Water Shortage Response Plan Update

• June 27, 2018
Overview

• Purpose of the Shortage Response Plan
• Background – The planning context
• Principles - Underlying basis
• Changing Implementation Concepts
• 4 stages of the plan
• Goal setting for demand reduction
• Appendices
• Summary and Recommendations
Purpose

• Be well prepared to serve our customers in the event of a water shortage and/or system problems.
• Reinforce that the implementation of the WSRP is not a failure, but rather, is part of the plan to provide water to customers in a responsible way.
• Complements existing water conservation program.
• Provides guidelines and options to address extended low flows in the Green River or reduced availability of groundwater.
• Provides a menu of possible responses on both the supply and demand sides.
Background

• Wrote the first plan in response to drought in 1992.

• Last update was done in 2006.

• Response to the 2015 drought showed that a more detailed plan would be useful.

• Integrated Resource Plan is currently being developed.
Principles

• Plan should be flexible

• Solutions consider responsible supply and demand side alternatives

• Shortage inconvenience/disruption should be shared

• Conservation vs Curtailment

• Voluntary preferred (over Mandatory)

• Safeguard water quality
Additional Concepts

- Modeled after Seattle’s Plan for consistency
- “Preparation” Stage vs “Advisory” Stage
- Supplement a Public Advisory Committee in times of drought
- Incident Command System (ICS) system of organization
- Triggers are not rigid; flexibility is maintained. Tools under development (IRP - WYSDM, Water Supply Outlook Tool) will support decision-making
- In accordance with TMC 12.10.150 – After Public Utility Board approval of the WSRP, Superintendent and/or Director is authorized to implement the Plan
4 Stages

**Stage 1 – Preparation**
- There is a potential for a water shortage
- No customer action required
- Internal preparations

**Stage 2 – Voluntary**
- Available sources are not expected to be sufficient
- Encourage customers to reduce water use
- Level of sacrifice depends on level of severity

**Stage 3 – Mandatory**
- Sources and previous demand reductions are not expected to be sufficient
- Prohibits nonessential water uses (exemptions apply)

**Stage 4 – Emergency**
- Catastrophic event or as continuation from a severe drought
- Maintaining an effective level of water service
- Public health and safety needs are paramount
Demand Reduction Goal Setting

- Demand reduction goals for Stages 2 through 4 should be:
  - Meaningful
  - Measurable
  - Understandable
  - Reasonable
  - Scalable
  - Consistent

- The WSRP does not pre-set explicit goals for demand reduction. Goals will be set at the time of the event.
Based on combination of Consultant modeling experiences throughout the State, and Tacoma Water’s 2015 drought experience.
Appendices

A. Water Shortage Response Team Membership (Internal), Roles and ICS Organization Chart

B. Tacoma Water Public Advisory Committee Membership

C. Previous WSRP Implementations

D. Communication and Outreach Plan

E. Potential Customer Demand Reduction Actions

F. Wholesale and Partner Customer Outreach Suggestions

G. Potential Exemptions for Water Use Restrictions

H. Potential Supply-side Augmentation Actions
Appendix A: ICS Organization Chart
## Appendix E: Demand Reduction Actions

### Potential Customer Demand Reduction Actions

(see footnotes)

<table>
<thead>
<tr>
<th>End Use 2</th>
<th>Behavior or Hardware 3</th>
<th>Implementation Stage 4</th>
<th>Indoor or Outdoor 5</th>
<th>Season 6</th>
<th>Sector 7</th>
<th>Action 8</th>
<th>Potential to enforce 9</th>
<th>Potential Exemption 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Clothes Washing</td>
<td>Behavior</td>
<td>N/A - Conservation</td>
<td>Indoor</td>
<td>Year Round</td>
<td>NR</td>
<td>Towels On Request: Provide new towels only on request.</td>
<td>N</td>
</tr>
<tr>
<td>32</td>
<td>Irrigation - Frequency</td>
<td>Behavior</td>
<td>Voluntary</td>
<td>Outdoor</td>
<td>Summer</td>
<td>All</td>
<td>Eliminate One Watering Day: Cut one day from your typical weekly watering schedule (except for young plants as noted elsewhere). (Note: The similar &quot;Water X Times A Week Maximum&quot; series might be preferred wording, but this is included as an option.)</td>
<td>N</td>
</tr>
<tr>
<td>52</td>
<td>Irrigation - Frequency</td>
<td>Behavior</td>
<td>Mandatory</td>
<td>Outdoor</td>
<td>Summer</td>
<td>All</td>
<td>Water Twice A Week Maximum: Plant watering is only allowed twice a week, in accordance with the published schedule by address.</td>
<td>Y</td>
</tr>
</tbody>
</table>
## Appendix H: Supply Augmentation Actions

