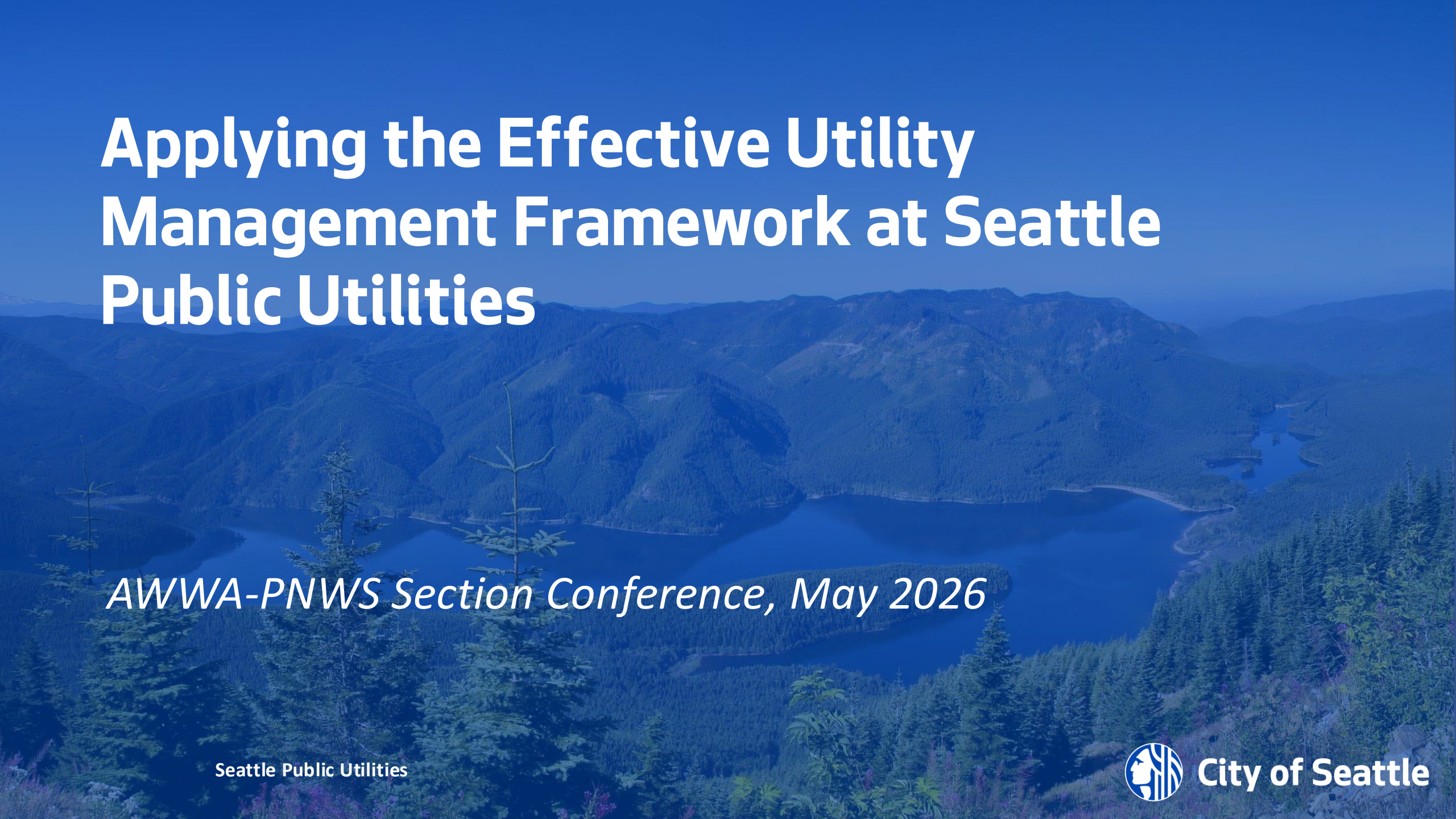
Applying the Effective Utility Management Framework at Seattle Public Utilities

AWWA-PNWS Section Conference, May 2026



Seattle Public Utilities

City of Seattle



Alex Chen

Chief Operating Officer –
Drinking Water
Seattle Public Utilities

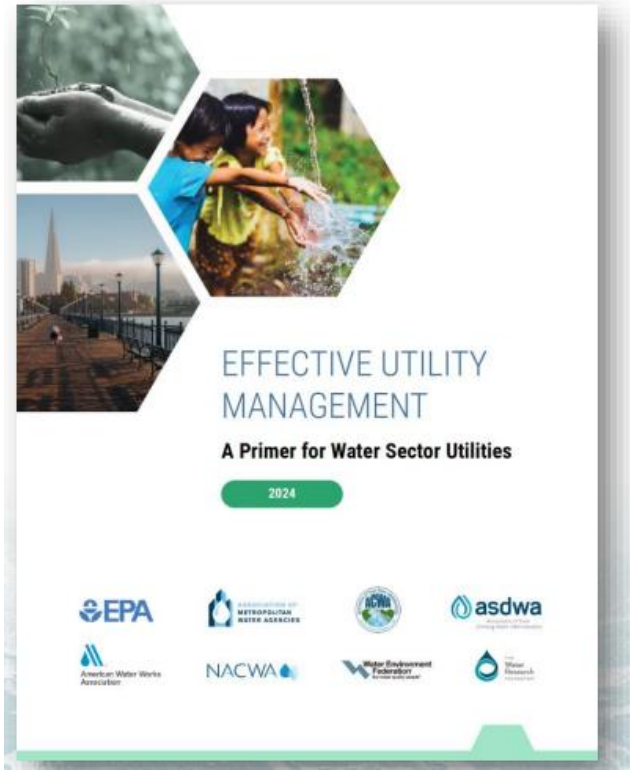




- *Utility work for 31 years, 21 at SPU*
  - *Professional Engineer*
- *Water Treatment Plant Operator 4*
- *Water Distribution Manager 4*

Agenda

- Effective Utility Management Framework
- Application to Seattle Public Utilities
- Insights Gained
- Next Steps





Seattle Public Utilities

- Water, sewer, drainage, solid waste
- 1.6 million water customers
- Regional – wholesale and retail
- Two protected watersheds
- Two surface water treatment plants, backup groundwater wells



What's Effective Utility Management (EUM)?

