined in this document is to meet the surety requirement using cash going forward.

Rate Stabilization Fund

The Rate Stabilization Fund (RSF) provides Tacoma Power with additional flexibility to meet financial needs. The fund was created using surplus wholesale revenue in 2010 and helps prevent the need for large rate changes outside of our normal rate setting processes.

Unlike the Bond Reserve Fund, the RSF does contribute to our financial metrics. The fund only contains cash from surplus revenue and recognition of that revenue as earnings has been deferred until the year it is transferred from the RSF into our Current Fund (the general account used to manage our operating expenses). The balance of the fund, however, is considered part of our total Days Liquidity balance, as listed in the [next section](#).

Every year Tacoma Power evaluates the size of the fund to determine whether it should be increased or decreased. To-date, Tacoma Power has not drawn on the RSF. However, in 2001 the utility needed more than twice the current balance to address challenges in the wholesale electric market due to the energy crisis. We do not know when the next energy crisis will impact us, but this fund helps us be more prepared for the unknown.

Historical Rate Stabilization Fund Balance

2009	2010	2011	2012-2018
\$0	\$10,000,000	\$36,000,000	\$48,000,000



Bringing it All Together

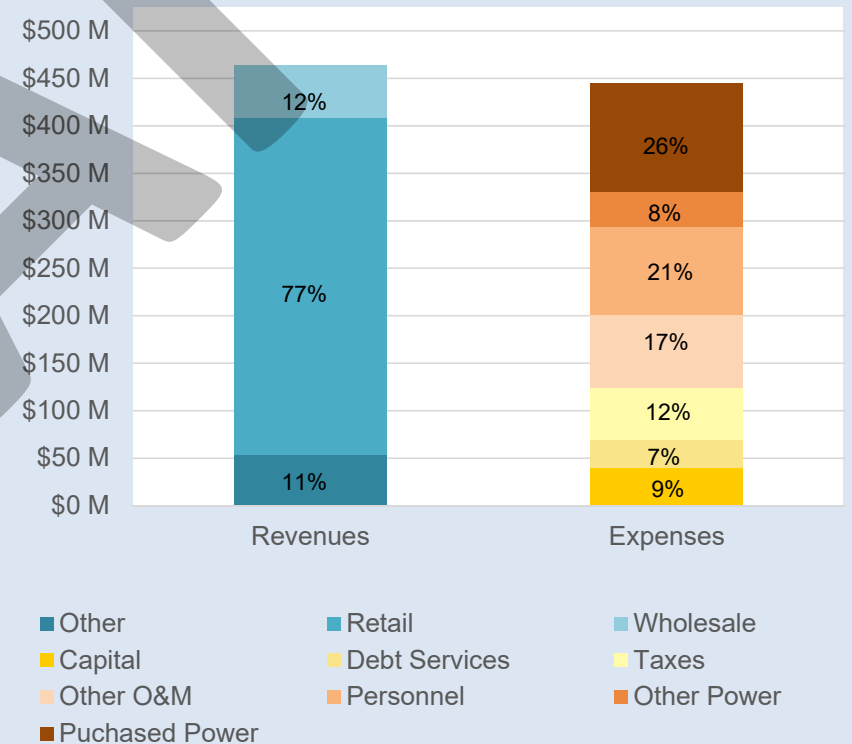
This slide brings together all of the components explained in the background section into a side-by-side comparison. Revenues in 2018 are \$464.4 million and expenses are \$415.7 million.

We always plan to collect more revenue than Operations and Maintenance expenses. We need positive net revenue to pay debt service and taxes, and to fund a portion of our capital expenses. For example, we used some of our accumulated cash reserves for the defeasance described on [page 57](#). These actions allow the utility to make the rate increase lower for customers than it otherwise would be.

It is a balancing act to keep the right amount of cash available to manage the operations of the utility and hold sufficient reserves to mitigate the many risks associated with our business. This is something we are always actively managing.

We use a financial model to analyze each component, compare assumptions, and determine a range of possible different financial outcomes. The model projects cash flows and other critical financial metrics over a 10-year time horizon. We can update the model to examine changes, test assumptions, or run scenarios that may impact the utility.

2018 Revenue & Expense Assumptions



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Section 5 The Base Case

The Base Case is the financial model against which we analyze and compare every scenario.



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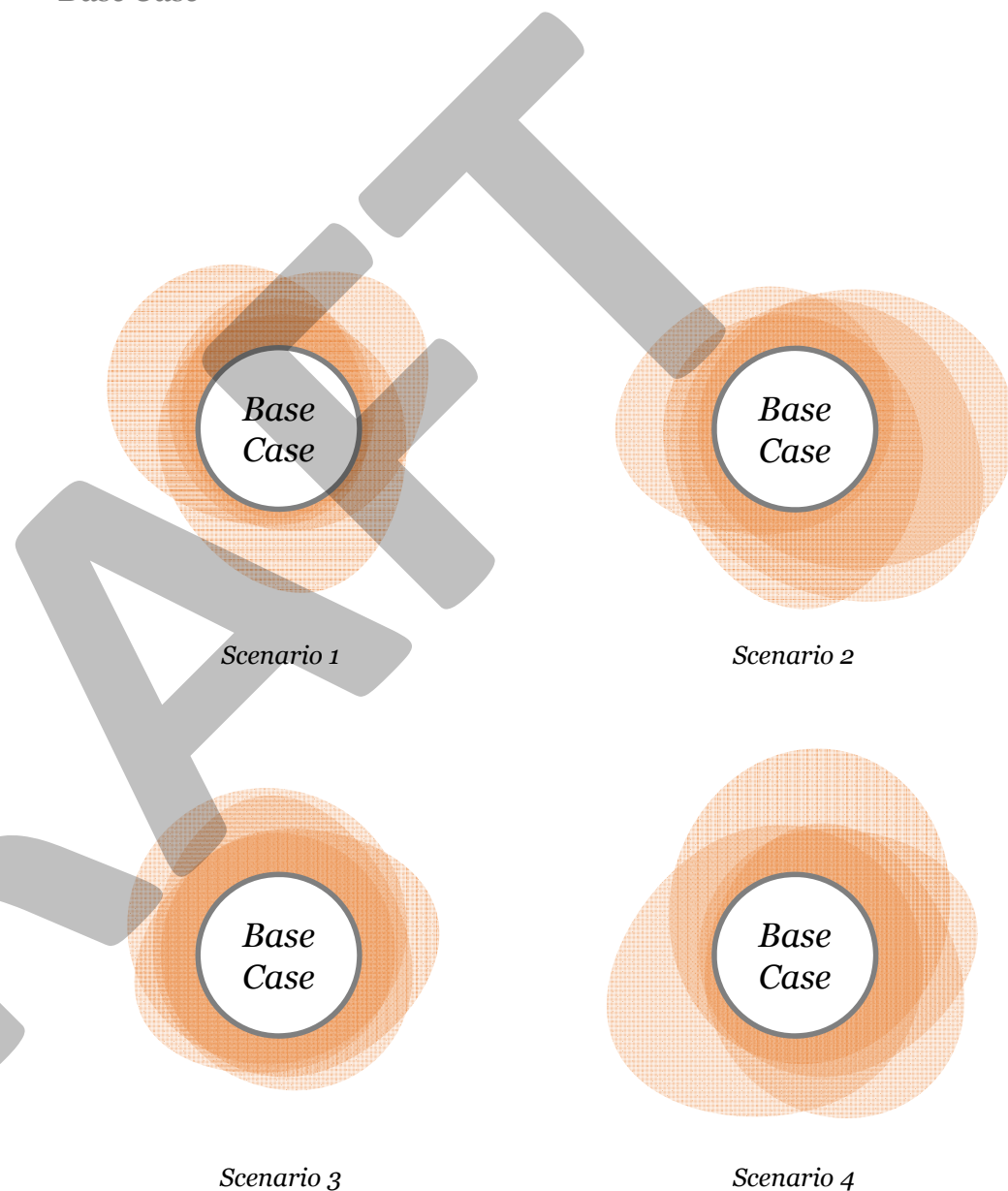
The Base Case

One of the purposes of the LRFP is to look at possible impacts of changes that may occur in the future. In order to do that successfully, we need a foundational example to compare our changes to. We call that example a [Base Case](#).

Think of it as the control in a scientific experiment. In a document where we will change and adjust different components of the plan (shown as [Scenarios](#)) to understand the resulting outcomes, the Base Case is the thing that doesn't change; **it's the foundation of the Long-Range Financial Plan**. The pictures to the right are a simple illustration of how the base case is always at the core and numerous other factors change around it to produce different scenarios.

In this LRFP, the Base Case is the combination of Tacoma Power's financial performance through May 2019 and the background information you read about in the previous section.

The analysis of scenarios and risks described in the following sections get compared with the Base Case to provide a relative rate increase. This results from using projections for liquidity and debt service coverage to indicate what rate increases are needed to maintain financial targets.



Liquidity

In order to understand how managing financial metrics influences rate increases, it is important to explain the two metrics we use as guides. We have minimums that we must maintain to meet our bond covenants, but also have targets that are well above these minimums.

The first metric is Days Liquidity. This is an organization's ability to cover operating expenses over a period of time. Tacoma Power's target is to continually maintain enough liquidity to operate the utility for 180 days. This target helps us maintain AA-level financial metrics. Any forecast that tells us we'll miss this target is something we will want to fully understand and explore and could potentially lead to a rate adjustment.

Here's how we calculate liquidity:

We add together all unrestricted cash and investments, including the Rate Stabilization Fund and acceptable Bank Lines

We multiply that number by 365 days

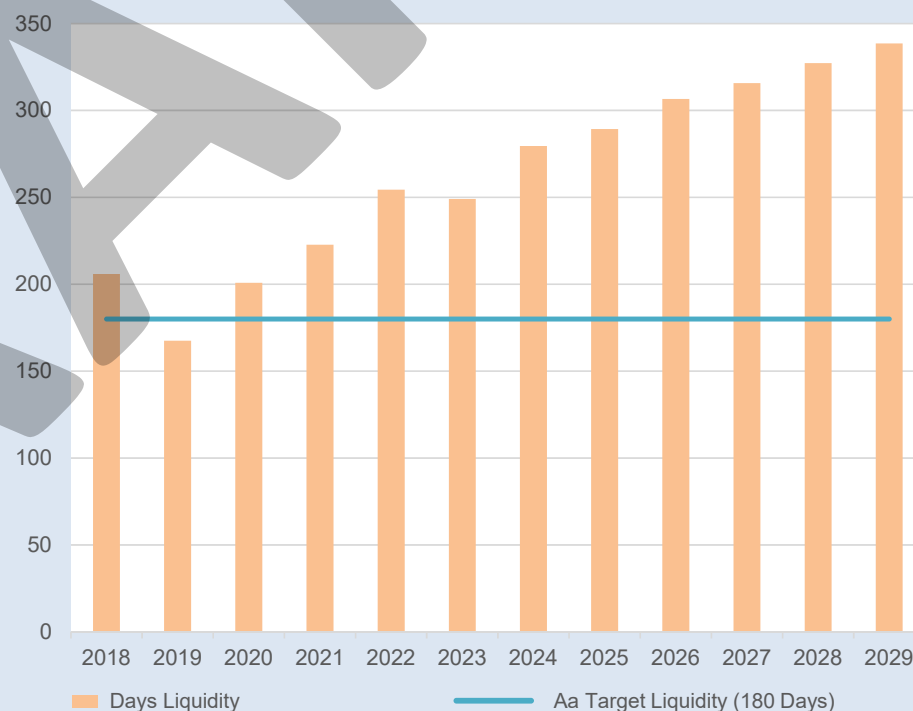
We then divide that total number by our annual operating expenses

That gives us the number of days of liquidity

As you can see from the chart, we are well above our target in the base case. These values change as we look at different scenarios on the following pages.

Historic and Base Case Projections of Days Liquidity

Target = 180 Days



Adjusted Debt Service Coverage

Another primary driver for rate increases is Tacoma Power's [Debt Service Coverage Ratio](#), a measurement of our ability to repay annual debt obligations using Net Revenue.

Net Revenue is simply the revenue we have left over after we pay operating expenses.

Debt Service Coverage is our ability to pay our debts after we've paid our other operating expenses. We have a legal obligation to maintain Net Revenue at a level that equals 1.25 times (1.25x) our debt service payments but we target maintaining 2.0x to support our existing bond ratings. If a projection shows that we wouldn't be able to maintain a 2.0x coverage ratio effectively, we would likely recommend a rate increase.