<table>
<thead>
<tr>
<th>Project</th>
<th>Type</th>
<th>Project Description</th>
<th>Potential Yield</th>
<th>Estimated Cost</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tacoma Well Fields</td>
<td>Groundwater</td>
<td>Start seldom-used, inefficient wells</td>
<td>small</td>
<td>low</td>
<td>See Well Operation Summary</td>
</tr>
<tr>
<td>Eagle Lake</td>
<td>Surface Water</td>
<td>Pump Eagle Lake</td>
<td>medium</td>
<td>medium</td>
<td>See 2015 Drought file</td>
</tr>
<tr>
<td>Wholesale Purchases from Lakehaven Utility District</td>
<td>Intertie</td>
<td>TW purchases water through an intertie from Lakehaven Utility District</td>
<td>Medium (hydraulically limited)</td>
<td>Low</td>
<td>Used in 2015.</td>
</tr>
</tbody>
</table>
Summary & Recommendations

• The revised Water Shortage Response Plan builds on strong regional collaboration.

• The four stage process provides a step-wise approach to conditions as they naturally evolve.

• We recommend adoption of the revised Water Shortage Response Plan.

• Next steps, timing and approval
Tacoma Power
Rate Recommendations

Bill Berry, Rates, Planning and Analysis Manager
Christina Leinneweber, Senior Utilities Economist

June 27, 2018
# Agenda

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<th>Title</th>
</tr>
</thead>
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<td>COSA Results</td>
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<td>3</td>
<td>Policy: Fixed Customer Charge</td>
</tr>
<tr>
<td>4</td>
<td>Policy: Click! Under-Recovery</td>
</tr>
<tr>
<td>5</td>
<td>Streetlights</td>
</tr>
<tr>
<td>6</td>
<td>HVG Class Rate Design</td>
</tr>
<tr>
<td>7</td>
<td>G Class Rate Design</td>
</tr>
<tr>
<td>8</td>
<td>EV Charging Station Pilot Rate</td>
</tr>
<tr>
<td>9</td>
<td>Appendix</td>
</tr>
</tbody>
</table>
Introduction
Introduction

Budget and Rate Timeline

We are here.

Jan 2018

2/7
Rates & Financial Planning Workshop

4/11
Draft LRFP & Revenue Requirement Forecast

5/9
Water & Power Rates & Financial Policy Review

5/23
PUB Budget Preview & Final LRFP /Rev Rqmt

6/27
PUB COSA & Class Rates Review

7/2
Participation Protocol Begins

7/25
PUB Water & Power Rates & Financial Policy SS & Potential Action

9/26
PUB SS Review of Budget & Rates

10/10
GPFC

10/31
PUB Budget & Rates Public Review

11/20
City Council Finalize Rates & Budget

7/2
Participation Protocol Begins

Apr 2019

4/1
Rates Effective

City Council Finalize Rates & Budget

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10/10
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10/31
PUB Budget & Rates Public Review

11/20
City Council Finalize Rates & Budget

4/1
Rates Effective
Rate Making Process

**Introduction**

**Revenue Requirement**
- Identify total retail revenue needed to sustain operations and meet financial metrics

**Cost-of-Service Analysis**
- Apportion revenue requirement to customer classes

**Rate Design**
- Construct rates to collect class revenue requirement
Revenue Requirement Forecast
Revenue Requirement Forecast

Revenue Requirement Calculation

- Load Forecast
  - Wholesale Revenue
  - Retail Revenue
  - Purchased Power
  - Capital
  - Personnel + Other O&M + New & Different

Projected expenses

Forecasted revenues at current rates

2019/2020 Rate Increase

Source: Tacoma Power Revenue Requirement Assumptions, 2019/2020 Biennium
The Tacoma Power Revenue Requirement forecast is based on a set of assumptions about future revenues and spending. These assumptions influence our projection of the amount we will need to collect in the next biennium to cover all of the utility’s expenses. Some key assumptions made to develop the revenue requirement include:

- **Continued increased spending on capital infrastructure**
- **Continued flat to declining retail load over time**
- **Continued decrease of wholesale revenues over time**
- **Continued increase of purchased power expenses into the future**

*Total Expense and Total Revenue values are for the 2019/2020 Calendar Year (January 2019 through December 2020).*

The Tacoma Power Revenue Requirement forecast is based on a set of assumptions about future revenues and spending. These assumptions influence our projection of the amount we will need to collect in the next biennium to cover all of the utility’s expenses. Some key assumptions made to develop the revenue requirement include:

<table>
<thead>
<tr>
<th>Projected Expenses including cash needs*</th>
<th>Projected Revenues at current rates*</th>
<th>Revenue Increase Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>945,791,058</td>
<td>926,801,500</td>
<td>(18,989,558)</td>
</tr>
</tbody>
</table>

Preliminary, subject to change. See Revenue Requirement Forecast Assumptions document from 6/22/2018.
Revenue Requirement Forecast

Methodology

The Revenue Requirement Forecast represents a more realistic or less conservative estimate of actual expected spending. Said another way, the methodology removes some of the budget conservatism that results in the growth of cash reserves.