- EPA-led guidance for self-assessment
- Helps utilities chart a course for ensuring their operations are effective
- A self-assessment tool that can be used across utilities nationally
- Benefits:
  - Save money while being sustainable
  - Ensure reliability in water supply
  - Be efficient with water and energy
  - Become more resilient
  - Build greater understanding and support from decision makers

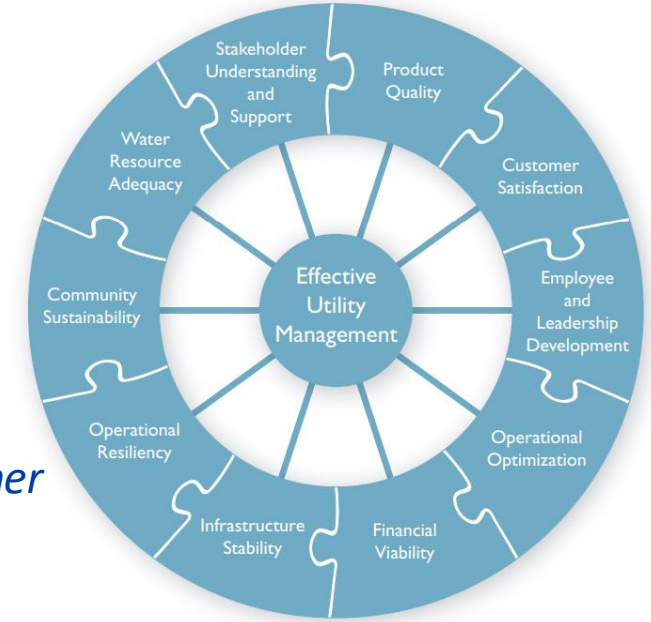
Effective Utility Management Ten Attributes and Five Keys to Management Success



https://www.epa.gov/sustainable-water-infrastructure/effective-water-utility-management-practices

Effective Utility Management

- Started in 2005 – EPA, AMWA, APWA, AWWA, NACWA, NAWC, WEF



Ten Attributes of Effectively Managed Water Sector Utilities

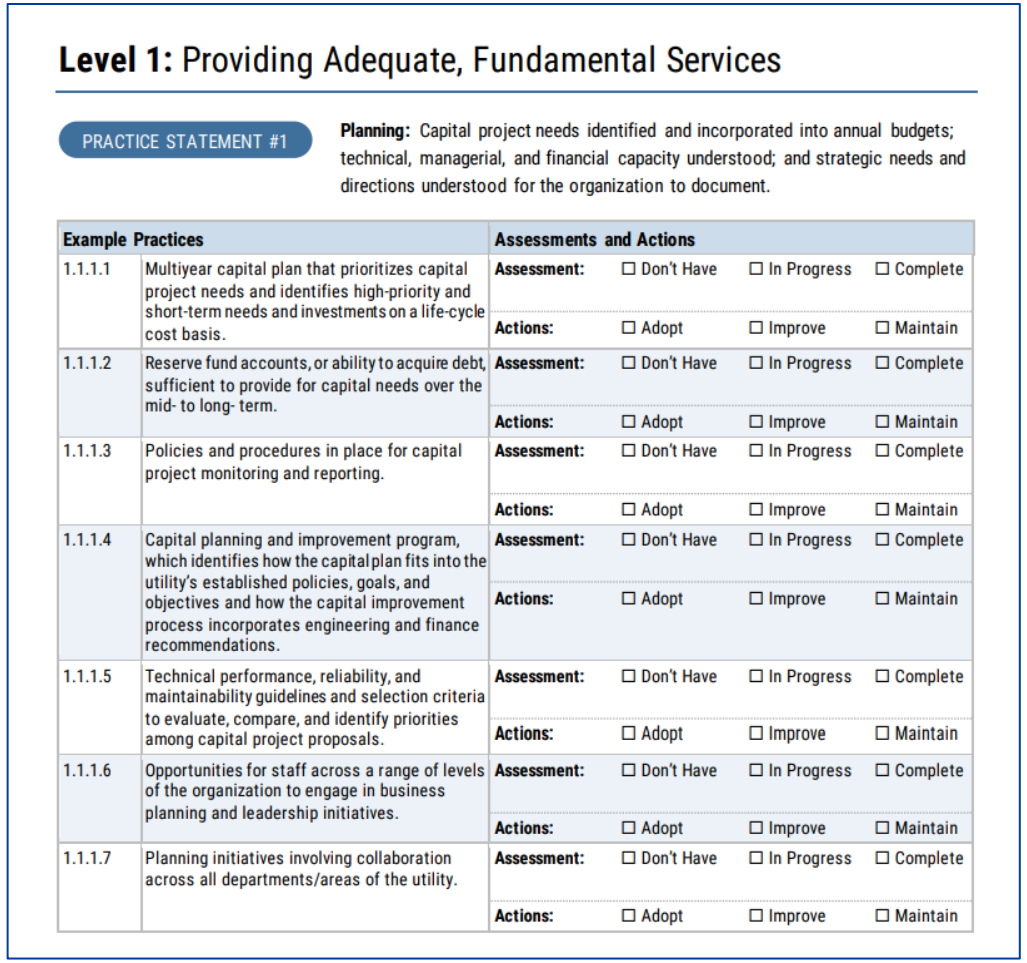
2008 EUM Primer



2024 EUM Primer Update

The Three Business Levels

1. Providing Adequate, Fundamental Services
2. Optimizing Operations and Services
3. Transforming Operations and Services for the Future



Level 1: Providing Adequate, Fundamental Services

PRACTICE STATEMENT #1

Planning: Capital project needs identified and incorporated into annual budgets; technical, managerial, and financial capacity understood; and strategic needs and directions understood for the organization to document.

Example Practices		Assessments and Actions			
1.1.1.1	Multiyear capital plan that prioritizes capital project needs and identifies high-priority and short-term needs and investments on a life-cycle cost basis.	**Assessment:**	☐ Don't Have	☐ In Progress	☐ Complete
		Actions:	☐ Adopt	☐ Improve	☐ Maintain
1.1.1.2	Reserve fund accounts, or ability to acquire debt, sufficient to provide for capital needs over the mid- to long- term.	**Assessment:**	☐ Don't Have	☐ In Progress	☐ Complete
		Actions:	☐ Adopt	☐ Improve	☐ Maintain
1.1.1.3	Policies and procedures in place for capital project monitoring and reporting.	**Assessment:**	☐ Don't Have	☐ In Progress	☐ Complete
		Actions:	☐ Adopt	☐ Improve	☐ Maintain
1.1.1.4	Capital planning and improvement program, which identifies how the capital plan fits into the utility's established policies, goals, and objectives and how the capital improvement process incorporates engineering and finance recommendations.	**Assessment:**	☐ Don't Have	☐ In Progress	☐ Complete
		Actions:	☐ Adopt	☐ Improve	☐ Maintain
1.1.1.5	Technical performance, reliability, and maintainability guidelines and selection criteria to evaluate, compare, and identify priorities among capital project proposals.	**Assessment:**	☐ Don't Have	☐ In Progress	☐ Complete
		Actions:	☐ Adopt	☐ Improve	☐ Maintain
1.1.1.6	Opportunities for staff across a range of levels of the organization to engage in business planning and leadership initiatives.	**Assessment:**	☐ Don't Have	☐ In Progress	☐ Complete
		Actions:	☐ Adopt	☐ Improve	☐ Maintain
1.1.1.7	Planning initiatives involving collaboration across all departments/areas of the utility.	**Assessment:**	☐ Don't Have	☐ In Progress	☐ Complete
		Actions:	☐ Adopt	☐ Improve	☐ Maintain