Here's how we calculate coverage:

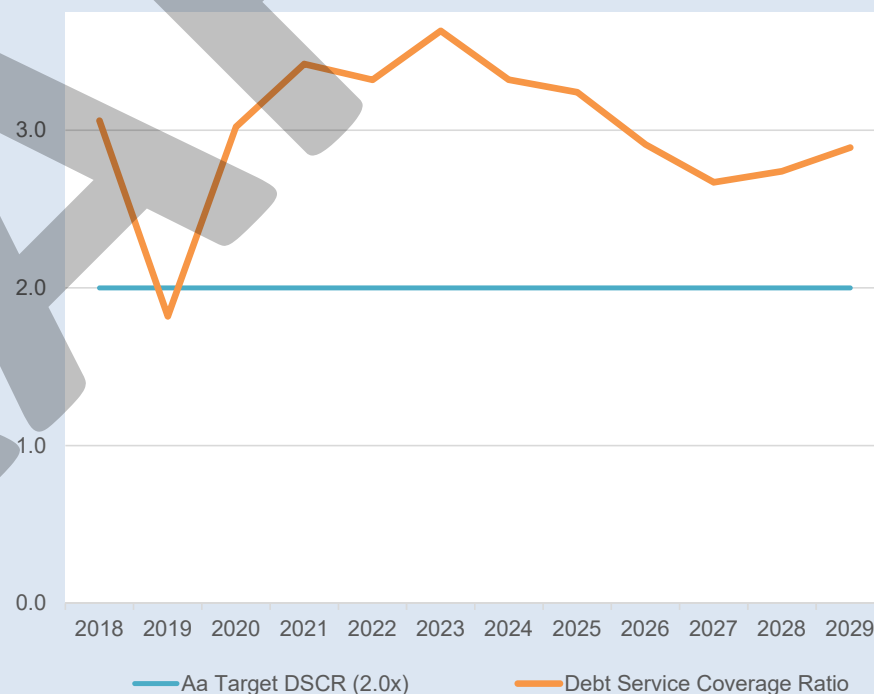
We subtract our total expenses from our total revenue to determine Net Revenue

We divide that number by our debt service payments due in that year, on an accrual basis, to determine the ratio of Net Revenue to Debt Service

As you can see from the chart, we are above our target with this metric in the [Base Case](#). Just like the [Days Liquidity](#) metric, these values change as we look at different scenarios on the following pages.

Historic and Base Case Projections of Adjusted Debt Service Coverage Ratio

Target = 2.0x



Projecting Rate Increases

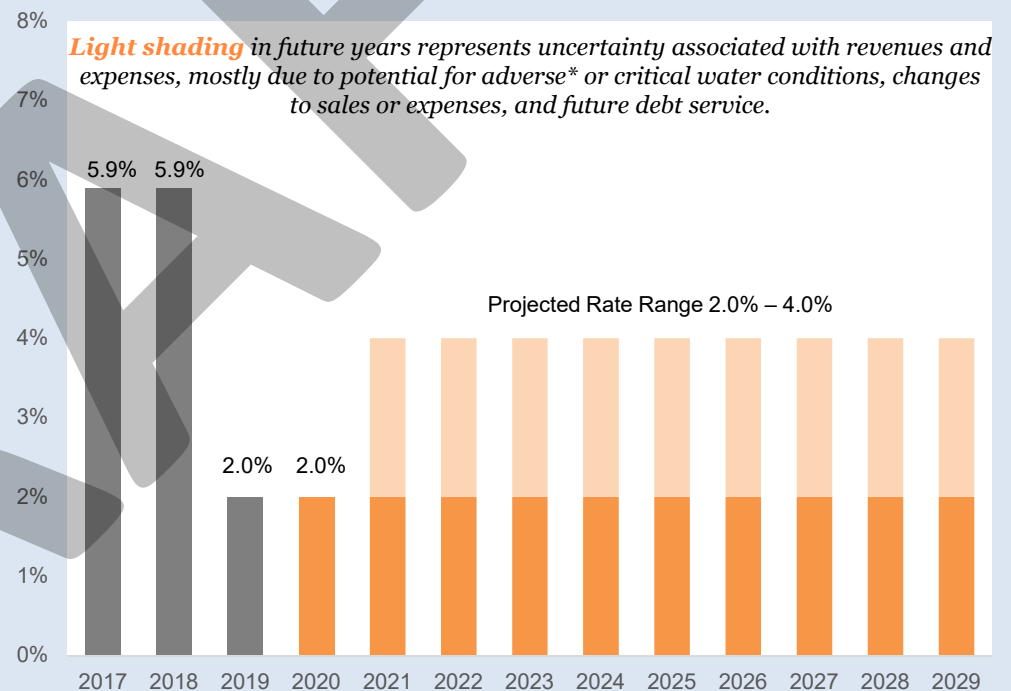
If we plug all the projections from the background section into the model and assume average water conditions, we derive the rate trajectory shown in order to maintain both Tacoma Power's target liquidity and debt service coverage in future years.

In the next section, we are going to test the sensitivity of these projections by changing some of the inputs into the model. The projected rate increases will increase or decrease depending on the element changed, but the changes will always be compared with the Base Case rate increases shown here.

It is important to remember that these are only projections and have not been formally recommended or approved by our regulatory bodies. Something can happen today that significantly impacts these projections, but at the time that this LRFP was published, this was our best forecast for the future.

Historic & Base Case Projected Rate Increases*

Average-water conditions in 2020 - 2029



* As of June 2019

Section 6 Risk Factors

There are things we can control and things we can't control.
In a Long-Range Financial Plan, we try to quantify and
predict as many of those things as we can.



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Internal and External Risk Factors

Risk can have an adverse impact on our finances, so it is essential to understand both internal and external risk drivers. Even though some factors may be out of our control, we can still develop effective strategies to address, plan for, and mitigate the impacts.

In most cases, it is these risks that we use to vary the inputs of our financial model in order to analyze the potential range of outcomes under these circumstances.

We cannot list all the possible risks in this plan, but this summary should provide a good overview of the most significant ones. Additional risks, but not all risks, relevant to the utility are listed in our 2017 Official Statement which is available at <http://bit.ly/tpwr-investorinfo>

Risk factors can include:

External Drivers

Weather & Climate
Wholesale Price Volatility
Economic Cycles
Regulatory Changes
Environmental Regulations
Customer Expectations

Internal Drivers

Compliance with Regulatory Mandates
Supply Portfolio
Technology Changes
Aging Infrastructure
Aging Workforce

In this chapter, we'll investigate:



Weather



Policy or Regulatory Impacts



Power Market Changes



Economic Cycles



*Mt. Rainier
March 2015*



*Mt. Rainier
March 2017*

Weather

Weather is a big external risk factor, and one that is very challenging to predict.

Weather conditions significantly impact both how much electricity our customers demand and the price of electricity in the wholesale power market which influences revenue we earn. In extremely cold or hot weather, people naturally increase the use of heating and cooling systems, creating more demand for energy. This impacts the amount we sell or purchase in the wholesale market.

Weather also influences natural gas prices. As with electricity, the price of natural gas fluctuates with supply and demand. Because natural gas turbines are widely used to generate electricity, these generators are often the least-cost resource in setting the electricity price in the wholesale electric market.

Since Tacoma Power must be prepared to meet our customers' needs during prolonged periods of extreme hot or cold. In addition to those extreme events, we also need to predict overall changes in weather patterns from one year to the next. That's no small task.

The pictures illustrate how different the snowpack can be from year to year.

* Photos used with permission from the US National Park Service.

Hydrology, by Overall Inflow

Hydrology relates to the study of the movement of water. We need to know a lot about hydrology because most of the electricity we provide to our customers relies on water.

Tacoma Power receives the majority of its power supply from hydroelectric generation.

The dams that store water used to generate electricity, in turn, rely on streamflow into the reservoirs behind the dam.

Stream flows are dependent on rainfall and snowpack, and this can vary significantly from year to year.

Yearly variations in snowpack lead to different amounts of runoff in the spring and early summer.

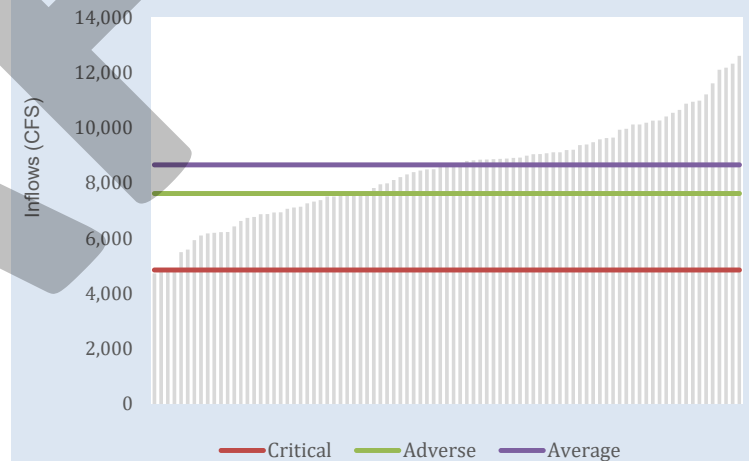
To help us predict the amount of power we can generate using hydroelectric power, we use a historical record to forecast the probability of future weather patterns. Some of these records date back to 1929.

The lowest line on our chart, called a **Critical Water** year, is determined by the amount of water that came into the reservoir during the lowest year on record. There is a very low probability that this will happen again, so we often use this as a lower bound for planning. In other words, if we can meet customer needs during a year with a “lowest-in-history” level of water inflows, then there is a good chance we can meet customer needs all year long.

Also, we use an **Adverse Water** year and an **Average Water** year as benchmarks for planning and forecasting our supply needs and our financial performance.

Total Tacoma System Inflows

*Annual Average 1929–2018
(sorted from least to most)*



Water Planning Standards for generation capacity

Critical: Inflows similar to lowest recorded historical year.

Adverse: Inflows similar to lowest 25% of recorded historical years. We expect this outcome to occur one out of every four years.

Average: Inflows similar to the average of all previously recorded historical water flow years. We expect this outcome to occur one out of every two years.

Hydrology, by Basin

On the previous page, we looked at hydrology risk on a system-wide basis, specifically how Tacoma Power manages the variability across different planning standards.

We operate several different hydroelectric projects across Tacoma Power's electric system, including:

- *Cowlitz*
- *Cushman*
- *Hood Street*
- *Nisqually*
- *Wynoochee*

We also receive power through Long-Term Power Sales Agreements with other entities, including:

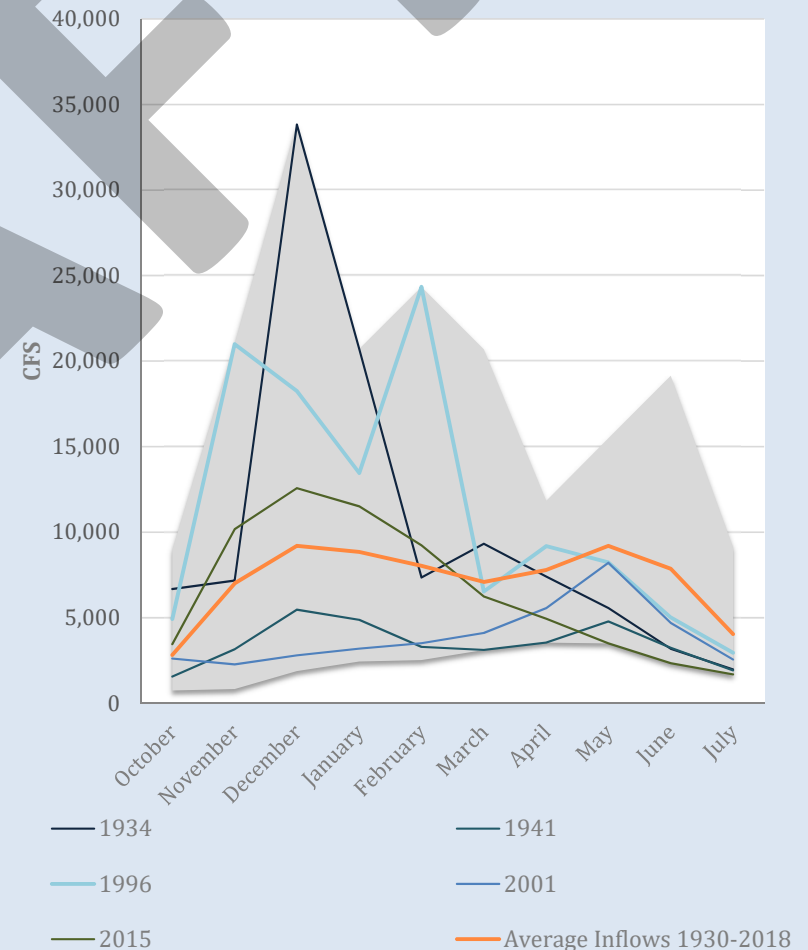
- *Bonneville Power Administration*
- *Grant County PUD*
- *Columbia Basin Hydropower*

All of these projects can have significant variability of inflows from one project to another or from one season to the next, depending upon temperature, rainfall, and snowpack throughout the year.