Should actual expenditures be greater than the revenue requirement forecast, Tacoma Power will use cash or request an additional rate increase.

The Revenue Requirement Forecast is preliminary and subject to change as the budget process continues.
Revenue Requirement Forecast

Forecast of Projected Rate Increases
2019-2024

Projected Rate Increases

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

Additional shading in future years represents uncertainty associated with revenues and expenses, mostly due to potential for adverse or critical water conditions.

<table>
<thead>
<tr>
<th>Year</th>
<th>Projected Rate Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>5.8%</td>
</tr>
<tr>
<td>2012</td>
<td>5.8%</td>
</tr>
<tr>
<td>2013</td>
<td>4.2%</td>
</tr>
<tr>
<td>2014</td>
<td>4.2%</td>
</tr>
<tr>
<td>2015</td>
<td>3.0%</td>
</tr>
<tr>
<td>2016</td>
<td>0%</td>
</tr>
<tr>
<td>2017</td>
<td>5.9%</td>
</tr>
<tr>
<td>2018</td>
<td>5.9%</td>
</tr>
<tr>
<td>2019</td>
<td>2%-4%</td>
</tr>
<tr>
<td>2020</td>
<td>2%-4%</td>
</tr>
<tr>
<td>2021</td>
<td>2%-4%</td>
</tr>
<tr>
<td>2022</td>
<td>2%-4%</td>
</tr>
<tr>
<td>2023</td>
<td>2%-4%</td>
</tr>
<tr>
<td>2024</td>
<td>2%-4%</td>
</tr>
</tbody>
</table>

Source: Tacoma Power Long Range Financial Plan
Cost of Service

Power Rates
Section 1.2
Cost of Service

Cost-of-Service Analysis

Tacoma Public Utilities is a Cost-of-Service Organization

- Rates set based on cost to serve customers.
- Customer Classes are groups of customers with similar usage characteristics that influence cost, such as infrastructure requirements and consumption patterns.
- A cost-of-service analysis (COSA) determines the cost of serving each Customer Class:
  - Standard utility practice
  - Conducted every budget cycle
  - Reviewed by third-party consultant

The COSA calculates the total revenue that should be collected from each rate class.
Cost of Service

Important Notes

The 19/20 rate recommendations are produced from an updated cost of service model.

Legacy Model versus Updated Model

- Updated Model created by consultant Black & Veatch
- Methodological differences
- Use of legacy allocators for load factors, minimum system
- May make further revisions before next rate process

Next Step: Review by Ft. Lewis (Participation Protocol)

- Department of Defense has the right to retain a rates consultant to review COSA
- Military may make comment to Board on policy matters
Rate Design

Power Rates
Section 1.3
Rate Design

Overarching Principles of Rate Design

Legal
- Fair
- Just
- Reasonable
- Non-Discriminatory

Industry-Standard
- Revenue Stability
- Cost Causation
- Economic Efficiency
- Equity
- Bill Stability

TPU Principles
- Affordability
- Environment
- Public Involvement
Policy Direction from City Council

Throughout this presentation, rate recommendations are made in context of their impact on transportation electrification. We do this in light of the Tacoma City Council Resolution in Support of Electric Vehicle Initiatives.

Resolution in Support of Electric Vehicle Initiatives

Rapidly increasing electric vehicle (EV) sales in the United States is a trend that will have positive impacts for our communities in the form of

- Fewer greenhouse gas emissions from the transportation sector
- Improved air quality
- Reduced fuel costs

Objective

To foster better conditions for Electrification of Transportation, including electric vehicle purchase and usage.
COSA
Results
COSA Results

Recommended Increase by Class

**Annual Step Increase**

- Residential: 0.9%
- Small General: 0.7%
- General: 4.0%
- High Voltage General: 3.1%
- Contract Industrial: 2.2%
- Street & Highway Lighting: 4.0%
- Traffic Signals & Lights: 4.0%
- Private Off-Street Lighting: 4.0%

System Average: 2.0%

Preliminary, subject to change.
Recommended Increase by Class

The 2019/2020 increase is substantially smaller 2017/2018.