SPU Long-term Sustainable Planning

- We use Asset Management to plan capital and operations and maintenance programs and budgets

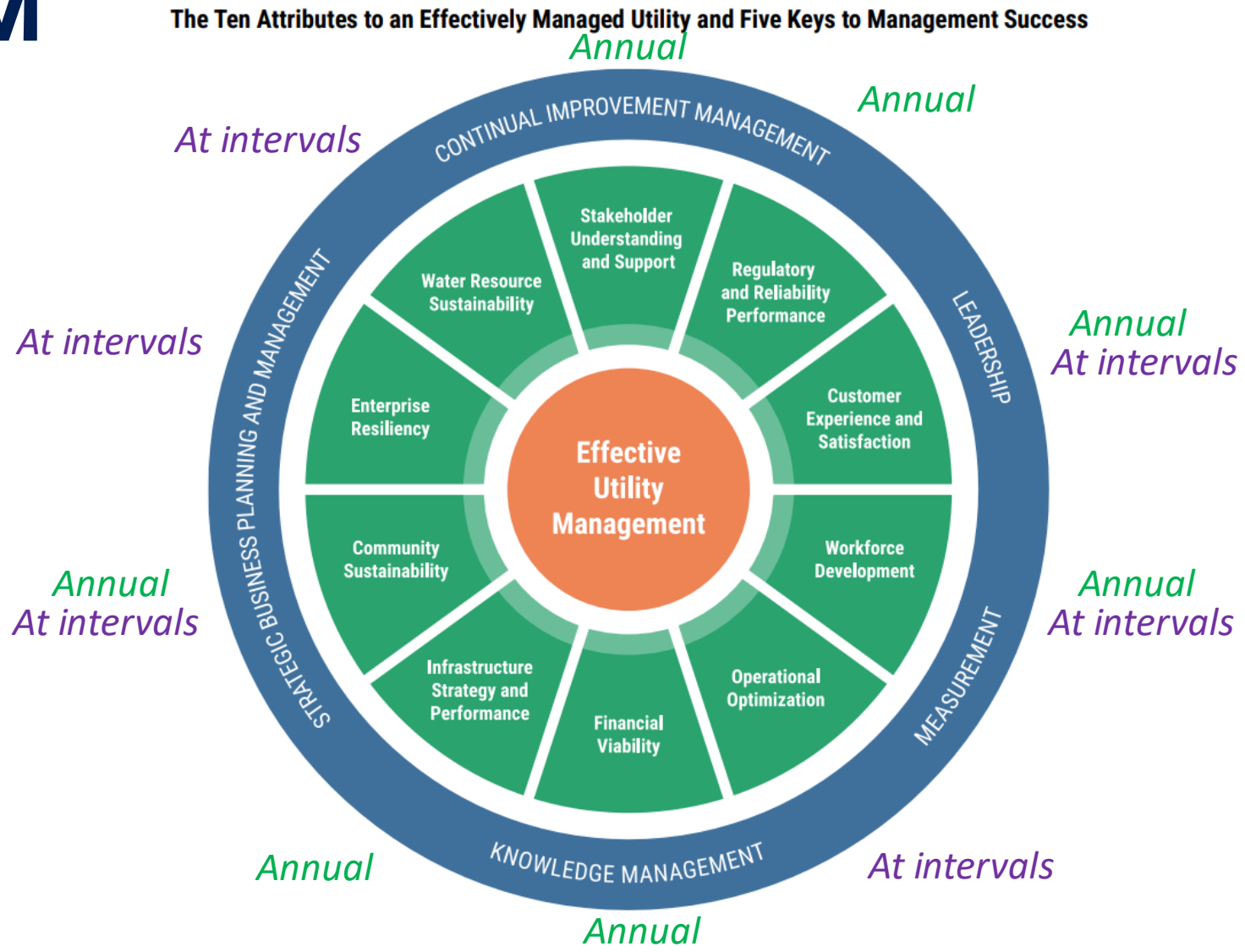
Long-term Plan(s) (10-50+ years) → **Programs/ Projects** → **Rolling 6-Year Budget**

Overarching Plans & Other Drivers

- SPU Strategic Business Plan
- 2019 Water System Plan
- Asset Management Plans
- S. Fork Tolt Watershed Management Plan
- Cedar River Habitat Conservation Plan
- Legal Agreements
- Regulatory or Contractual
- Special topics (i.e., seismic)
- Opportunities (i.e., transportation)

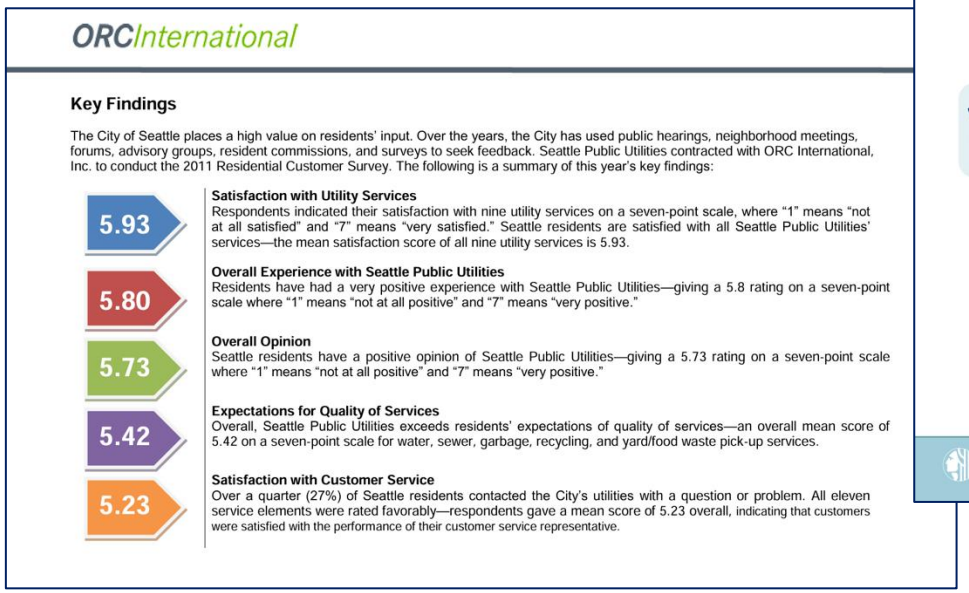
SPU and EUM

- Many items are already a core part of our everyday business
- Some we address at intervals