The chart to the right illustrates the monthly variability of inflows into just one project: the utility's Cowlitz Basin (Mossyrock Dam). The orange line illustrates the average inflows and the shaded grey area depicts the range of historical occurrences. Sometimes years like 2015 occur, whereby there were several drier than expected months, and the overall range in volatility is expanded.

This variability by project, along with licensing requirements, such as fish passage and recreation provisions, should give you an idea of the complexity involved with forecasting hydrology.

Cowlitz Basin Inflow Variability



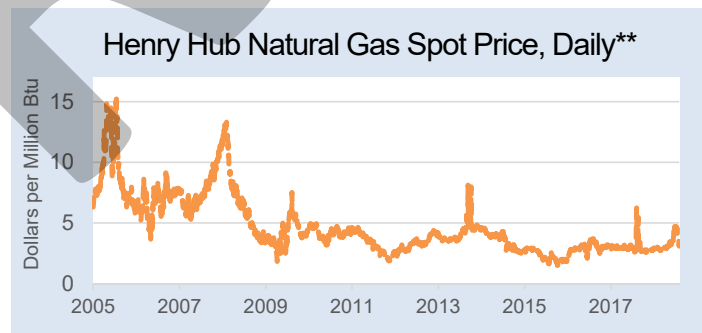
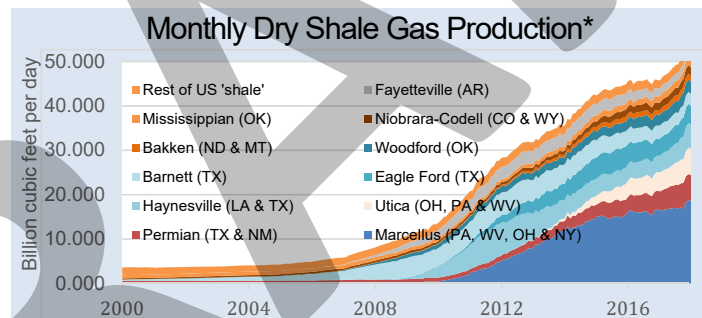
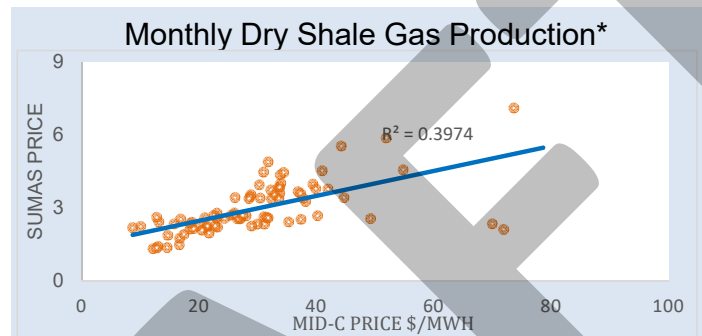
Natural Gas

As previously described, Tacoma Power sells surplus power into the wholesale electricity market. The price of natural gas has a significant impact on the price of electricity in this market since gas turbines are used in most utilities' generation mix and therefore influence the price at which they buy and sell power.

The chart at the upper right illustrates the close correlation between the price of natural gas at [Sumas](#) and the price of electricity at the [Mid-Columbia](#), two prominent trading hubs for gas.

There are periods of time, or seasons, when hydro reservoir inflows are higher than normal and the oversupply of generation can also have a heavy influence on wholesale power prices—but historically gas has been the primary driver.

We incorporate the natural gas price forecast into our model for determining anticipated revenues from wholesale electric sales.



These charts help in providing a reasonable explanation for the current depression of wholesale power prices compared to prior years.

***Shale gas** production has ramped up significantly in recent years, enabled by hydraulic fracturing (or “fracking”) technology, and has significantly added to the total amount of natural gas in the marketplace.*

This increase in natural gas production, starting in 2006, corresponds with a downward trend in natural gas prices during the same period.

* Source: EIA's Natural Gas Weekly Update. State abbreviations indicate primary state(s).

** Source: U.S. Energy Information Administration ([see glossary](#)).

Regulatory Changes

Regulatory changes represent another risk factor. They can occur at the national, regional, state, or local level, and Tacoma Power actively participates in each of these forums. The utility proactively advocates for the interests of customers and endeavors to shape changes that may impact finances or operations.

The adoption of the Energy Independence Act or Washington Ballot Initiative-937, is an example of a recent regulatory change that has impacted the utility. Among other things, the Act requires that by 2020 Tacoma Power obtain 15 percent of its customer's electricity needs from qualifying [renewable sources](#). The requirement escalates in incremental steps, requiring 3 percent, 9 percent, and 15 percent by 2012, 2016, and 2020, respectively.

2019 WA State Legislature Session

The Washington State Legislature concluded its 2019 session passed a number of energy-related bills. Most notable was E2SSB 5116 designed to transition the electricity sector to 100% clean power in Washington state. The Clean Energy Transition Act (CETA) establishes three standards for Washington State utilities:

1. The 2025 Coal Elimination Standard requires utilities to remove all coal from rates.

2. The 2030-2044 Greenhouse Gas Neutral (GHG) Standard requires utilities to provide 100 percent carbon neutral electric service to retail load. To comply with this standard, 80% of sales of electricity to retail customers must be from carbon-free resources and 20% may be comprised of unbundled renewable energy credits (RECs), energy transformation projects, or an administrative penalty payment.
3. The 2045 100% Clean Electricity Standard declares it is the policy of the state of Washington that all sales of electricity to retail customers will be from renewable and non-emitting generation. Utilities must demonstrate compliance with this policy on an annual basis.

Due to its surplus renewable and carbon-free hydro portfolio, Tacoma Power is well positioned to meet the CETA's requirements. However, this sweeping new law includes many policy changes which will require numerous rulemakings and workgroups to determine the implementation details as well as additional new utility planning and reporting requirements.

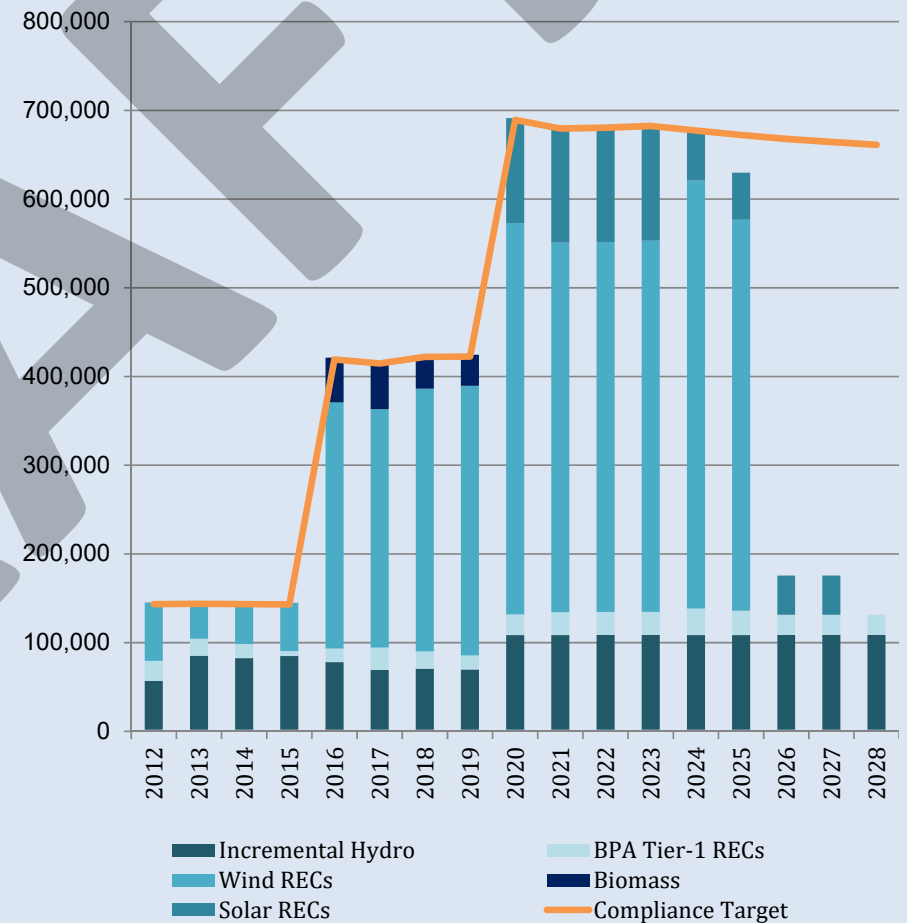
REC Compliance

When qualifying renewable resources generate electricity they not only produce power but they also get credit for producing renewable energy. This credit is a Renewable Energy Certificate or REC. The State of Washington has an approved list of resources that meet the criteria to receive RECs. New hydro projects or improvements to hydro projects qualify to receive RECs, but existing hydro prior to 1999 does not qualify.

The chart illustrates Tacoma Power's compliance with this requirement. Note that if we have extra RECs at the end of the year, we are able to transfer surplus RECs from one year to the following year. This strategy has allowed us to be fully in compliance with the Energy Imbalance Act since its inception.

Renewable Energy Credits

Current Renewable Compliance Status



Renewable Energy Additions

As regulation continues to incent electricity providers to increase the deployment of renewable resources, we must consider the impacts of the resulting transformation on electricity markets in our LRFP.

Washington voters approved a policy initiative to generate at least 15 percent of its major utility energy needs with qualifying renewable resources by 2020. Many other states have similar initiatives, some have far higher goals. The impact on wholesale markets and traditional system operations resulting from these changes is causing a fundamental shift in our industry.

As utilities acquire renewable resources, other power plants historically used for power generation are retired (such as coal, nuclear, and natural gas-fired plants). Since the power generation coming from the new renewable resources, such as solar and wind, are subject to weather patterns, their output is “intermittent”, or variable, throughout the day and year, while the plants they are replacing can be more predictably relied upon to generate power since they are directly managed by burning fuel.

Since power generation must be balanced with consumer demand every second of every day, this reduced control over power generation has caused significant operational challenges to the industry.

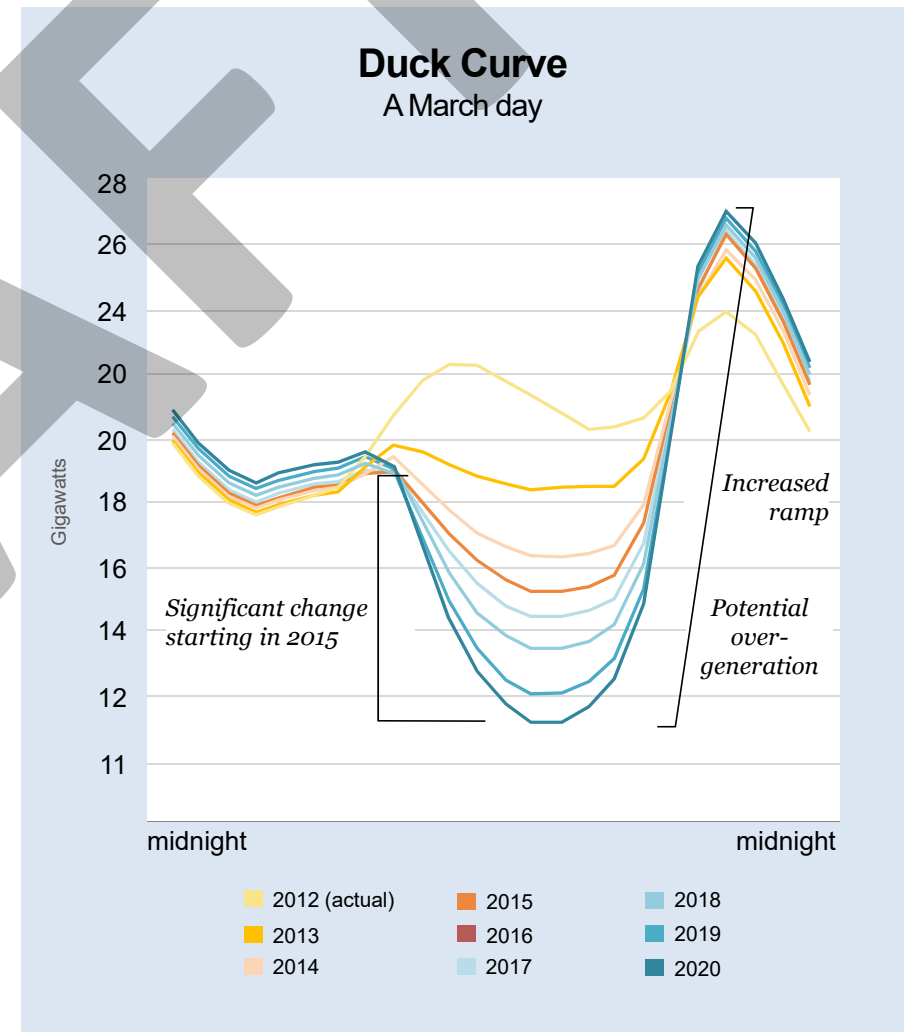


Evolution of the Wholesale Market

Several years ago, the California Independent System Operator (CAISO) - an entity that oversees the operation for portions of the California power system - published a paper forecasting the effects of increasing solar generation. This curve became known as the “Duck Curve” because the shape of the load resembles a duck. The curve shown here illustrates how newly constructed solar resources have reduced the amount of consumer demand from utilities during the daytime hours when solar energy is being produced. As the sun sets and people return home from work, the demand for utility power then steeply increases.

