Water Line of Business – Overview and Priorities

Customer Review Panel

January 31, 2020
Today’s Discussion

1. Quick Background
   - Overview
   - Finances
   - Service Levels and Goals

2. Current SBP Action Plans and next steps for 2021-2026

3. Strategic Priorities for 2021-2026
The Big Picture: Overview Statistics

- 1.4 million customers
  - About half Seattle retail, half wholesale
- 100,000 acres in two watersheds, seasonal wellfield
  - Seattle City Light hydroelectric plants
- 193 miles of transmission pipelines
- 1,680 miles of distribution mains
- 250+ million gallons of treated water storage
- Many pump stations, valves, fire hydrants, service lines

- # Employees: 364
- # Unions: 12

- Regulators:
  - Department of Health
  - Department of Ecology
The Big Picture: Seattle’s Regional Water System
The Big Picture: Water Consumption and Water Conservation

Total Seattle Regional Water System Annual Demand in Millions of Gallons per Day: 1930-2017

- Annual Consumption in MGD
- Historical Maximum & Current Consumption Levels
- Population
- Consumption Trend Line

Seattle Public Utilities
# The Big Picture: Overview Statistics for Rates and Bills

## Rates and Bills

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of Current Rate Path</td>
<td>3 years; 2018-2020</td>
</tr>
<tr>
<td>Billing Mechanism</td>
<td>Combined Utility Bill</td>
</tr>
<tr>
<td>2019 Operating Revenue</td>
<td>$282 million</td>
</tr>
<tr>
<td>Number of Customer Accounts</td>
<td>- 192,000 retail accounts</td>
</tr>
<tr>
<td></td>
<td>- Water also sold to Cascade Water Alliance and 18 other wholesale customers</td>
</tr>
<tr>
<td>Rate Methodology</td>
<td>- Retail bills based on metered water usage and meter size, with higher seasonal rates in the summer</td>
</tr>
<tr>
<td></td>
<td>- Wholesale bills based on contracts and metered water use</td>
</tr>
<tr>
<td>Retail Customer Classes</td>
<td>Two subclasses: residential and commercial; very similar rates</td>
</tr>
</tbody>
</table>
The Big Picture: Drinking Water Process from Source to Tap
Sources and Uses of Drinking Water Funds

Water Fund Revenues and Expenses (2019, $ in Millions)

Revenues:
- Residential, $93.4, 33%
- Commercial, $102.6, 36%
- Private Fire, $3.9, 1%
- Public Fire, $9.7, 4%
- Other, $16.1, 6%
- Wholesale, $56.2, 20%

Expenses:
- D&M, $110,699, 39%
- Debt Services, $83,799, 30%
- Taxes, $41,112, 15%
- CIP, $46,665, 16%

Seattle Public Utilities
# Drinking Water Financial Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Target</th>
<th>Rate Study</th>
<th>Current Projection</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debt Service Coverage</td>
<td>1.70x</td>
<td>1.93x</td>
<td>2.09x</td>
<td>Above Target</td>
</tr>
<tr>
<td>Net Income</td>
<td>Generally Positive</td>
<td>$48.2M</td>
<td>$56.3M</td>
<td>Above Target</td>
</tr>
<tr>
<td>Cash-Funded CIP (% Rate Study Average)</td>
<td>20% min. over rate study period*</td>
<td>34.3%</td>
<td>45.0%</td>
<td>Above Target</td>
</tr>
<tr>
<td>&amp; Cash Contribution</td>
<td></td>
<td>$41.8M</td>
<td>$23.1M</td>
<td></td>
</tr>
<tr>
<td>Year-End Operating Cash</td>
<td>$10.6M (1/12th Operating Expense)</td>
<td>$32.0M</td>
<td>$125.5M</td>
<td>Above Target</td>
</tr>
</tbody>
</table>

* Formal policy target is based on average across rate setting period, but also provides for a 15% annual minimum for rate setting purposes.
Drinking Water Rates and Affordability

• Rate path

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<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Water</td>
<td>2.0%</td>
<td>2.5%</td>
<td>3.7%</td>
<td>5.0%</td>
<td>4.1%</td>
<td>5.0%</td>
<td>3.7%</td>
</tr>
<tr>
<td>Wastewater</td>
<td>4.1%</td>
<td>8.1%</td>
<td>9.9%</td>
<td>8.9%</td>
<td>1.3%</td>
<td>2.6%</td>
<td>5.8%</td>
</tr>
<tr>
<td>Drainage</td>
<td>10.7%</td>
<td>9.2%</td>
<td>9.7%</td>
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<td>7.9%</td>
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<td>Solid Waste</td>
<td>3.1%</td>
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<tr>
<td><strong>Combined</strong></td>
<td><strong>4.3%</strong></td>
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<td><strong>6.8%</strong></td>
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<td><strong>5.0%</strong></td>
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• Affordability metrics (being developed)
Where We Are in Our Capital Investments