SPU – Some of the "Interval" Work

SPU - Customer Experience and Satisfaction



ORCInternational

Key Findings

The City of Seattle places a high value on residents' input. Over the years, the City has used public hearings, neighborhood meetings, forums, advisory groups, resident commissions, and surveys to seek feedback. Seattle Public Utilities contracted with ORC International, Inc. to conduct the 2011 Residential Customer Survey. The following is a summary of this year's key findings:

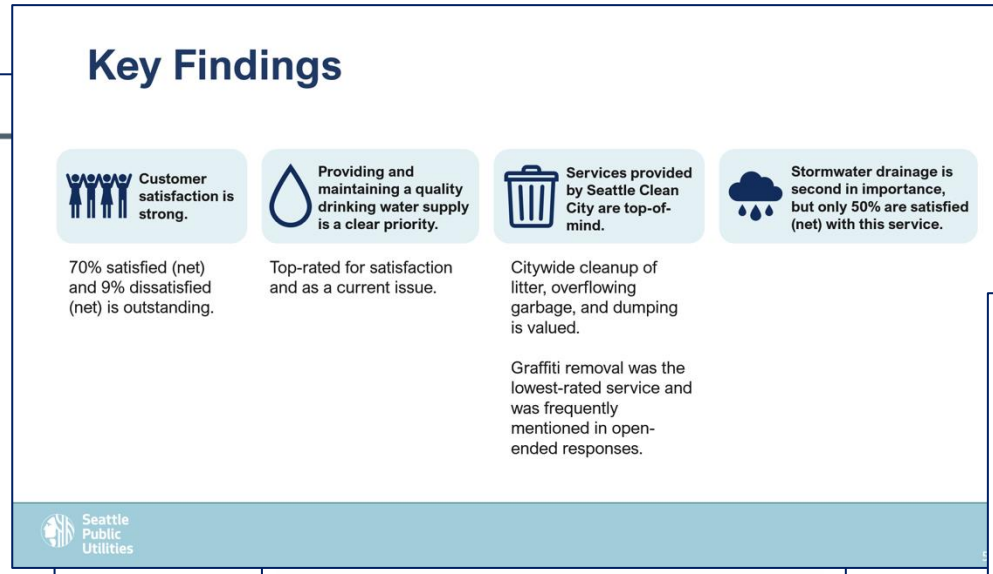
5.93 **Satisfaction with Utility Services**
Respondents indicated their satisfaction with nine utility services on a seven-point scale, where "1" means "not at all satisfied" and "7" means "very satisfied." Seattle residents are satisfied with all Seattle Public Utilities' services—the mean satisfaction score of all nine utility services is 5.93.

5.80 **Overall Experience with Seattle Public Utilities**
Residents have had a very positive experience with Seattle Public Utilities—giving a 5.8 rating on a seven-point scale where "1" means "not at all positive" and "7" means "very positive."

5.73 **Overall Opinion**
Seattle residents have a positive opinion of Seattle Public Utilities—giving a 5.73 rating on a seven-point scale where "1" means "not at all positive" and "7" means "very positive."

5.42 **Expectations for Quality of Services**
Overall, Seattle Public Utilities exceeds residents' expectations of quality of services—an overall mean score of 5.42 on a seven-point scale for water, sewer, garbage, recycling, and yard/food waste pick-up services.

5.23 **Satisfaction with Customer Service**
Over a quarter (27%) of Seattle residents contacted the City's utilities with a question or problem. All eleven service elements were rated favorably—respondents gave a mean score of 5.23 overall, indicating that customers were satisfied with the performance of their customer service representative.



Key Findings

Customer satisfaction is strong.
70% satisfied (net) and 9% dissatisfied (net) is outstanding.

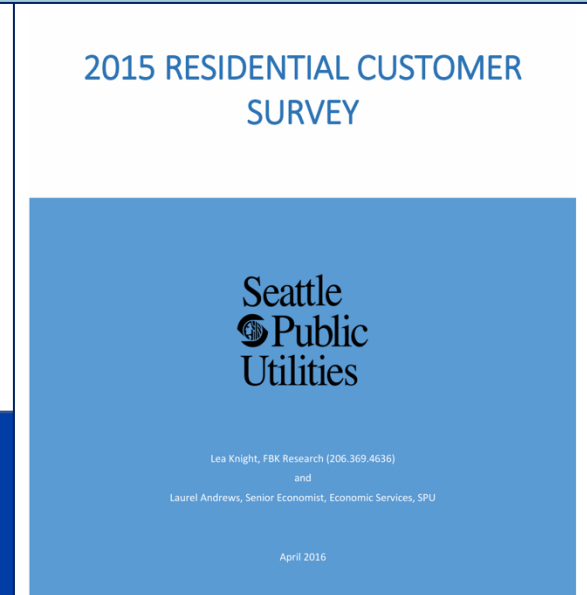
Providing and maintaining a quality drinking water supply is a clear priority.
Top-rated for satisfaction and as a current issue.

Services provided by Seattle Clean City are top-of-mind.
Citywide cleanup of litter, overflowing garbage, and dumping is valued.

Graffiti removal was the lowest-rated service and was frequently mentioned in open-ended responses.

Stormwater drainage is second in importance, but only 50% are satisfied (net) with this service.

Seattle Public Utilities



2015 RESIDENTIAL CUSTOMER SURVEY

Seattle Public Utilities

Lea Knight, FBK Research (206.369.4636)
and
Laurel Andrews, Senior Economist, Economic Services, SPU

April 2016



J.D. Power
2025 U.S. Water Utility Residential Customer Satisfaction Study℠

Overall Customer Satisfaction Index Ranking
(Based on a 1,000-point scale)
West — Large

Seattle Public Utilities	569
Golden State Water Company	533
Las Vegas Valley Water District	528
L. A. Dept. of Water & Power	522
East Bay Municipal Utility District	521
California Water Service	519
SFPUC	519
Segment Average	517
City of Phoenix	510
Denver Water	508
San Jose Water	490
City of San Diego	470

Source: J.D. Power 2025 U.S. Water Utility Residential Customer Satisfaction Study℠

Charts and graphs extracted from this press release for use by the media must be accompanied by a statement identifying J.D. Power as the publisher and the study from which it originated as the source. Rankings are based on numerical scores, and not necessarily on statistical significance. No advertising or other promotional use can be made of the information in th release or J.D. Power survey results without the express prior written consent of J.D. Power.