As more solar resources are constructed, these supply and demand difference continues to get steeper, which creates “ramping” challenges for utilities managing power plant generation. The industry is presently innovating to figure out how to handle these new changes in how consumers are using the electric grid in order to maintain system stability and avoid blackouts. Storage is one technology being explored. In the Pacific Northwest, we are also able to leverage hydroelectric power since it can be stored behind dams and released on demand.

Another impact of this change, is that the value of power during the daytime hours has decreased dramatically, since there is no fuel cost associated with solar energy production. This has been a key driver of the lower energy prices we have seen in the wholesale markets. As new resources are constructed and added to the power supply of the region, new challenges will continue to emerge and utilities will need to respond with new infrastructure investments, impacting the cost of providing power to our customers.



Reliability Standards

The Reliability Standards developed by the North American Electric Reliability Corporation (NERC) are another major area of regulatory compliance. NERC oversees and regulates the reliability of the electric system in North America. NERC Reliability Standards define the reliability requirements for planning and operating the North American bulk power system (BPS). The standards apply to all users, owners and operators of the BPS and focus on performance, risk management, and system capabilities.

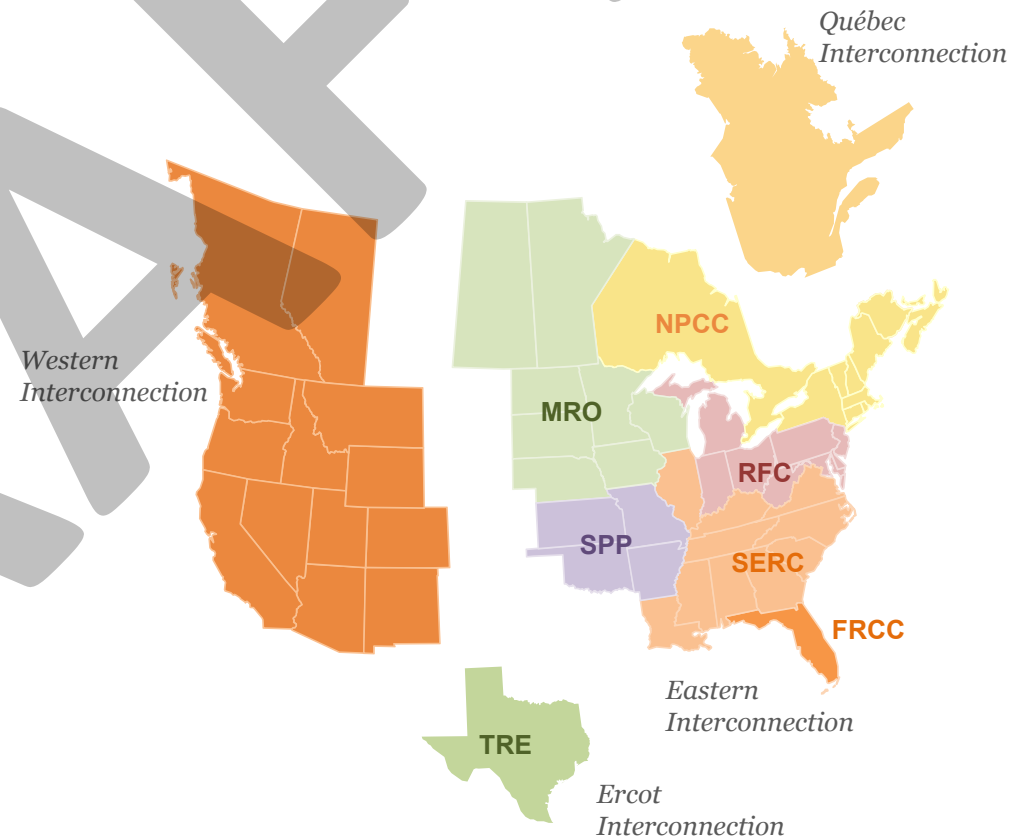
NERC defines a reliable bulk power system as one that is able to meet the electricity needs of customers even when unexpected equipment failures reduce the amount of available electricity.

NERC is divided into regions, and Tacoma Power is a member of the Western Electricity Coordinating Council (WECC). WECC is the regional entity responsible for monitoring and enforcing standards in the western interconnection.

Reliability Standards are continually evolving as new threats emerge or better information about existing standards arise. It is important to remain in compliance with the standards because entities found to be in violation of specific standards can face fines of as much as \$1 million dollars a day.

The purpose of the standards is to ensure grid reliability so that major blackouts like the one that occurred in 2003 do not happen again.

NERC Interconnections



As of June 2007, mandatory and enforceable NERC Reliability Standards became effective and applicable to Tacoma Power in its capacity as an owner operator, and use of the BPS.

Economic Cycles

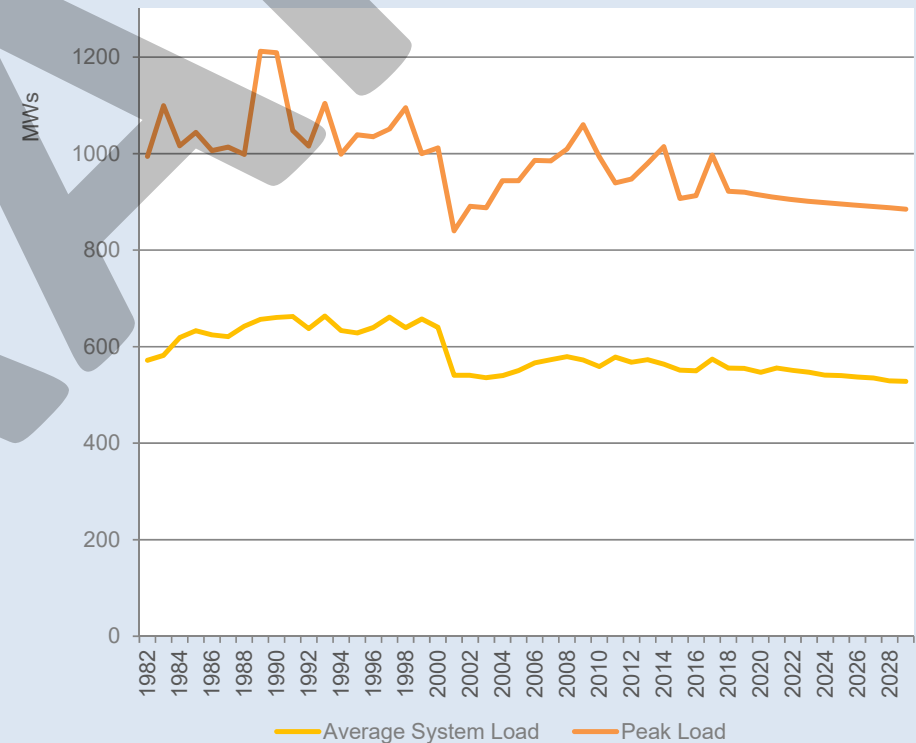
Over 75 percent of Tacoma Power's revenue comes from selling electricity to its retail customers. In an economic downturn, or recession, Tacoma Power's retail load can be decline. A slower economy often results in little to no new business growth. In extended recessionary periods, existing businesses can actually shrink or be forced to shut their doors. Depending on the size of the customer, loss of retail loads can have a significant impact on Tacoma Power.

At one point in the utility's history, several large industrial customers had to close their businesses. Since Tacoma Power is a cost-of-service utility, those costs had to then be recovered from fewer customers. When this happens, rates must be increased or costs must be reduced through actions such as layoffs or a reduction in services provided.

During times of high demand for electricity, such as when the economy is strong, costs, customer demand for electricity will likely increase. However, the costs of goods and services we buy may go up as well. These are all elements we strive to manage through scenario analysis in this Plan.

The chart to the right illustrates the actual and projected growth and decline of average and peak customer loads since 1982.

Tacoma Power System Average Retail Energy Usage & Peak System Loads



Decreasing Retail Loads

Nationally, electric companies are experiencing a decline in consumption. There are many different reasons for this but one that resonates with many people has to do with changing technology. As the picture below illustrates, the common everyday light bulb has changed significantly over time. It is difficult to buy a traditional incandescent bulb anymore and often LED bulbs are cheaper for consumers when given the option.

What happens when you replace an incandescent bulb with an LED is that you end up using less electricity. This is a good thing and we actually help people do this! Check out the existing list of programs at knowyourpower.com that our customers can take advantage of.

However, for an organization that sells electricity this means that Tacoma Power receives less revenue every time a customer installs a more efficient light bulb. It's not just light bulbs though. There are insulation upgrades, heating upgrades and many other ways customers are reducing their consumption. In fact, building standards and codes are being updated all the time and more efficient buildings and infrastructure are replacing less efficient buildings.

Additionally, customers are becoming more aware and interested in ways to modify their energy consumption and save money. All of this adds up to a steadily declining retail load forecast. This was one of the reasons for our last rate increase in April 2017 and a challenge we will be continuing to address moving forward.





Section 7 Scenario Analysis

How different scenarios will likely impact the bottom line.



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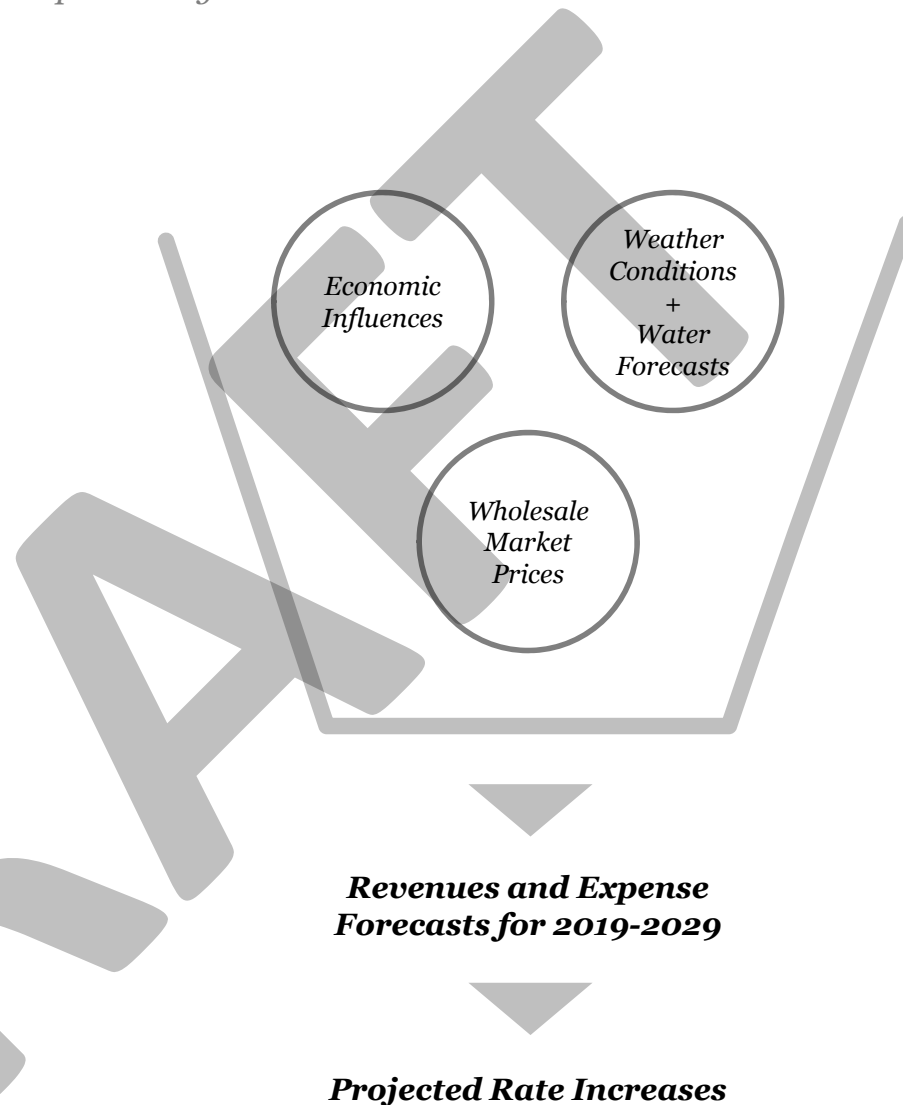
Financial Risk Analysis

Given the risk factors you read about in the previous section, Tacoma Power faces financial variability and uncertainty during the period covered by this LRFP. Analyzing the sensitivity of the Plan to specific risk factors can help improve Tacoma Power's ability to manage the financial impact of these risks. Let's think of those risks in three categories:

*One of the foremost risk categories is **weather conditions**, which creates the potential for diminished revenue due both to changing consumer demand and variable rainfall and snowpack.*

*Another key risk is the impact of **wholesale power prices**. Since wholesale revenues makes up about a significant portion of Tacoma Power revenue, changes to the average market price of electricity can greatly impact financial performance.*

***Economic influences** in the region can either increase revenues through new business developments or reduce usage through the loss of customers.*



Selected Scenarios: Financial Impact Summary

The table to the right summarizes how the impacts of some of the various risks we have presented can affect our future rate increases. We also show the impact of skipping a cyclical rate increase all together. All scenarios are compared to the Base Case, described in more detail in [Section 5](#).