COSA Results

Annual Step Increase

Preliminary, subject to change.
COSA versus Recommended Increase

Annual Step Increases

- System Average: 2.0%

- Residential
- Small General
- General
- High Voltage General
- Contract Industrial
- Street & Highway Lighting
- Traffic Signals & Lights
- Private Off-Street Lighting

Recommended vs. COSA Results

Preliminary, subject to change.
Gradualism Recommended for Lighting

Drivers of Streetlight Class Rate Increase

- **Data inconsistencies** recently highlighted with street and traffic billing units
- **Small class** → **high percent** increases can be driven by **small dollar** changes
- **Small class** → COSA **model/methodology** changes have disproportionate impact

Rate Increase Cap Choices

- **Level of Cap**: 2x system average rate increase

**Allocation to Other Classes**: shown by meter count—places most burden on residential and small general classes

Other cap limits and allocations possible if desired.

**Lighting classes**
COSA rate increase is **1,578,949** of **21,980,031** rate period increase.
## COSA Rate Change Detail

<table>
<thead>
<tr>
<th>Description</th>
<th>Revenue at Existing Rates*</th>
<th>Final COSA Results*</th>
<th>COSA Rate Change</th>
<th>Redistribution for Gradualism Cap (Increase Cap at 2x System)</th>
<th>Recommended Rate Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Amount</td>
<td>Annual Increase</td>
<td>Amount</td>
<td>Annual Increase</td>
<td></td>
</tr>
<tr>
<td>Residential</td>
<td>$365,351,989</td>
<td>$369,082,504 $3,730,515</td>
<td>0.7% $1,152,813</td>
<td>$4,883,328 0.9%</td>
<td></td>
</tr>
<tr>
<td>Small General</td>
<td>57,070,622</td>
<td>57,522,822 452,200</td>
<td>0.5% 115,536</td>
<td>567,736 0.7%</td>
<td></td>
</tr>
<tr>
<td>General</td>
<td>207,180,477</td>
<td>219,578,662 2,398,185</td>
<td>3.9% 18,674</td>
<td>12,416,859 4.0%</td>
<td></td>
</tr>
<tr>
<td>High Voltage General</td>
<td>45,870,568</td>
<td>48,038,774 2,168,206</td>
<td>3.1% 50</td>
<td>2,168,256 3.1%</td>
<td></td>
</tr>
<tr>
<td>Contract Industrial</td>
<td>48,523,303</td>
<td>50,175,279 1,651,976</td>
<td>2.2% 18</td>
<td>1,651,994 2.2%</td>
<td></td>
</tr>
<tr>
<td>Street &amp; Highway (H1)</td>
<td>1,834,191</td>
<td>2,217,800 383,609</td>
<td>13.5% (273,005)</td>
<td>110,604 4.0%</td>
<td></td>
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<tr>
<td>Traffic Signals (H1)</td>
<td>168,602</td>
<td>164,663 (3,940)</td>
<td>-1.6% 3,940</td>
<td>- 0.0%</td>
<td></td>
</tr>
<tr>
<td>Private Off-Street (H2)</td>
<td>3,005,788</td>
<td>4,205,067 1,199,279</td>
<td>24.8% (1,018,026)</td>
<td>181,253 4.0%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$ 729,005,540</td>
<td>$750,985,571 $21,980,031</td>
<td>2.0% $21,980,031</td>
<td>2.0% $21,980,031</td>
<td></td>
</tr>
</tbody>
</table>

Preliminary, subject to change.

*Retail Revenue and Cost of Service for 2019/2020 Rate Period (April 2019 through March 2021).
Rate Design: Customer Charge
Policy: Residential Rate Design

Rate Recommendation

Place 100% of the residential class 19/20 rate increase in customer charge.

<table>
<thead>
<tr>
<th>Rate Design</th>
<th>Current</th>
<th>COSA</th>
<th>Recommendation</th>
<th>2019</th>
<th>2020</th>
<th>Annual Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Charge</td>
<td>$ 16.50</td>
<td>$ 23.30</td>
<td>$ 17.35</td>
<td>$ 18.20</td>
<td>+0.85 step</td>
<td></td>
</tr>
<tr>
<td>Energy Charge</td>
<td>0.045351</td>
<td>0.032890</td>
<td>0.045351</td>
<td>0.045351</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Delivery Charge</td>
<td>0.034435</td>
<td>0.040860</td>
<td>0.034435</td>
<td>0.034435</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>1,000 kWh Bill</td>
<td>$ 96.29</td>
<td>$ 97.06</td>
<td>$ 97.14</td>
<td>$ 97.99</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Policy: Small General Rate Design

Rate Recommendation

Place 100% of the small general class 19/20 rate increase in customer charge.