Historic and Proposed Capital Facilities Plan Spending through 2040
(2018-2023 Adopted CIP, plus 2024-2040 Estimate, in thousands of 2017 dollars)

* Other includes Fleets, Facilities, Security, Information Technology, SCADA and other miscellaneous projects.
Drinking Water Service Levels & Goals

**Service Levels**

- Provide reliable, high-quality, aesthetically pleasing water that meets all regulatory requirements
- Meet all environmental requirements, including instream flow requirements and performance commitments in tribal and agency agreements/permits
- Meet requirements for system pressure and flow
- Limit unplanned outages in the water system
- Respond promptly to customer issues

**Goals**

- Environmental stewardship
- Public health protection
- Community centered
- Affordability and equity
- Resiliency
- Long term asset management
- Long term financial stability
SBP Action Plans - What’s Changed since 2017?

2017
- Move Seattle levy – funding for utility impacts
- Better understanding of seismic hazards in the Puget Sound region
- Drought of 2015
- Continued study of climate change
- Increasing costs for street work
- Keeping up with growth (new taps)

Now
- Some Move Seattle projects delayed
- Seismic study complete, implementation started
- More climate change analysis underway
- Street costs still increasing, new tap volume still high
SBP Action Plans

- Action Plan #2 – Fund Opportunity Infrastructure Work that Supports Transportation Projects

- Action Plan #3 – Expand Maintenance of the Water Distribution System

- Action Plan #4 – Expand Water Modeling

Refer to Action Plan summary table
SBP Strategic Priorities for the next 3-6 Years

• Aging infrastructure / asset management

• Seismic study implementation
  • Short-term actions
  • Long-term capital planning

• Climate change
  • Water supply for people and instream flow requirements
  • Watersheds, including wildfires
Aging Infrastructure

• Life cycle management for sustainability
• Asset-by-asset approach, plus high-level strategic planning to tie it all together
• Working on a utility-wide assessment of asset management
## Discrete Assets (Easier to Inspect)

<table>
<thead>
<tr>
<th>Asset</th>
<th>Condition</th>
<th>Certainty</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cedar Watershed Reservoirs and Dams</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tolt Watershed Reservoirs and Dams</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Lake Youngs Reservoir and Dams</td>
<td></td>
<td></td>
<td><em>Cascades Dam</em></td>
</tr>
<tr>
<td>Transmission-Area Buildings</td>
<td></td>
<td></td>
<td><em>Older buildings</em></td>
</tr>
<tr>
<td>In-Town Buildings</td>
<td></td>
<td></td>
<td><em>Older buildings</em></td>
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<tr>
<td>Landsburg Buildings</td>
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<tr>
<td>Water Treatment Plants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete Reservoirs (Treated Water)</td>
<td></td>
<td></td>
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<tr>
<td>Steel Water Tanks and Standpipes</td>
<td></td>
<td></td>
<td><em>Coatings, seismic</em></td>
</tr>
<tr>
<td>Water Pump Stations</td>
<td></td>
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</tr>
</tbody>
</table>
# Distributed Assets (More Difficult to Inspect)

<table>
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<tbody>
<tr>
<td>Cedar Watershed Transportation System</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tolt Watershed Transportation System</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Transmission Pipes and Appurtenances</td>
<td></td>
<td></td>
<td>More inspection needed, difficult</td>
</tr>
<tr>
<td>Water Distribution Pipes</td>
<td></td>
<td></td>
<td>Cannot inspect easily</td>
</tr>
<tr>
<td>Water Utilidors</td>
<td></td>
<td></td>
<td>More inspection needed, difficult</td>
</tr>
<tr>
<td>Water Meters (Wholesale and Retail)</td>
<td></td>
<td></td>
<td>Testing frequency</td>
</tr>
<tr>
<td>Water Valves</td>
<td></td>
<td></td>
<td>Deferred maintenance</td>
</tr>
<tr>
<td>Water Hydrants</td>
<td></td>
<td></td>
<td>Deferred maintenance</td>
</tr>
</tbody>
</table>
Example of Distributed, Difficult to Inspect Assets: Data-Driven Decision Making

- Water mains
  - Many of them
  - Difficult to inspect, estimate useful remaining life
- Monitor indirect trends
  - Break rates
  - Leakage rates
- Look at new technologies
  - Cost savings for installation
  - Better inspection methods
- Adjust replacement rate based on data
SPU - Watermain Failures and Distribution System Leakage