These scenarios shown here provide a range of possible outcomes which help us assess the possible financial risks facing the utility. Due to our current, strong financial position, Tacoma Power can presently absorb many possible risk factors with minimal impact on rates relative to the base case.

In each of the scenario pages that follow specific details are provided to help you understand some of the different components that are unique to that individual scenario.

The scenarios displayed here and in this section are not intended to represent all of the scenarios that we developed and analyzed. However, they provide you with the ability to see some of the expected impacts of possible events.

Scenario	Projected Rate Increases										
	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%	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%
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%

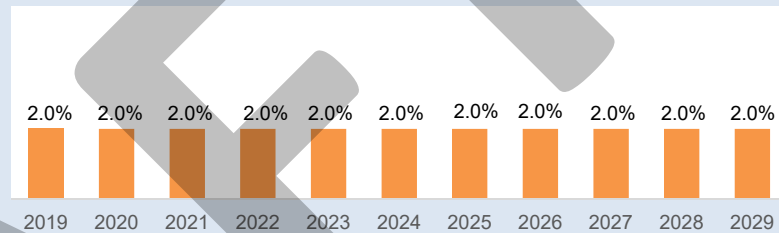
Critical Water Conditions

Tacoma Power is affected by the variability of snowpack and precipitation. Multiple years of dry weather and water shortages can have a significant impact on the financial strength of the utility through reduced revenues. This scenario demonstrates how one year of Critical water inflows in 2021 may impact Tacoma Power financially.

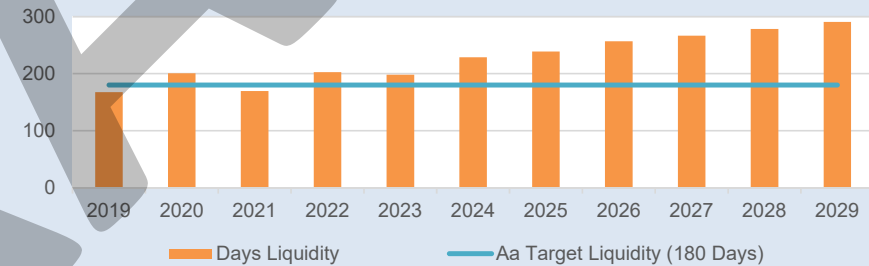
When Tacoma Power has a critical water year, there are much lower inflows into the reservoirs that we rely on to generate electricity. Under this scenario, most of the electricity that is generated needs to be used to serve our customer's needs. When this occurs, Tacoma Power does not have much electricity to sell into the wholesale market, thereby reducing the amount of wholesale revenue the utility can earn.

Illustrated in the Debt Service Coverage Ratio chart, the ratio falls well below the target in the critical water year. We would likely use the Rate Stabilization Fund in such an event to get our Debt Service Coverage Ratio to 2.0 times debt service (shown as the green line in the chart to the right). The Rate Stabilization Fund would then be replenished over the next two biennia. You won't see the impact in the liquidity chart because the Rate Stabilization Fund is included in our Days Liquidity calculation.

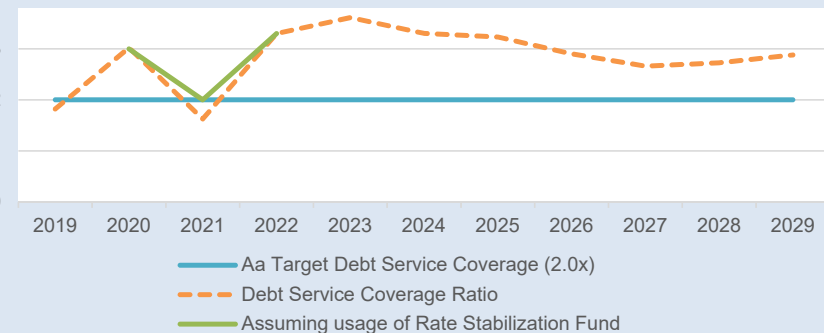
Projected Rate Increase
Critical Water in 2021



Days Liquidity Ratio
Critical Water in 2021



Debt Service Coverage Ratio
Critical Water in 2021



Loss of Large Customer

Losing a large retail customer due to local economic influences is one of the potential external risk factors facing Tacoma Power.

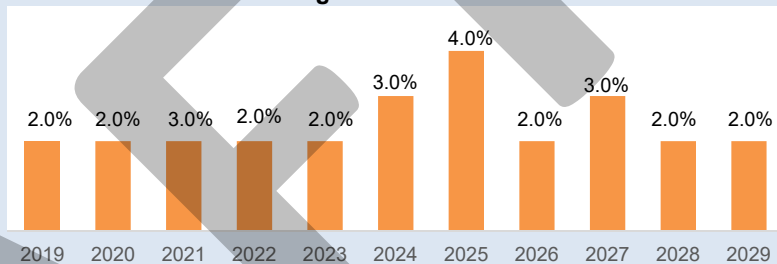
Under typical economic scenarios, retail sales represent about 75 percent of total revenue.

If Tacoma Power were to lose a large retail customer, it makes sense that the amount of retail revenue earned would decrease. This would result in a decline in net revenues for Tacoma Power and affect rate increases in future years.

The opposite of this scenario could also have just the opposite effect. If Tacoma Power were to acquire a new large customer, such as a new large industrial customer, new apartment spaces, or retail businesses moving to the Tacoma service area, net revenues for the utility would increase. This would lead to lower rate increases in the near-term and future years.

In this scenario, the loss of a large customer doesn't severely impact rates because we assumed that the cost to procure power would also go away along with the retail revenues we received from the customer.

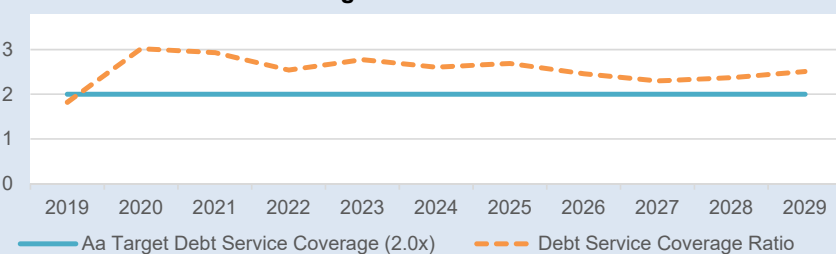
**Projected Rate Increase
Large Customer Loss**



**Days Liquidity Ratio
Large Customer Loss**



**Debt Service Coverage Ratio
Large Customer Loss**

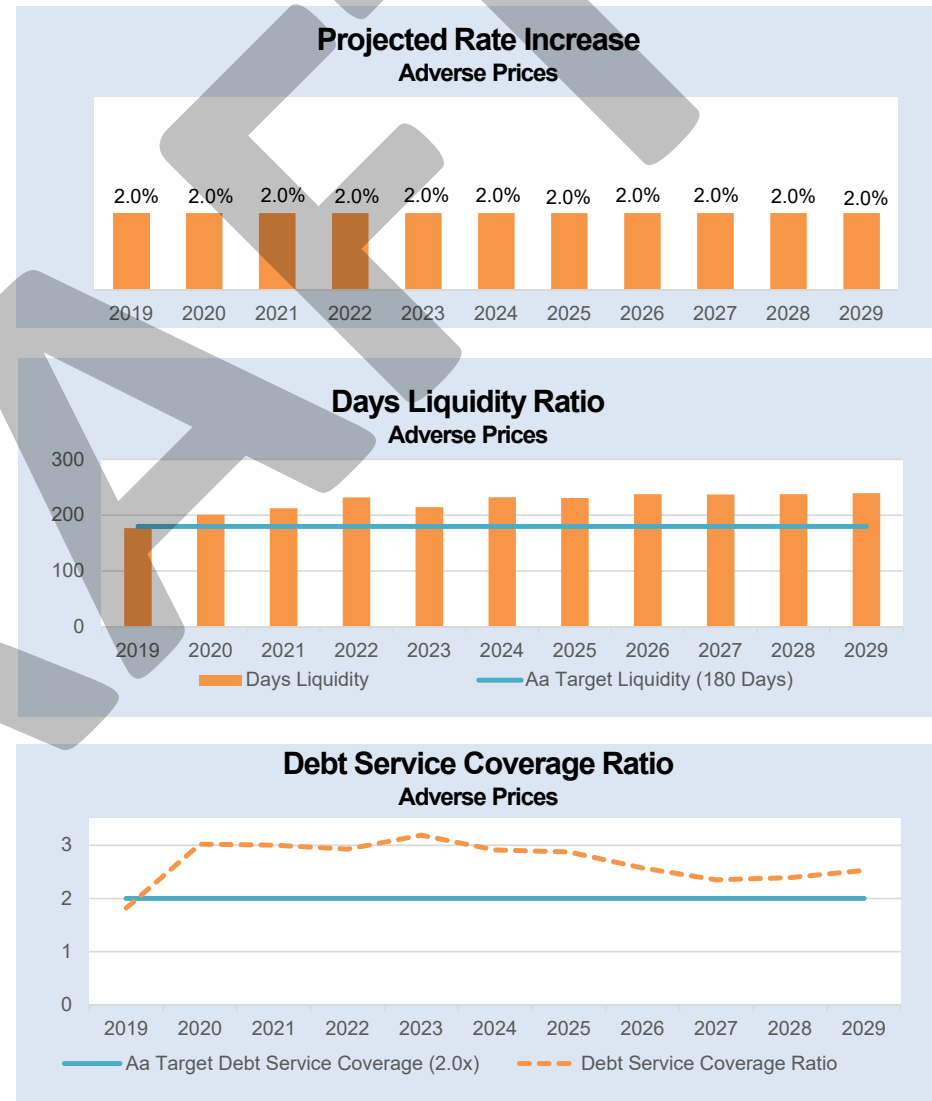


Lower Wholesale Prices

Most of the time we talk about adverse in terms of the water inflows into our system. However, we also consider the effect of wholesale market prices being something less than the current forecasted level, since these revenues are relied upon to help keep retail rates low. For this reason it also makes sense to look at the effect of lower than expected market prices.

Our wholesale revenue is a product of the amount of surplus electricity available to be sold to other users and the prevailing market price for power in the wholesale market. In this scenario, we assumed the market prices were at the 25th percentile of the forecast used in the base case beginning in 2021. This impacts Tacoma Power beginning in 2023 but does not result in projected rate increases that are higher than in the base case.

While it is unlikely for prices to fall this much for a sustained period, some of the risks outlined in the transformation of the market on [page 79](#) could push prices in this direction.