- Several different surveys over the years

SPU – Workforce Development

- Supervisor and Leadership Training





SPU – Workforce Development





Culture is a sense of belonging. And a great work culture is where everyone feels welcomed, valued, and safe.







SPU – Workforce Development



SPU – Operational Optimization

- Electrical usage optimization

Overall Energy Intensity

In 2006, SPU's water system energy intensity (energy use per water volume delivered) was 468 kWh/MG.[1] While the data point is nearly 20 years old, SPU probably still has one of the least-energy-intensive water systems in the United States today (Figure 1). This is due to the gravity-fed water supply from a high-quality watershed that requires little pumping or treatment. These advantages should be preserved as much as possible.

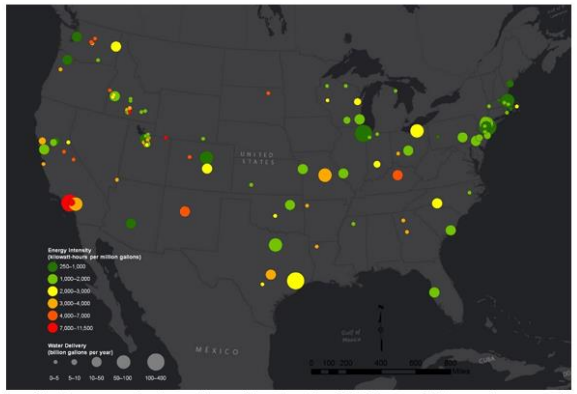


Figure 1: Energy intensity of selected U.S. public water systems[1]

RECOMMENDATIONS

Based on the analysis described above, HAL recommends the following actions. These actions should be discussed with SPU staff and vetted before implementation.

- Align energy management efforts with existing water system policies.
- Preserve advantages of gravity-fed surface water from protected watersheds.
- Watch for extreme pressures which may lead to customer complaints and/or water loss.
- Use storage to balance water supply and demand, as well as power supply and demand.
- Identify and prioritize the most efficient pump(s) in multiple-pump setups.
- Analyze paths for water delivery and prioritize most energy-efficient ones.
- Continue efforts in water loss control.
- Maintain capacity in Tolt and Cedar supply lines (e.g., pig or flush). Control flow rate to avoid head loss before pumping.
- Explore using neighboring water systems to balance water and energy loads.
- Develop an extended-period simulation to enhance hydraulic modeling capabilities.

SPU - Community Sustainability

Duwamish Valley Resilience District

SEA LEVEL RISE ADAPTATION + ANTI-DISPLACEMENT



Physical Infrastructure: Climate Change Adaptation

- Sea level rise infrastructure
- Establish development framework



Financial Infrastructure: Community Wealth Building

- Secure sustainable funding
- Equitably distribute benefits



Organization Infrastructure: Community Stabilization

- Fight displacement
- Share decision-making
- Establish and hold partnerships
- Deploy EJ & ED investments

Place-based, geographic strategy & designation

A Resilience District equips community to marshal their assets to address systemic vulnerabilities / inequities.

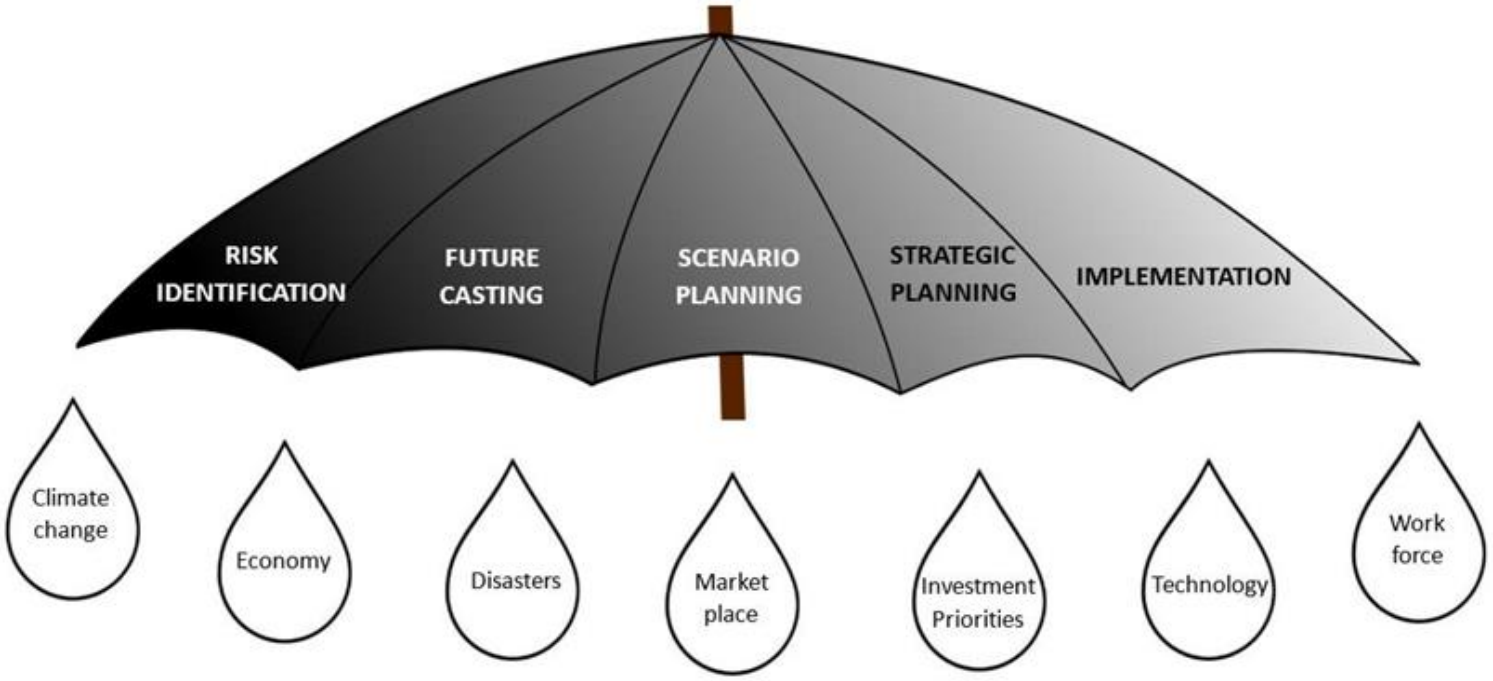
Robert Wood Johnson Foundation

Center for Community Investment

Seattle Public Utilities, Office of Sustainability and Environment, Office of Planning and Community Development