<table>
<thead>
<tr>
<th></th>
<th>Current</th>
<th>COSA</th>
<th>Recommendation</th>
<th>2019</th>
<th>2020</th>
<th>Annual Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Charge</td>
<td>$ 22.50</td>
<td>$ 35.21</td>
<td>$ 23.45</td>
<td>$ 24.40</td>
<td>+0.95 step</td>
<td></td>
</tr>
<tr>
<td>Energy Charge</td>
<td>0.044616</td>
<td>0.032862</td>
<td>0.044616</td>
<td>0.044616</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Delivery Charge</td>
<td>0.034587</td>
<td>0.038942</td>
<td>0.034587</td>
<td>0.034587</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>2,000 kWh Bill</td>
<td>$ 180.91</td>
<td>$ 178.82</td>
<td>$ 181.86</td>
<td>$ 182.81</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Policy: Residential & Small General Rate Design

Rationale for Rate Recommendations

Reduces Seasonal Bill Variability

Increasing the customer charge decreases seasonal bill variability. Large fluctuations in bills can be difficult for low-income customers and small businesses to manage.

Enhances Financial Stability

Increasing the customer charge aligns fixed costs and fixed revenues.

Benefits Electrification

Supports adoption of electric appliances and vehicles by keeping “fuel” costs low.
Rate Design: Minimum System Analysis
Policy: Customer Charge Rate Design

Description of Minimum System Analysis

Even when only 1kWh is used, the utility makes sizable investments to connect a customer to the system.

The cost of the smallest theoretical distribution system required to connect a customer to the customer cost is included in the customer charge.
Policy: Customer Charge Rate Design

Description of Minimum System Analysis

Even when only 1kWh is used, the utility makes sizable investments to connect a customer to the system.

**NO MINIMUM SYSTEM**

- Distribution $179,288,735
  - Demand $158,251,213 (88%)
  - Customer $21,037,522 (12%)

**FULL COST-OF-SERVICE**

- Distribution $179,288,735
  - Demand $115,994,004 (65%)
  - Customer $63,294,731 (35%)
Policy: Customer Charge Rate Design

Impact of Minimum System Analysis

Each rate class’s estimated cost-of-service customer charge is derived using Minimum System Analysis.

Use of the Minimum System Analysis ensures recovery of fixed costs to provide distribution services.

<table>
<thead>
<tr>
<th>Customer Charge</th>
<th>Current</th>
<th>Recommended 2020</th>
<th>COSA with Minimum System Included</th>
<th>COSA with Minimum System Excluded</th>
<th>Impact of Minimum System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>$16.50</td>
<td>$18.20</td>
<td>$23.30</td>
<td>$14.49</td>
<td>$8.82</td>
</tr>
<tr>
<td>Small General</td>
<td>22.50</td>
<td>24.40</td>
<td>35.21</td>
<td>22.27</td>
<td>12.95</td>
</tr>
<tr>
<td>General</td>
<td>76.00</td>
<td>80.00</td>
<td>80.26</td>
<td>48.34</td>
<td>31.93</td>
</tr>
</tbody>
</table>

Preliminary, subject to change.
Impact of Minimum System Analysis

Cost-of-Service
Customer Charge Components

<table>
<thead>
<tr>
<th></th>
<th>Residential</th>
<th>Small General</th>
<th>General</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base, including Click! underrecovery</td>
<td>$23.30</td>
<td>$35.21</td>
<td>$80.26</td>
</tr>
<tr>
<td>Minimum System</td>
<td>$8.82</td>
<td>$12.95</td>
<td>$31.93</td>
</tr>
<tr>
<td></td>
<td>$14.49</td>
<td>$22.27</td>
<td>$48.34</td>
</tr>
</tbody>
</table>

Preliminary, subject to change.
Policy: Customer Charge Rate Design

Rationale for Minimum System Analysis

- Simple to calculate and explain
- Usually results in a higher customer charge, which is advantageous for
  - customers who cannot control their electric usage
  - customers who cannot install distributed generation
  - customers who electrify appliances or transportation
- Ensures full recovery of fixed distribution cost
- Covers cost to utility of providing distribution connections to distributed-generation customers on the grid
- Consistent with 2017/2018 Cost-of-Service Analysis methodology
- Consistent with industry practice

- Requires theoretical analysis with various assumptions to create allocators
- Usually results in higher customer charge, which is disadvantageous for
  - low users
  - distributed-generation owners
- Change from pre-2015 Cost-of-Service Analysis methodology.
Policy: Customer Charge Rate Design

Rate Design and Transportation Electrification

Higher fixed charges lower the cost of electrification.