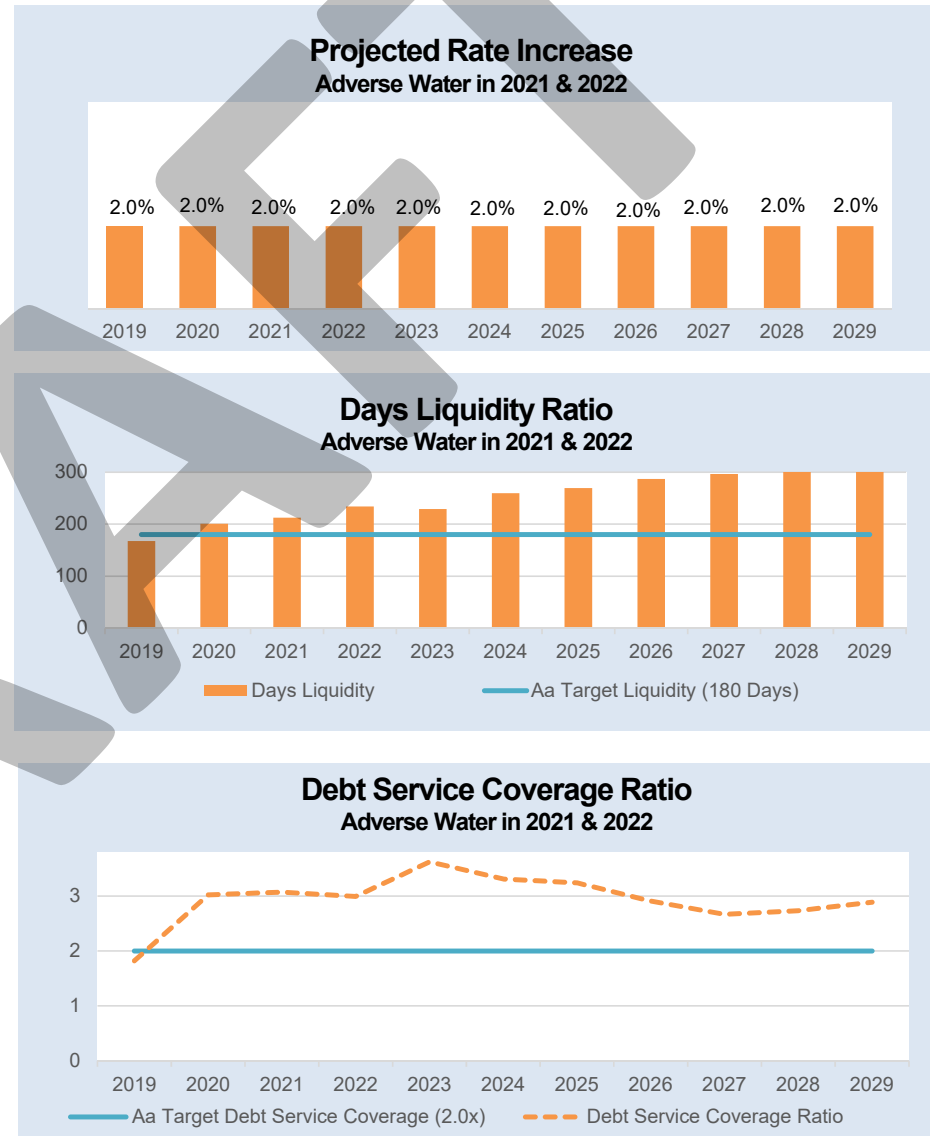


Adverse Water Conditions in 2021 and 2022

This scenario represents how we traditionally plan for water conditions when we set biennium budgets. To assess the impact of sustained lower-than-average water conditions, we forecast the rate increases necessary to maintain our financial metrics, given adverse water conditions in 2021 and 2022.

Due to many of the changes Tacoma Power has made to manage its financial performance in the last few years, like calling the outstanding 2005B Bonds, there is more flexibility in the near-term to absorb the impacts of two adverse water years in a row, as reflected in the charts shown here.

While this is a relatively low probability type of event, the combination of prices and water conditions in the 2015/2016 biennium resulted in wholesale revenue levels equivalent to this very condition. The decline in wholesale revenue during the previous biennium is one of the items that contributed to a need for two 5.9 percent rate increases.



Section 8 Funding the Plan

Carefully considering everything in the LRFP,
what is most likely to happen, and how do we plan to pay for it?



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Electric Rate & Financial Policy

What's in the Policy?

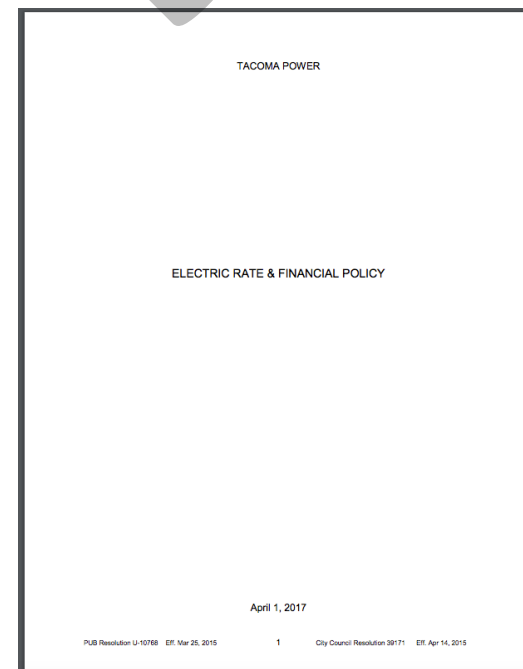
Our Electric Rate & Financial Policy provides guidance for managing the financial performance of the utility and is approved by our TPU Board and City Council. Related to many of the elements discussed in the LRFP, you will find the following sections in the Electric Rate & Financial Policy document:

- I. Rate Setting Objectives*
- II. Rate Review Process*
- III. Rate Setting Policies*
- IV. Financial Targets and Rate Setting Practices*
- V. Rate Stabilization Fund*

Section IV provides guidance on what it means for Tacoma Power to maintain sound financial metrics that support our current and future financing needs, support maintenance or improvement of credit ratings and minimize the cost of funds and risks associated with borrowing. This section also specifies our assumption to use Adverse water conditions for wholesale revenue during the budget planning period.

Section V includes information about the Rate Stabilization Fund. We use this fund as a means to manage potential volatility associated with our operating environment and can draw on the fund to mitigate the need for large rate changes from one year to the next. If you would like to know more about the Rate Stabilization Fund, check out [page 60](#).

The latest version of our Electric Rate and Financial Policy can be found on our website at the following link: <http://bit.ly/tpwr-erfp>



To Cash Fund or to Bond Fund?

We typically fund capital projects using either the money we borrow from issuing bonds or from revenue collected through retail rates and wholesale sales. Our Electric Rate and Financial Policy states that, “Under normal circumstances, major capital projects will be financed primarily with debt and fifty percent of all other capital requirements will be financed through rate revenues.” We make a determination at the start of each biennium about approximately how much of our capital budget should be funded with bonds or cash. However, we also look at actual spending and financial performance during the biennium and make adjustments as required.

Many of the assets Tacoma Power owns have long useful lives and we typically try to fund those assets with bond funds to facilitate equitable cost allocation. If an asset is anticipated to be used for 30 years, we would expect that customers 30 years from now share in paying for the benefits that asset provides. Funding our long-term assets with bonds allows us to align the life of the assets with our payment of them.

Assets with a shorter life are often funded with revenue. However, it is a balancing act because as more debt is used to pay for assets, debt service expenses increase and put stress on future power rates.

Funding Guidelines

Major projects:

100% bond funded

Remaining projects:

50% bond funded & 50% revenue funded

The table below shows how actual capital spending has been funded. We have generally followed the guidelines in our Electric Rate and Financial Policy. However, there are times when we have used more revenue to pay for capital expenses.

Historical Cash and Bond Funding Ratios

	Revenue Funded Capital	Bond / Debt Funded Capital	Total Capital
2013/2014	38%	62%	\$120,439,200
2015/2016	31%	69%	\$159,437,900
2017/2018	42%	58%	\$143,057,300
Average Funding	37%	63%	

Leveling Out Existing Debt Service

Remember those spikes in our [debt service](#) chart? One of the first things we want to do is level those out.

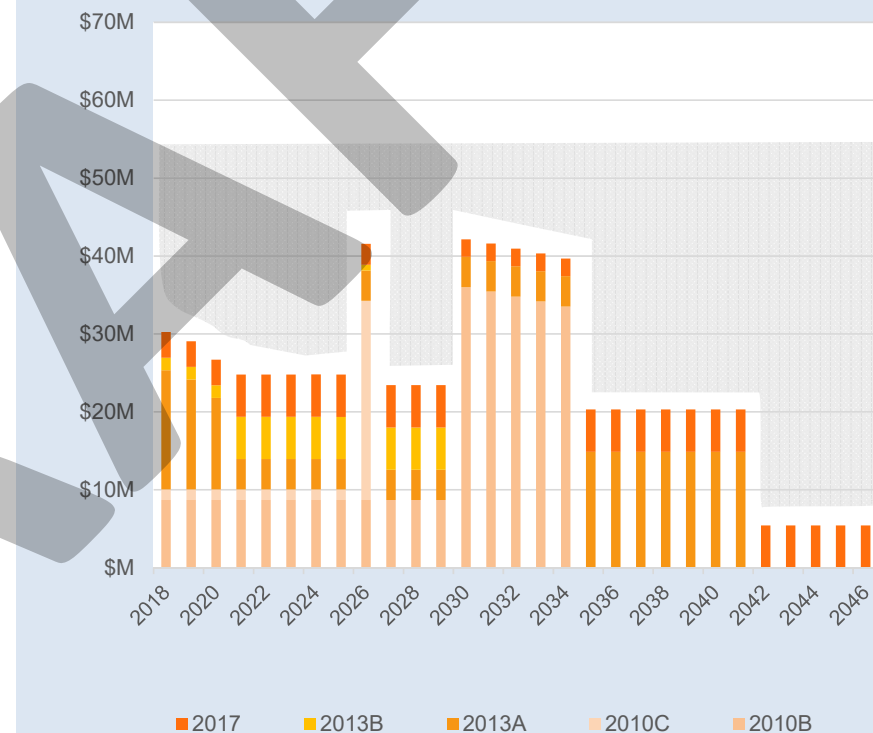
The gray area on the chart represents the gaps we will aim to fill when we issue debt in future years. We will also be extending this chart beyond 2045 as we add capital projects that have a usable life that extends beyond the next 25 years. The placement of debt is a primary consideration when issuing future bonds and a key part of our strategic investment decisions.

The placement of debt is affected by interest rates:

- *If interest rates on existing bonds are higher than current rates, then we may want to pay principal and interest sooner.*
- *If interest rates are lower when we issue bonds, it can be financially beneficial to push debt service payments out further.*

Another assumption included in the LRFP that allows for leveling of the existing debt service is the call and defeasance of bonds beginning in 2023. On July 1, 2023, we may redeem approximately \$32.5 million of outstanding Bonds. We also could defease up to \$15,000,000 in 2025 of other outstanding Bonds. Both the bond call and defeasance would help stabilize rate impacts as well as Tacoma Power's financial metrics in future years. Of course, discussion of any such redemption or defeasance is preliminary and subject to Board and Council approval.

Current Debt Service Profile



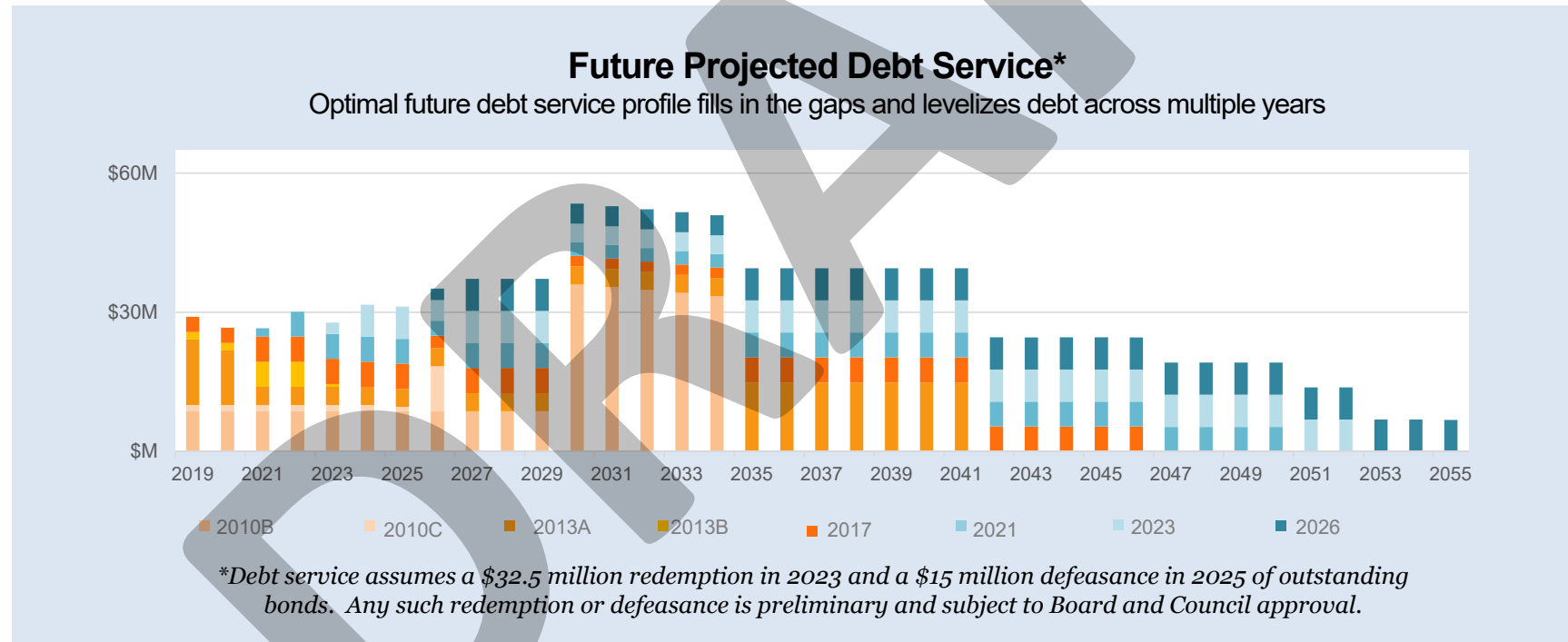
Tacoma Power has [defeased](#) and [called](#) bonds in the past and could do so in the future. No decision has been made to date about future bond repayments or retirements.