City of Seattle

SPU – Enterprise Resiliency



SPU – Enterprise Resiliency

SPU's RISK AND RESILIENCY ASSESSMENT AND FRAMEWORK

2019 Final Report



SPU - Water Resource Sustainability

- Water supply, climate change, sea level rise efforts
- Carbon neutrality goals

SPU Goals

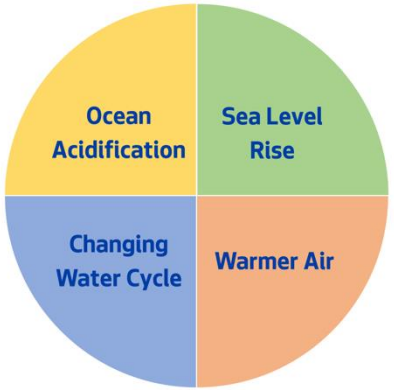
- Carbon Neutrality by 2030
- An Energy Efficient & Energy Aware Utility
- Generating Renewable Energy

By achieving these goals, SPU will be taking a strong stance on environmental stewardship and climate leadership while managing the costs of our operations, therefore contributing to ratepayer affordability and effective management of our assets

Climate Impacts in Seattle

Puget Sound waters have increased in acidity by 25% since the Industrial Revolution.

Seattle is experiencing more heavy rain and storms in winter, and drier, hotter summers. Snowpack in the mountains is decreasing and melting earlier.



Sea levels in Puget Sound have risen by nine inches since 1900 and are expected to rise by another two to five feet by 2100.

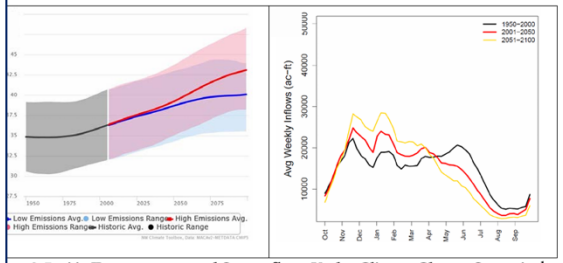
Average annual air temperature in Seattle has increased by 1.3 degrees F since 1895 and is projected to be 5.5 degrees F warmer by 2050.

3 Seattle Public Utilities

City of Seattle

The ensemble of future climate projections shows an increasing trend in average temperatures across all seasons (Figure 2-7). Warmer winter temperatures would result in more precipitation falling as rain and less as snow, resulting in declining snowpack over time. While projections show little to no trend in average annual precipitation, several models suggest an amplification of current seasonal patterns; winter precipitation may increase and summer precipitation may decrease in the future. The variability in annual precipitation is expected to increase in the future, which would result in drier and wetter years than have been observed historically. The potential for anomalously dry winters in combination with warmer winter temperatures in the future creates the possibility that there will be years in the future that SPU is unable to meet reservoir refill targets in the spring.

The regional average annual streamflow hydrograph is characterized by two peaks. The first peak occurs in the late fall when the rainy season begins. Flows are reduced as temperatures cool and a greater portion of precipitation falls as snow which accumulates as snowpack. The second hydrograph peak occurs in the spring as temperatures rise and snowmelt runs off to the stream. It is important to note that any given year will look different than the generalized average hydrograph because of variability in weather patterns from year to year.



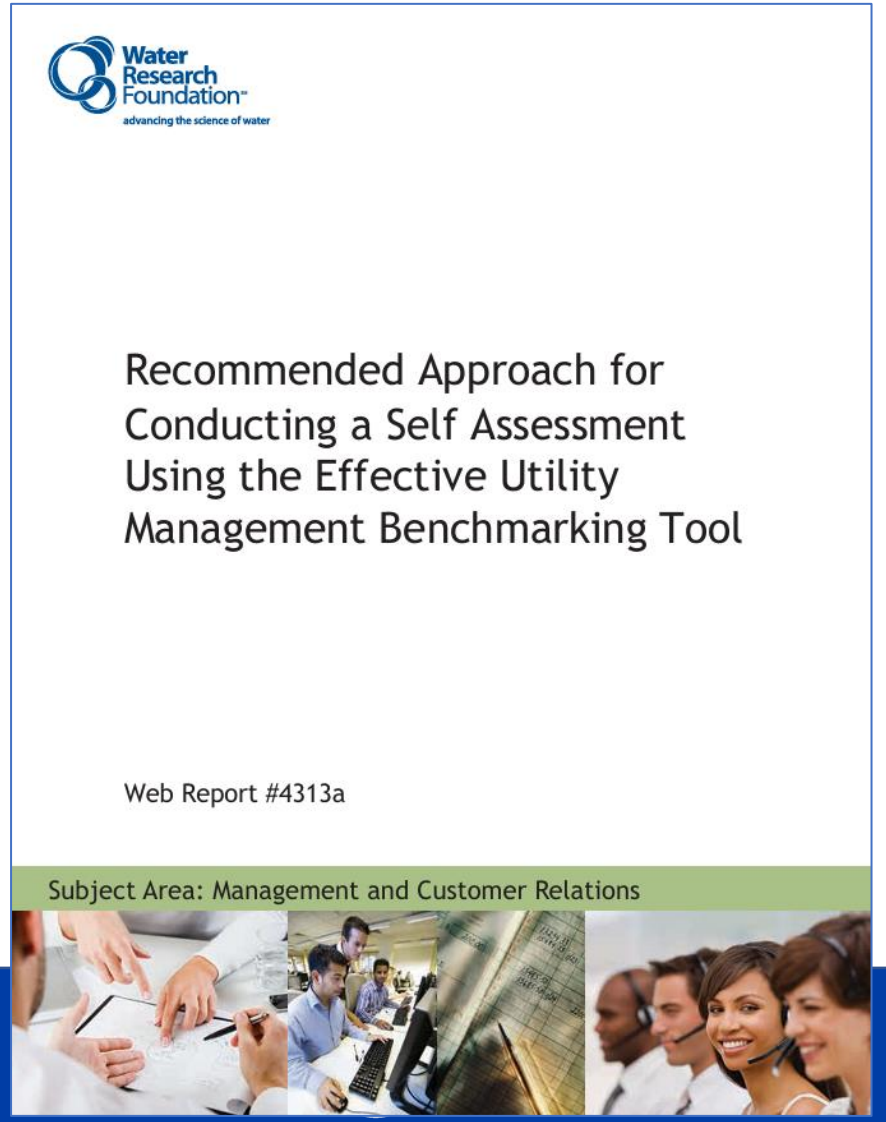
ure 2-7. Air Temperatures and Streamflows Under Climate Change Scenarios[1]

[1] Left-hand graph: Historic average temperatures (in grey) and projections of future temperatures under two emissions scenarios through 2100. Right-hand graph: Total average weekly inflow supply as calculated by 20 GCMs for three time periods.