<table>
<thead>
<tr>
<th>Charge</th>
<th>Current Rates</th>
<th>Full Increase in Fixed (Proposed Rates)</th>
<th>Full Increase in Variable</th>
<th>Reduce Customer Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer</td>
<td>$ 16.50</td>
<td>$ 18.20</td>
<td>$ 16.50</td>
<td>$ 14.50</td>
</tr>
<tr>
<td>Energy</td>
<td>0.045351</td>
<td>0.045351</td>
<td>0.036170</td>
<td>0.038268</td>
</tr>
<tr>
<td>Delivery</td>
<td>0.034435</td>
<td>0.034435</td>
<td>0.045351</td>
<td>0.045351</td>
</tr>
</tbody>
</table>

Average Residential Monthly Bill

<table>
<thead>
<tr>
<th></th>
<th>Non-EV</th>
<th>$ 93.80</th>
<th>$ 95.50</th>
<th>$ 95.48</th>
<th>$ 95.52</th>
</tr>
</thead>
<tbody>
<tr>
<td>EV Household</td>
<td>123.72</td>
<td>125.42</td>
<td>126.05</td>
<td>126.87</td>
<td></td>
</tr>
<tr>
<td>Monthly Cost of EV</td>
<td>$ 29.92</td>
<td>$ 29.92</td>
<td>$ 30.57</td>
<td>$ 31.36</td>
<td></td>
</tr>
<tr>
<td>Increase in Cost of EV Adoption (relative to current rates)</td>
<td>$ 0.65</td>
<td>2.20%</td>
<td>4.80%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Assumes EV drives 15,000 miles per year at .30 kWh per mile, costing 375 kWh per month; 100% of vehicle charging occurs at residence.
Policy: Customer Charge Rate Design

Rate Design and Transportation Electrification

Higher fixed charges lower the cost of electrification.

Assumes EV drives 15,000 miles per year at .30 kWh per mile, costing 375 kWh per month; 100% of vehicle charging occurs at residence.
Most utilities are summer-peaking, and air conditioning provides a significant portion of load. Low-income customers often forego air conditioning, so their bills may be systematically lower. Few homes are heated electrically.

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

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

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

Only 1% of the variation in Tacoma Power’s customers’ electric use can be explained by estimated income.
Policy: Customer Charge Rate Design

Rate Design and Low-Income Customers

<table>
<thead>
<tr>
<th>ALI C</th>
<th>ALICE: 31%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Asset-Limited</td>
</tr>
<tr>
<td>L</td>
<td>Poverty: 11%</td>
</tr>
<tr>
<td>I</td>
<td>ALICE: 31%</td>
</tr>
<tr>
<td>C</td>
<td>42%</td>
</tr>
<tr>
<td>E</td>
<td>Employed</td>
</tr>
</tbody>
</table>

Vulnerable Households in Pierce County

With rising rents and other cost-of-living expense in the county, regional organizations are increasingly focused on the struggles of working families. Increasing numbers of employed individuals are unable to afford basic necessities. Such families are particularly vulnerable to unexpected bills and are often unable to control electric usage by upgrading their homes to be more efficient. Collecting the rate increase through the customer charge limits the bill impact to these customers to 85¢ per month.

Click! Under-Recovery
## Click! Under-Recovery Allocation

### CLICK! FINANCIALS

<table>
<thead>
<tr>
<th></th>
<th>2019</th>
<th>2020</th>
<th>2019/2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Click! Revenue</td>
<td>24,720,180</td>
<td>24,318,280</td>
<td>49,038,460</td>
</tr>
<tr>
<td>Click! Commercial O&amp;M</td>
<td>25,117,923</td>
<td>25,930,857</td>
<td>51,048,780</td>
</tr>
<tr>
<td>Click! and HFC Capital</td>
<td>1,237,378</td>
<td>1,237,378</td>
<td>2,474,756</td>
</tr>
<tr>
<td>Click! Capital A&amp;G Credit</td>
<td>-55,864</td>
<td>-44,909</td>
<td>-100,773</td>
</tr>
<tr>
<td>Taxes</td>
<td>3,307,972</td>
<td>3,249,244</td>
<td>6,557,216</td>
</tr>
<tr>
<td><strong>Net Cash Flow</strong></td>
<td><strong>-4,887,229</strong></td>
<td><strong>-6,054,290</strong></td>
<td><strong>-10,941,519</strong></td>
</tr>
</tbody>
</table>

### Allocation by Meter Count

- Shows Click! under-recovery in customer charge, as in the last rate case
- Decreases from $3.42 per customer per month in the 17/18 budget projection to $2.46 per customer per month in this projection

Preliminary, subject to change.
Click! Under-Recovery Allocation

Effect on Customer Charge

Cost-of-Service
Customer Charge Components

- Residential
  - Base: $12.03
  - Click! underrecovery: $8.82
  - Minimum System: $2.46
  - Total: $23.30

- Small General
  - Base: $19.81
  - Click! underrecovery: $12.95
  - Minimum System: $2.46
  - Total: $35.21

- General
  - Base: $45.88
  - Click! underrecovery: $35.21
  - Minimum System: $2.46
  - Total: $80.26