Projected Debt Service

In our expected scenario, the LRFP assumes the issuance of approximately \$100 million in long-term fixed-rate bonds in 2021, 2023, and 2026 with payments that are spread over 30 years. These funds will repay spending on capital projects during the prior biennium.

The graph below illustrates the base case future bond issuances that will refund spending on capital projects targeted in future biennia.

The combination of the existing bond issues and projected future bond issues will be structured to level out the future debt service as described on the previous slide.



* Not included in the graph is the debt service due on the short-term line of credit from Wells Fargo that is currently used to manage the initial spending on bond-funded capital projects.



Section 9 Glossary

Defining a few key terms



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Glossary

Accrual method

Under the accrual basis of accounting, expenses are matched with the related revenues and/or are reported when the expense occurs, not when the cash is paid.

Additions and replacements (A&R)

Costs to improve existing assets. Capital additions can take the form of replacing or adding new parts that may increase useful life or potential performance.

Administrative & general (A&G)

Expenses necessary to operate a business, which are not related to materials, labor, or sale of goods or services, such as office supplies, rent, and janitorial services.

Adverse water

The amount of water that came into the Tacoma Power reservoirs during the lowest 25% of recorded historical years on record. This amount of water flow occurs one out of every four years.

Asset life analysis

The process of identifying and documenting all the costs expected over the life of an asset. This includes equipment and facilities. This information is needed to make decisions on the acquisition and ongoing use of assets.

Average water

The amount of water that comes into the Tacoma Power reservoirs on a regular basis. This amount of water flow occurs one out of every two years, or fifty percent of the time.

Base case

A set of financial expectations that represent a “best guess” of the current financial outcomes if unexpected happens. The base case assumes that there will not be major policy changes, unforeseen disasters, or other game-changing events.

Biennium

A specified period of two years and the cycle of Tacoma Power’s budgeting efforts.

Base case analysis

Comparing the Base Case forecast with alternative scenarios. It shows the relative effects of scenario changes to the “Base Case” version of the future.

Bonds

A debt security where an investor loans money to a corporation or government for a defined period of time at a variable or fixed interest rate. Bonds are used by corporations, municipalities, and governments to raise money and finance a variety of projects and activities.

Bond call

When an issuer calls its bonds, the issuer buys back the bonds from the investors prior to the bonds’ maturity date. The issuer pays investors the call price (usually the face value of the bonds) together with accrued interest to date and, at this point, the issuer stops making interest payments.

Capital

Assets or property having value owned by a person or organization.

Capital Improvement Program (CIP)

A four to ten year plan that identifies capital projects and equipment purchases. It provides a planning schedule and options for financing the plan.

Capital Steering Committee (CSC)

A committee of individuals that leverages their experiences, expertise, and insight to make informed decisions and drive the capital program. The CSC prioritizes potential capital projects, and monitors the project status to ensure that the business objectives are adequately addressed.

Glossary cont.

Conservation

Energy conservation is the effort made to reduce the consumption of energy by using less of an energy service.

Cost of service analysis (COSA)

The process of allocating utility expenses among the different classes of customers. Not all customers use the same resources. The COSA ensures users pay for their share of the costs they impose on the utility in the form of rates.

Cost of service utility

A utility where customers are charged rates based on what it costs to provide service.

Credit rating

An estimated ability of an organization to fulfill their financial commitments.

Critical water

The amount of water that came into the Tacoma Power reservoirs during the lowest year on record.

Customer classes

Customer classes are the broad rate groups used to allocate costs to customers. Examples are residential, commercial and industrial.

Days liquidity ratio (days cash on hand)

The number of days that an organization can continue to pay its operating expenses, given the amount of cash available.
 $(\text{Unrestricted Cash} \times 365 \text{ Days}) / (\text{Total Operating Expenses})$

Debt service

The cash that is required to cover the repayment of interest and principal on a debt for a particular period.

Debt service coverage ratio (DSCR)

A measure of the cash flow available to pay current debt interest, principal and lease payments.

$\text{DSCR} = (\text{Operating Revenues} - \text{Operating Expenses}) / \text{Debt Service}$

Debt ratio

The ratio shows the percentage of debt used to finance a company's assets. $\text{Debt Ratio} = \text{Total Debt Service Owed} / \text{Value of Total Assets}$

Defease

Setting aside funds to pay for the interest and principal owed on debt. This removes the liabilities from the balance sheet of the borrower.

Financial plan

A financial plan is a comprehensive evaluation of the utility's current and future financial state by using currently known variables to predict future revenues, expenses, asset values and debt service plans.

Heavy load hours

Heavy load hours are defined as the morning through evening hours when energy demand is highest. Heavy load hours are typically 6 a.m. to 10 p.m., Monday through Saturday.

Henry Hub

A natural gas distribution hub and trading point in the North America natural gas pipeline system, located near Erath, Louisiana. Henry Hub is also the standard delivery point for the NYMEX natural gas futures contract in the US. The contracts are traded 18 months into the future and are used as a primary financial hedging tool in the marketplace. When you hear someone say, "Natural gas is trading for \$XX," they're referring to the Henry Hub price for the current month's contract.

Hydroelectric

The generation of electricity using flowing water to power a generator.

Glossary cont.

Hydrology

The scientific study of the movement, distribution, and quality of water, including the water cycle and water resources.

Light load hours

Light load hours include the later night time and early morning hours when energy demand is the lightest. Light load hours are typically 10p.m. to 6 a.m., Monday through Saturday and all day Sunday.

Load

Generic term for something in the electric system that draws power, such as lights and appliances.

Load forecast

Load forecasting is a technique used to predict the energy needed to meet the demand and supply of power. The accuracy of forecasting is of great significance for the operational and managerial loading of a utility company.

Megawatt-hours

A unit for measuring power that is equivalent to one million watts. One megawatt is equivalent to the energy produced by 10 automobile engines. A megawatt hour (MWh) is equal to 1,000 Kilowatt hours (KWh) used continuously for one hour.

Mid-Columbia trading hub

Mid-C is a power trading hub for the Northwest U.S. comprising the control areas of three public utility districts in Washington that run hydroelectric projects on the Columbia River. The three PUDs are Grant, Douglas and Chelan.

Power purchase agreements

A contract between two parties, one which generates electricity (the seller) and one which is looking to purchase electricity (the buyer).

Public Utility Board

The five-member board that oversees the management and operations of Tacoma's electric, water, and rail utilities.

Rating agency

A credit rating agency rates a borrower's ability to pay back debt by making timely interest payments and the likelihood of default.

Renewable Resources

A resource which can be used repeatedly and replaced naturally. Examples include oxygen, fresh water, solar energy and biomass.

Renewable Portfolio Standard

Initiative 937 in Washington state calls for electric utilities that serve more than 25,000 customers in the state of Washington to obtain 15% of their electricity from new renewable resources by 2020 and to undertake all cost-effective energy conservation.

Scenarios

A potential future situation that creates risk or provides an opportunity.

Shale gas

Natural gas trapped within shale formations. Shales are fine-grained sedimentary rocks that can be rich sources of petroleum and natural gas.

Sumas

Northwest Sumas, located in Washington on the border with Canada, forms the primary natural gas trading hub for consumers in the Pacific Northwest (Washington, Oregon, and Idaho).

Surety

Surety is the guarantee of the debts of one party by another. The party that guarantees the debt, known as the surety, is often an organization assuming the responsibility of paying the debt in the event that the debtor is unable to make the payments.

Wholesale

"Wholesale" is the sale of electricity to other power providers, and not regular customers.

More Information & Contact Info

This document is a product of Tacoma Power's Rates, Planning & Analysis Team

After making it this far, you may have additional questions. We aimed to produce a document that informs, increases transparency, and starts essential conversations around some of the things we're thinking about. If you direct your questions to the email below, we will get back to you.

Rates, Planning & Analysis Manager

PowerFinance@cityoftacoma.org

Tacoma Power Website

Investor Relations Page

<http://bit.ly/tpwr-investorinfo>

Tacoma Power Homepage

<https://www.mytpu.org/tacomapower>

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Section 10 Appendix

Maybe you want to see a few more of the numbers?



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Base Case

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Projections (\$ in Millions)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
System Average Rate Increase	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Retail Sales of Electricity	\$370.50	\$375.26	\$385.46	\$390.54	\$395.72	\$401.13	\$407.77	\$414.38	\$421.07	\$427.02	\$434.11
Revenues from Wholesale Sales	41.16	63.25	74.32	75.36	77.86	80.13	74.09	75.38	74.31	78.96	81.33
Other Operating Revenues	54.26	29.36	29.65	33.53	37.49	38.19	39.23	40.10	41.09	41.18	42.16
Total Revenues	\$465.92	\$467.87	\$489.42	\$499.43	\$511.07	\$519.44	\$521.09	\$529.86	\$536.48	\$547.16	\$557.60
Operations & Maintenance	\$354.71	\$327.68	\$336.00	\$336.25	\$345.43	\$349.12	\$353.94	\$361.07	\$369.96	\$376.75	\$388.09
Operating Taxes	21.13	20.77	21.19	21.59	22.00	22.41	22.89	23.37	23.86	24.32	24.84
Total Operating Expenses	\$375.84	\$348.45	\$357.19	\$357.84	\$367.43	\$371.53	\$376.83	\$384.43	\$393.81	\$401.07	\$412.93
Gross Earning Taxes	34.41	34.28	36.24	36.77	37.42	38.05	38.17	38.83	39.32	40.19	32.78
Revenue Available for Debt Service	\$ 55.67	\$ 85.15	\$ 95.99	\$104.82	\$106.22	\$109.86	\$106.09	\$106.60	\$103.34	\$105.91	\$111.89
Net Debt Service on Bonds	\$ 30.52	\$ 28.17	\$ 28.06	\$ 31.61	\$ 29.28	\$ 33.13	\$ 32.70	\$ 36.58	\$ 38.68	\$ 38.68	\$ 38.68
Adjusted Debt Service Coverage Ratio*	1.82	3.02	3.42	3.32	3.63	3.32	3.24	2.91	2.67	2.74	2.89
Adjusted Days Liquidity	167	201	223	254	249	280	289	307	316	327	339

* Adjusted Debt Service Coverage Ratio reflects our coverage after the transfer of 7.5% Gross Earnings Taxes to the City of Tacoma

Critical Water in 2021 Scenario

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Projections (\$ in Millions)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
System Average Rate Increase	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Retail Sales of Electricity	\$370.50	\$375.26	\$385.46	\$390.54	\$395.72	\$401.13	\$407.77	\$414.38	\$421.07	\$427.02	\$434.11
Revenues from Wholesale Sales	41.16	63.25	23.34	78.33	83.81	86.08	80.04	81.34	80.27	84.92	87.28
Other Operating Revenues	54.26	29.36	29.65	30.05	31.02	31.72	32.76	33.62	34.61	34.70	35.67
Total Revenues	\$465.92	\$467.87	\$438.44	\$498.92	\$510.56	\$518.93	\$520.58	\$529.34	\$535.95	\$546.63	\$557.06
Operations & Maintenance	\$354.71	\$327.68	\$339.23	\$336.25	\$345.43	\$349.12	\$353.94	\$361.07	\$369.96	\$376.75	\$388.09
Operating Taxes	21.13	20.77	21.19	21.57	21.98	22.39	22.87	23.35	23.84	24.30	24.82
Total Operating Expenses	\$375.84	\$348.45	\$360.42	\$357.82	\$367.41	\$371.52	\$376.81	\$384.41	\$393.79	\$401.05	\$412.91
Gross Earning Taxes	34.41	34.28	32.42	36.73	37.38	38.01	38.13	38.79	39.28	40.15	32.75
Revenue Available for Debt Service	\$ 55.67	\$ 85.15	\$ 45.61	\$104.37	\$105.77	\$109.41	\$105.64	\$106.13	\$102.87	\$105.44	\$111.41
Net Debt Service on Bonds	\$ 30.52	\$ 28.17	\$ 28.06	\$ 31.61	\$ 29.28	\$ 33.13	\$ 32.70	\$ 36.58	\$ 38.68	\$ 38.68	\$ 38.68
Adjusted Debt Service Coverage Ratio*	1.82	3.02	1.63	3.30	3.61	3.30	3.23	2.90	2.66	2.73	2.88
Adjusted Days Liquidity	167	201	170	203	198	229	239	257	267	279	291