City of Seattle

EUM Self-Assessment Process

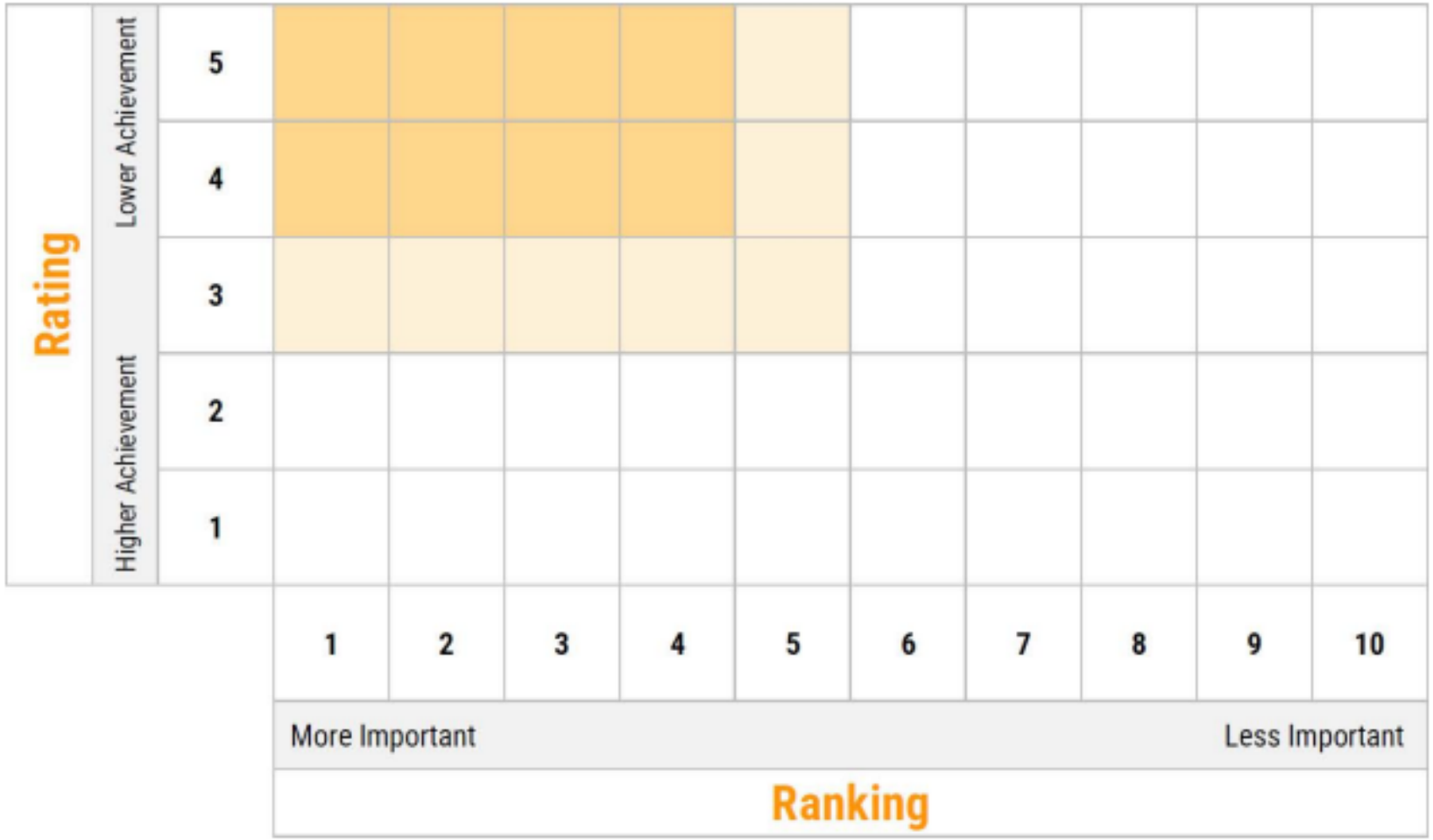
- Fairly straightforward
- Thoughtful internal discussion
- Led to insights and areas for improvement



EUM Self-Assessment Chart

Step 3: Chart Results

Chart each Attribute based on your ratings and rankings.