Preliminary, subject to change.
G Class Rate Design
## Policy: Schedule G Rate Design

### Rate Recommendation

<table>
<thead>
<tr>
<th>Rate Design</th>
<th>Current</th>
<th>COSA</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2019</td>
<td>2020</td>
<td></td>
</tr>
<tr>
<td>Customer Charge</td>
<td>$ 76.00</td>
<td>$ 80.26</td>
<td>$ 78.00</td>
</tr>
<tr>
<td>Demand Charge</td>
<td>8.35</td>
<td>14.05</td>
<td>8.43</td>
</tr>
<tr>
<td>Energy Charge</td>
<td>0.044813</td>
<td>0.032547</td>
<td>0.047316</td>
</tr>
</tbody>
</table>

Preliminary, subject to change.
Policy: Schedule G Rate Design

Rationale

**COSA Results in Substantial Demand Charge Increase**

- Schedule G serves a large, diverse group of customers
- "Average" COSA results not representative of many class customers
- COSA results will disproportionately impact low-demand Schedule G customers
- Goal remains to split customer class, requires data not yet available

**Recommendation**

- Small increase in customer charge to full cost of service
- Small increase in demand charge to avoid disproportionate impact to smaller customers
- Most of rate increase in energy charge

Preliminary, subject to change.
### Policy: Schedule G Rate Design

#### Illustration of Impacts

<table>
<thead>
<tr>
<th>Sample Bills under Alternate Rate Designs</th>
<th>Current</th>
<th>COSA</th>
<th>Recommendation 2019</th>
<th>Recommendation 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Customer Bill</td>
<td>$ 667</td>
<td>$ 646</td>
<td>-3.1%</td>
<td>$ 696</td>
</tr>
<tr>
<td>Medium Customer Bill</td>
<td>3,284</td>
<td>3,480</td>
<td>+6.0%</td>
<td>3,413</td>
</tr>
<tr>
<td>Large Customer Bill</td>
<td>102,081</td>
<td>128,854</td>
<td>+26%</td>
<td>105,134</td>
</tr>
</tbody>
</table>

Small Customer billed at 10,000 kWh and 17 kW; Medium Customer billed at 46,605 kWh and 134 kW; Large Customer billed at 1,000,000 kWh and 6,849 kW

Preliminary, subject to change.
EV Charging Station Pilot Rate
EV Charging Station Pilot Rate

Context

Proposed pilot rate is one of the Tacoma Power initiatives aligned with the Tacoma City Council Resolution in Support of Electric Vehicle Initiatives.

Resolution in Support of Electric Vehicle Initiatives

Rapidly increasing electric vehicle (EV) sales in the United States is a trend that will have positive impacts for our communities in the form of

- Fewer greenhouse gas emissions from the transportation sector
- Improved air quality
- Reduced fuel costs
Objective
To foster better conditions for Electrification of Transportation, including electric vehicle purchase and usage.

Direct Current Fast Chargers
Public Direct Current Fast Chargers (DCFC) are anticipated to play an important role in accelerating electric vehicle adoption. DCFC have high electricity demand relative to total energy consumption.
DCFC in Tacoma Power Territory
Public Direct Current Fast Chargers are currently classified as General Service, or Schedule G, customers.

Schedule G is a three part rate

- Customer Charge
- Demand Charge
- Energy Charge

Challenge
Because DCFC electricity demands are high, demand charges create a significant barrier in DCFC network development.
Potential Solution
Derive a two-part EV Public Charging Station Pilot rate from General Service Schedule G

- Customer Charge
- Energy Charge

What is a Pilot?
A pilot is...
- A test or trial of a concept
- Limited in scope and duration
- Intended to provide new information about the concept so that it may be evaluated for possible adoption in a new permanent service schedule

Pilot Concept
Availability & Scope

- Available to customers offering charging services for the use of the general public
- Service must be separately metered with an interval meter
- Customer must be under 1MW
- Pilot limited to 25 metered customers

Duration

- 7 years
- Staff will evaluate utilization and potential adjustments after 2 years with gradualism in mind

Benefits of EV Charging Station Pilot Rate

- Improves options for Tacoma Power customers
- Benefits system planning through acquired data
- Informs future rate offerings

Rate Design

Rate option details will be presented to PUB in the August 8th Study Session.
Appendix
Appendix

Cost-of-Service Study

![Diagram showing the breakdown of total expenses into functionalization and customer allocation categories. The categories include Demand/Peak Related, Consumption Related, and Customer Related, which further break down into Residential, Commercial, and Industrial costs. The diagram illustrates the allocation process for different types of expenses.]
Appendix

United Way ALICE Report

How has the number of ALICE households changed over time?