- Benchmarking data:
  - National average
    ~15-20 failures/100 mi
  - West Coast average
    ~10-15 failures/100 mi
  - DSL goal <10%
Replacement & Renewal Strategy – Long Term

Replacement Forecast (miles)

- Unlined Cast Iron
- Lined Cast Iron
- Ductile Iron
- Galvanized Iron/Steel
- Steel

Year

Pipe (miles)

[Graph showing the forecast for pipe replacement over a long-term period with a peak around 2038 and a decline thereafter.]
Aging Infrastructure: Rate Path Impacts

• Recommended to ramp up watermain replacement program
  • Currently 1 mile/year
  • Seek to ramp up to 2 miles/year in the next 6 years
Aging Infrastructure: Performance Measurements

- Continue to track and report watermain break trends
- Report on any changes in the target replacement rate, with associated rate impacts
  - Adjust long-term plan based on data
- Test technologies such as pipe lining instead of "dig and replace"
Seismic
Seismic: Mitigation Approach – Short Term Measures (Next 15 to 20 Years)

• Enhance emergency preparedness and response planning
  • Earthquake-specific response plan
  • Significantly augment pipeline repair material stocks
  • Assess adequacy/improve emergency drinking water

• Develop/implement isolation and control strategies
  • Reservoir isolation valves
  • Explore isolating areas of large amounts of pipe damage
  • Add valves to make isolation easier
Seismic: Mitigation Approach – Long Term Measures (Next 50 Plus Years)

• Build It Right (Now Until Forever)
  • Use earthquake-resistant pipe when pipe is replaced
  • Design new facilities to remain functional

• Upgrade Vulnerable Critical Facilities (Next 50 Plus Years)
  • Most vulnerable transmission pipelines locations (Cedar system has top priority)
  • Critical facilities
    • Large volume reservoirs
    • Key pump stations and support facilities
    • Life-safety
Seismic: Capital Planning Recommendations

• $15 to $20 million per year – 50+ years
• Refer to Seismic Study Executive Summary for a list of proposed projects
• Options analysis for all projects
  • Proactive upgrade options
  • Operational response until replacement
  • Example: a vulnerable pipe crossing
    • Proactive replacement/seismic upgrade of pipe
      • Open trench replacement
      • Slip-line pipe
    • Wait until condition-related replacement
      • Install emergency connections
      • Place spare pipe immediately adjacent
Seismic: Rate Path Impacts

• Recommended a 50-year capital improvements program based on prioritization and affordability considerations
• Considered accelerating 50-year CIP into shorter timeframe
  • Rate impact significant
Seismic: Performance Measurements

• Implement short-term recommendations
• Implement capital projects compared to proposed schedule
  • Use of asset management principles for options analysis balancing cost and risk
Climate Change

• Water Supply
  • Less snowpack for spring reservoir refill
  • Drier summers, lower reservoir drawdown in summer/fall
  • Wetter winters, more dynamic flood mgmt

• Watersheds
  • Drier summers, higher fire risk
  • Wetter winters, flood impacts
Climate Change and Water Supply

• Currently in third round of climate change planning since 2000
  • Previous studies used small numbers of global climate models
  • Current study uses many more models
• Using more climate models resulted in more uncertainty
  • Pivoting away from specific climate-based predictions
  • Moving towards planning based on drivers for future adaptation options, such as lower snowpack and more precipitation falling as rain
Climate Change and Water System Plan (WSP) Forecasts

• Currently have extra capacity in the drinking water system
• Anticipated to remain that way for many decades...
  • But must assess climate change impacts on supply and demand
Climate Change and Watersheds

• Completed watershed vulnerability to climate change
• Recommended adaptation strategies to increase resilience
  • Forests and streams
  • Road crossings
• Conducting wildfire risk assessment
Climate Change: Rate Path Impacts

- Recommended to perform additional studies
  - No significant O&M or capital projects right now
- Additional studies may inform future needs for added O&M or capital needs
Climate Change: Performance Measurements

• Water Supply
  • Complete adaptation planning with different strategies and options to improve resiliency
  • Prioritize lower cost options that are easier to implement and resolve constraints now and, in the future
  • Identify triggers that might move SPU towards more costly water supply alternatives

• Watersheds
  • Implement adaptation strategies to improve resiliency
  • Monitor to determine effectiveness, learn and continue to adapt
  • Define wildfire risk and identify triggers that may prompt SPU to consider additional strategies

• Report back on potential rate impacts, if studies recommend significant O&M or CIP projects