* Adjusted Debt Service Coverage Ratio reflects our coverage after the transfer of 7.5% Gross Earnings Taxes to the City of Tacoma

Loss of Large Customer Scenario

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Projections (\$ in Millions)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
System Average Rate Increase	2.00%	2.00%	2.00%	2.00%	2.00%	3.00%	4.00%	3.00%	2.00%	2.00%	2.00%
Retail Sales of Electricity	\$ 370.50	\$375.26	\$378.61	\$378.23	\$383.19	\$390.94	\$403.90	\$413.02	\$422.42	\$429.71	\$436.79
Revenues from Wholesale Sales	41.16	63.25	71.57	77.98	83.56	85.85	79.79	81.10	80.12	84.78	87.15
Other Operating Revenues	54.26	29.36	29.19	29.51	30.22	30.64	31.42	32.08	32.87	32.79	33.60
Total Revenues	\$ 465.92	\$467.87	\$479.37	\$485.72	\$496.97	\$507.43	\$515.12	\$526.20	\$535.42	\$547.28	\$557.53
Operations & Maintenance	\$ 354.71	\$327.68	\$340.70	\$348.47	\$357.85	\$361.96	\$366.73	\$374.34	\$383.39	\$390.92	\$402.70
Operating Taxes	21.13	20.77	20.91	21.07	21.46	21.95	22.66	23.23	23.82	24.33	24.84
Total Operating Expenses	\$ 375.84	\$348.45	\$361.60	\$369.54	\$379.30	\$383.91	\$389.40	\$397.57	\$407.21	\$415.25	\$427.53
Gross Earning Taxes	34.41	34.28	35.52	35.81	36.43	37.22	37.80	38.63	39.32	40.28	32.84
Revenue Available for Debt Service	\$ 55.67	\$ 85.15	\$ 82.25	\$ 80.38	\$ 81.24	\$ 86.30	\$ 87.92	\$ 90.00	\$ 88.89	\$ 91.75	\$ 97.16
Net Debt Service on Bonds	\$ 30.52	\$ 28.17	\$ 28.06	\$ 31.61	\$ 29.28	\$ 33.13	\$ 32.70	\$ 36.58	\$ 38.68	\$ 38.68	\$ 38.68
Adjusted Debt Service Coverage Ratio*	1.82	3.02	2.93	2.54	2.77	2.60	2.69	2.46	2.30	2.37	2.51
Adjusted Days Liquidity	167	201	206	209	181	188	182	185	184	184	186

* Adjusted Debt Service Coverage Ratio reflects our coverage after the transfer of 7.5% Gross Earnings Taxes to the City of Tacoma

Lower Wholesale Price Scenario

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Projections (\$ in Millions)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
System Average Rate Increase	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Retail Sales of Electricity	\$370.50	\$375.26	\$385.46	\$390.54	\$395.72	\$401.13	\$407.77	\$414.38	\$421.07	\$427.02	\$370.50
Revenues from Wholesale Sales	41.16	63.25	58.58	61.89	66.81	68.58	63.95	64.95	64.14	67.73	41.16
Other Operating Revenues	54.26	29.36	29.65	30.44	31.29	31.86	32.77	33.52	34.39	34.35	54.26
Total Revenues	\$465.92	\$467.87	\$473.68	\$482.86	\$493.82	\$501.57	\$504.50	\$512.85	\$519.60	\$529.10	\$465.92
Operations & Maintenance	\$354.71	\$327.68	\$333.21	\$333.24	\$342.33	\$345.96	\$350.78	\$357.87	\$366.79	\$373.42	\$354.71
Operating Taxes	21.13	20.77	21.19	21.59	21.99	22.40	22.87	23.34	23.83	24.29	21.13
Total Operating Expenses	\$375.84	\$348.45	\$354.40	\$354.82	\$364.32	\$368.36	\$373.65	\$381.21	\$390.61	\$397.70	\$375.84
Gross Earnings Taxes	34.41	34.28	35.06	35.53	36.12	36.71	36.93	37.55	38.06	38.83	34.41
Revenue Available for Debt Service	\$ 55.67	\$ 85.15	\$ 84.22	\$ 92.51	\$ 93.38	\$ 96.51	\$ 93.92	\$ 94.08	\$ 90.93	\$ 92.56	\$ 55.67
Net Debt Service on Bonds	\$ 30.52	\$ 28.17	\$ 28.06	\$ 31.61	\$ 29.28	\$ 33.13	\$ 32.70	\$ 36.58	\$ 38.68	\$ 38.68	\$ 30.52
Adjusted Debt Service Coverage Ratio*	1.82	3.02	3.00	2.93	3.19	2.91	2.87	2.57	2.35	2.39	1.82
Adjusted Days Liquidity	167	201	212	232	214	232	231	238	237	238	167

* Adjusted Debt Service Coverage Ratio reflects our coverage after the transfer of 7.5% Gross Earnings Taxes to the City of Tacoma

Adverse Water in 2021 & 2022 Scenario

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Projections (\$ in Millions)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
System Average Rate Increase	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Retail Sales of Electricity	\$370.50	\$375.26	\$385.46	\$390.54	\$395.72	\$401.13	\$407.77	\$414.38	\$421.07	\$427.02	\$434.11
Revenues from Wholesale Sales	41.16	63.25	63.84	67.46	83.81	86.08	80.04	81.34	80.27	84.92	87.28
Other Operating Revenues	54.26	29.36	29.65	30.45	31.33	32.03	33.07	33.94	34.93	35.02	36.00
Total Revenues	\$465.92	\$467.87	\$478.94	\$488.45	\$510.87	\$519.24	\$520.89	\$529.65	\$536.27	\$546.95	\$557.39
Operations & Maintenance	\$354.71	\$327.68	\$336.15	\$336.31	\$345.43	\$349.12	\$353.94	\$361.07	\$369.96	\$376.75	\$388.09
Operating Taxes	21.13	20.77	21.19	21.59	21.99	22.40	22.88	23.36	23.85	24.31	24.83
Total Operating Expenses	\$375.84	\$348.45	\$357.34	\$357.90	\$367.42	\$371.53	\$376.82	\$384.43	\$393.81	\$401.06	\$412.92
Gross Earnings Taxes	34.41	34.28	35.45	35.94	37.40	38.03	38.15	38.81	39.31	40.17	32.76
Revenue Available for Debt Service	\$ 55.67	\$ 85.15	\$ 86.14	\$ 94.61	\$106.04	\$109.68	\$105.91	\$106.41	\$103.15	\$105.72	\$111.70
Net Debt Service on Bonds	\$ 30.52	\$ 28.17	\$ 28.06	\$ 31.61	\$ 29.28	\$ 33.13	\$ 32.70	\$ 36.58	\$ 38.68	\$ 38.68	\$ 38.68
Adjusted Debt Service Coverage Ratio*	1.82	3.02	3.07	2.99	3.62	3.31	3.24	2.91	2.67	2.73	2.89
Adjusted Days Liquidity	167	201	212	234	229	259	269	287	296	308	320

* Adjusted Debt Service Coverage Ratio reflects our coverage after the transfer of 7.5% Gross Earnings Taxes to the City of Tacoma

Scheduled Debt Service

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Year	2010B (BABs)	2010C (CREBs)	2013A	2013B	2017	Total *
2017	\$ 8,691,824	\$ 1,364,276	\$ 17,757,100	\$ 1,616,110	\$ 1,095,600	\$ 30,524,910
2018	\$ 8,691,824	\$ 1,364,276	\$ 15,279,100	\$ 1,616,110	\$ 3,286,800	\$ 30,238,110
2019	\$ 8,691,824	\$ 1,364,276	\$ 14,094,350	\$ 1,616,110	\$ 3,286,800	\$ 29,053,360
2020	\$ 8,691,824	\$ 1,364,276	\$ 11,731,100	\$ 1,616,110	\$ 3,286,800	\$ 26,690,110
2021	\$ 8,691,824	\$ 1,364,276	\$ 3,892,600	\$ 5,411,110	\$ 5,436,800	\$ 24,796,610
2022	\$ 8,691,824	\$ 1,364,276	\$ 3,892,600	\$ 5,411,360	\$ 5,434,300	\$ 24,794,360
2023	\$ 8,691,824	\$ 1,364,276	\$ 3,892,600	\$ 5,411,110	\$ 5,436,550	\$ 24,796,360
2024	\$ 8,691,824	\$ 1,364,276	\$ 3,892,600	\$ 5,412,860	\$ 5,438,050	\$ 24,799,610
2025	\$ 8,691,824	\$ 1,364,276	\$ 3,892,600	\$ 5,408,813	\$ 5,433,550	\$ 24,791,063
2026	\$ 8,691,824	\$ 25,549,276	\$ 3,892,600	\$ 736,750	\$ 2,693,050	\$ 41,563,500
2027	\$ 8,691,824		\$ 3,892,600	\$ 5,411,750	\$ 5,438,050	\$ 23,434,224
2028	\$ 8,691,824		\$ 3,892,600	\$ 5,408,000	\$ 5,435,800	\$ 23,428,224
2029	\$ 8,691,824		\$ 3,892,600	\$ 5,412,750	\$ 5,436,800	\$ 23,433,974
2030	\$ 36,001,824		\$ 3,892,600		\$ 2,260,550	\$ 42,154,974
2031	\$ 35,445,302		\$ 3,892,600		\$ 2,260,550	\$ 41,598,452
2032	\$ 34,789,416		\$ 3,892,600		\$ 2,260,550	\$ 40,942,566
2033	\$ 34,164,289		\$ 3,892,600		\$ 2,260,550	\$ 40,317,439
2034	\$ 33,517,046		\$ 3,892,600		\$ 2,260,550	\$ 39,670,196
2035			\$ 14,882,600		\$ 5,435,550	\$ 20,318,150
2036			\$ 14,878,100		\$ 5,436,800	\$ 20,314,900
2037			\$ 14,881,350		\$ 5,435,050	\$ 20,316,400
2038			\$ 14,880,600		\$ 5,435,050	\$ 20,315,650
2039			\$ 14,881,800		\$ 5,436,300	\$ 20,318,100
2040			\$ 14,877,600		\$ 5,438,300	\$ 20,315,900
2041			\$ 14,882,400		\$ 5,435,550	\$ 20,317,950
2042					\$ 5,437,800	\$ 5,437,800
2043					\$ 5,434,000	\$ 5,434,000
2044					\$ 5,433,200	\$ 5,433,200
2045					\$ 5,435,000	\$ 5,435,000
2046					\$ 5,434,000	\$ 5,434,000

* Debt Service is shown based on the amount that is accrued in each year. Actual payments of the amount accrued may occur in the following year.

Projected Capital Improvement Program Expenditures

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Project Expenditures * (\$000)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Power Supply	\$11,286	\$11,286	\$11,625	\$11,625	\$11,973	\$11,973	\$12,333	\$12,333	\$12,702	\$12,702	\$13,084
Transmission and Distribution	18,444	26,686	\$26,306	\$26,306	\$27,095	\$27,095	\$27,908	\$27,908	\$28,745	\$28,745	\$29,607
Utilities Technology	10,201	10,200	\$10,506	\$10,506	\$11,146	\$11,146	\$11,825	\$11,825	\$12,544	\$12,544	\$12,920
Conservation	\$7,447	\$7,447	\$12,164	\$12,164	\$13,021	\$15,316	\$15,430	\$15,430	\$15,530	\$15,530	\$15,996
General Plant	13,292	23,152	\$22,839	\$22,839	\$22,708	\$20,413	\$21,026	\$21,026	\$21,656	\$21,656	\$22,306
Total Project Expenditures	\$60,670	\$78,771	\$83,440	\$83,440	\$85,943	\$85,943	\$88,521	\$88,521	\$91,177	\$91,177	\$93,912

* Includes actual values through May 2019.

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