ALICE is an acronym for Asset Limited, Income Constrained, Employed – households that earn more than the Federal Poverty Level, but less than the basic cost of living for the county (the ALICE Threshold). Combined, the number of ALICE and poverty-level households equals the total population struggling to afford basic needs. The number of households below the ALICE Threshold changes over time; households move in and out of poverty and ALICE as their circumstances improve or worsen. The recovery, starting in 2010, has been uneven across the state. Conditions have improved for some families, but with rising costs, many still find themselves struggling.
Appendix

United Way ALICE Report

What types of households are struggling?

The way Americans live is changing. There are more different family and living combinations than ever before, including more people living alone or with roommates and more adult children living with their parents. Families with children are changing: There are more blended families with remarried parents, more non-married cohabiting parents, and more same-sex parents. The number of senior households is also increasing. Yet all types of households continue to struggle: There are ALICE and poverty-level households across all of these living arrangements.
Appendix

United Way ALICE Report

Why do so many households struggle?

The cost of living continues to increase...
The Household Survival Budget reflects the bare minimum that a household needs to live and work today. It does not include savings for emergencies or future goals like college. In 2016, costs were well above the Federal Poverty Level of $11,880 for a single adult and $24,300 for a family of four. Family costs increased by 28 percent statewide from 2010 to 2016, compared to 9 percent inflation nationally.

...and wages lag behind
Employment and wages vary by location and firm size, but across the state more than half of newly hired workers earn less than the cost of the family Household Survival Budget. Small firms (<50 employees) often drive economic growth but their wages tend to be lower, especially in rural areas where they are the largest employers. Large firms (500+ employees) offer higher wages but are concentrated in cities, where the cost of living is also higher. Medium-size firms (50-500 employees) pay more but employ the fewest workers.

<table>
<thead>
<tr>
<th>Household Survival Budget, Pierce County</th>
<th>SINGLE ADULT</th>
<th>2 ADULTS, 1 INFANT, 1 PRESCHOOLER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly Costs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing</td>
<td>$742</td>
<td>$1,126</td>
</tr>
<tr>
<td>Child Care</td>
<td>$--</td>
<td>$1,408</td>
</tr>
<tr>
<td>Food</td>
<td>$177</td>
<td>$586</td>
</tr>
<tr>
<td>Transportation</td>
<td>$409</td>
<td>$818</td>
</tr>
<tr>
<td>Health Care</td>
<td>$226</td>
<td>$845</td>
</tr>
<tr>
<td>Technology</td>
<td>$55</td>
<td>$75</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>$189</td>
<td>$548</td>
</tr>
<tr>
<td>Taxes</td>
<td>$286</td>
<td>$621</td>
</tr>
<tr>
<td>Monthly Total</td>
<td>$2,084</td>
<td>$6,027</td>
</tr>
<tr>
<td>ANNUAL TOTAL</td>
<td>$28,008</td>
<td>$72,324</td>
</tr>
<tr>
<td>Hourly Wage</td>
<td>$12.50</td>
<td>$36.16</td>
</tr>
</tbody>
</table>

Employment by Firm Size and Wage for New Hires, 2016

Appendix

United Way ALICE Report

2016 Point-in-Time Data

Population: 861,312 • Number of Households: 317,671
Median Household Income: $64,434 (state average: $67,106)
Unemployment Rate: 6.2% (state average: 5.4%)
ALICE Households: 31% (state average: 28%) • Households in Poverty: 11% (state average: 11%)
### Average Rates: Current & Proposed

<table>
<thead>
<tr>
<th>Average per-kWh Rate</th>
<th>Current Rates</th>
<th>Proposed Rates*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>9.68 ¢</td>
<td>9.81 ¢</td>
</tr>
<tr>
<td>Small General</td>
<td>9.36 ¢</td>
<td>9.45 ¢</td>
</tr>
<tr>
<td>General</td>
<td>7.05 ¢</td>
<td>7.47 ¢</td>
</tr>
<tr>
<td>High Voltage General</td>
<td>5.14 ¢</td>
<td>5.38 ¢</td>
</tr>
<tr>
<td>Contract Industrial</td>
<td>4.70 ¢</td>
<td>4.86 ¢</td>
</tr>
<tr>
<td>Street &amp; Highway Lighting (H1)</td>
<td>5.24 ¢</td>
<td>5.56 ¢</td>
</tr>
<tr>
<td>Traffic Signals &amp; Lights (H1)</td>
<td>9.77 ¢</td>
<td>9.77 ¢</td>
</tr>
<tr>
<td>Private Off-Street Lighting (H2)</td>
<td>21.13 ¢</td>
<td>22.41 ¢</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7.84 ¢</strong></td>
<td><strong>8.07 ¢</strong></td>
</tr>
</tbody>
</table>

*average for 19/20 rate period*