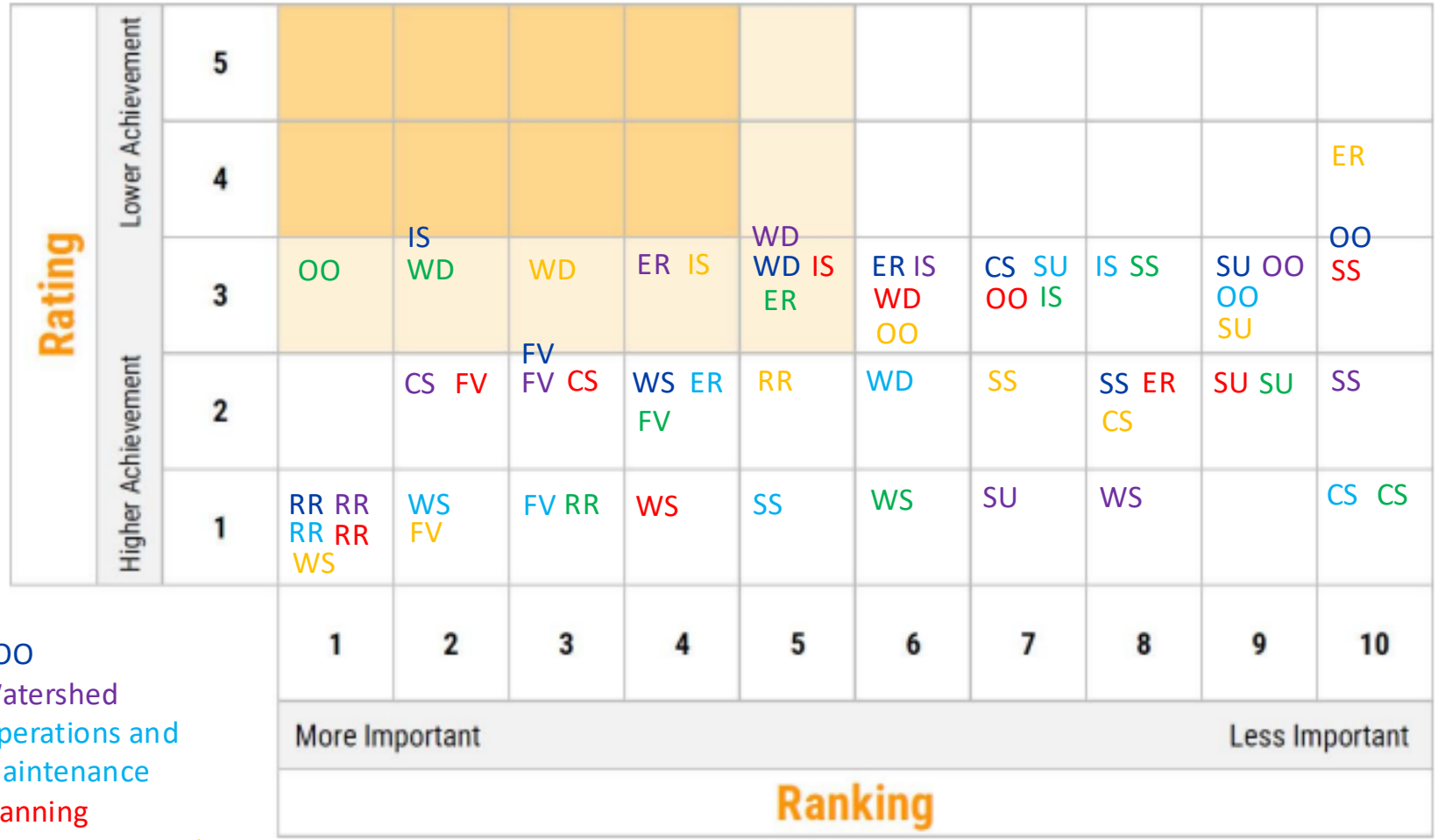


- SU (Community Sustainability)
- CS (Customer Experience and Satisfaction)
- ER (Enterprise Resiliency)
- FV (Financial Viability)
- IS (Infrastructure Strategy and Performance)
- OO (Operational Optimization)
- RR (Regulatory and Reliability Performance)
- SS (Stakeholder Understanding and Support)
- WS (Water Resource Sustainability)
- WD (Workforce Development)

Self-Assessment Results

Step 3: Chart Results

Chart each Attribute based on your ratings and rankings.



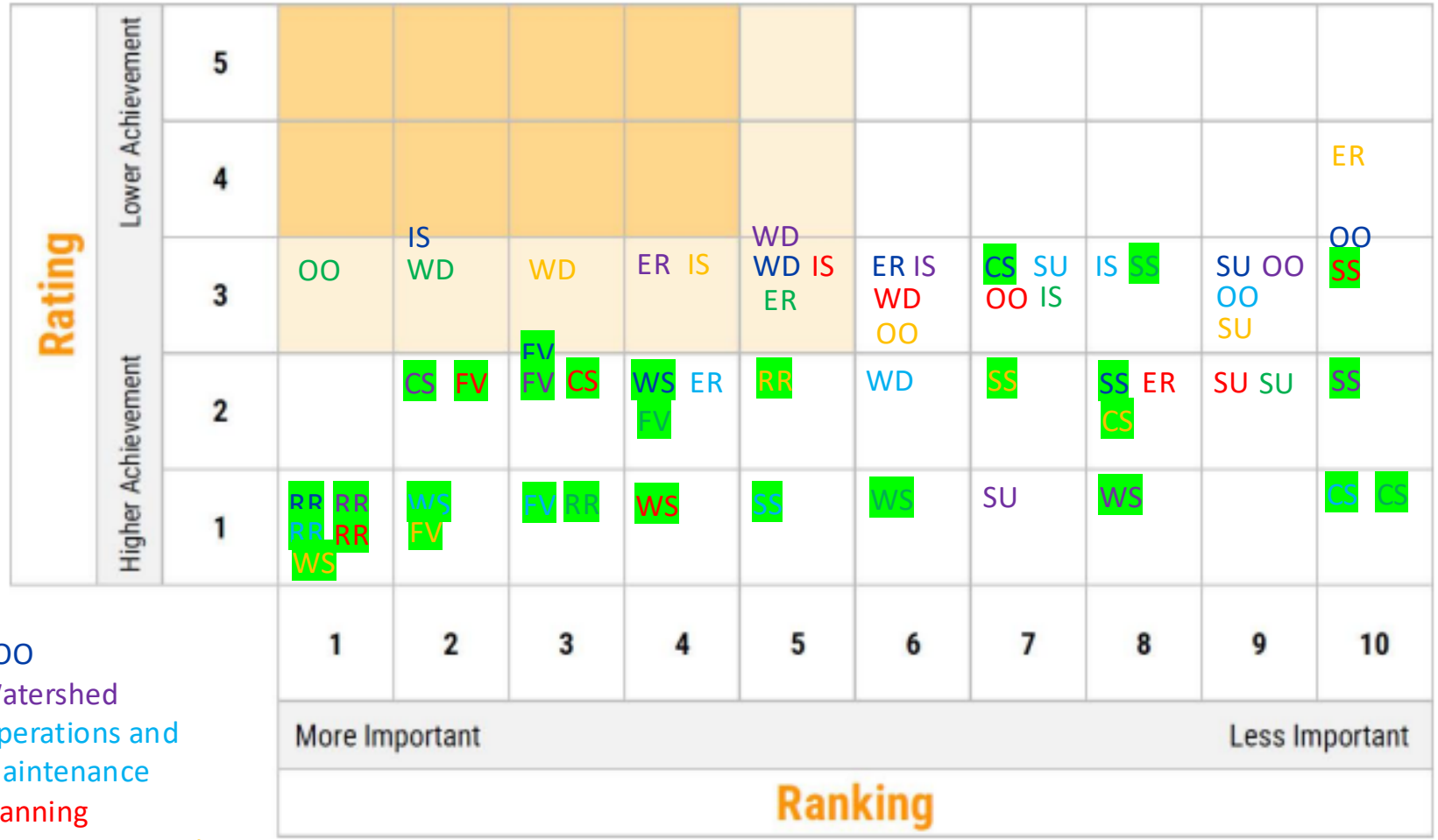
COO
Watershed
Operations and Maintenance
Planning
Transmission and Distribution Maintenance
Water Quality

- SU (Community Sustainability)
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- WD (Workforce Development)

Strengths

Step 3: Chart Results

Chart each Attribute based on your ratings and rankings.



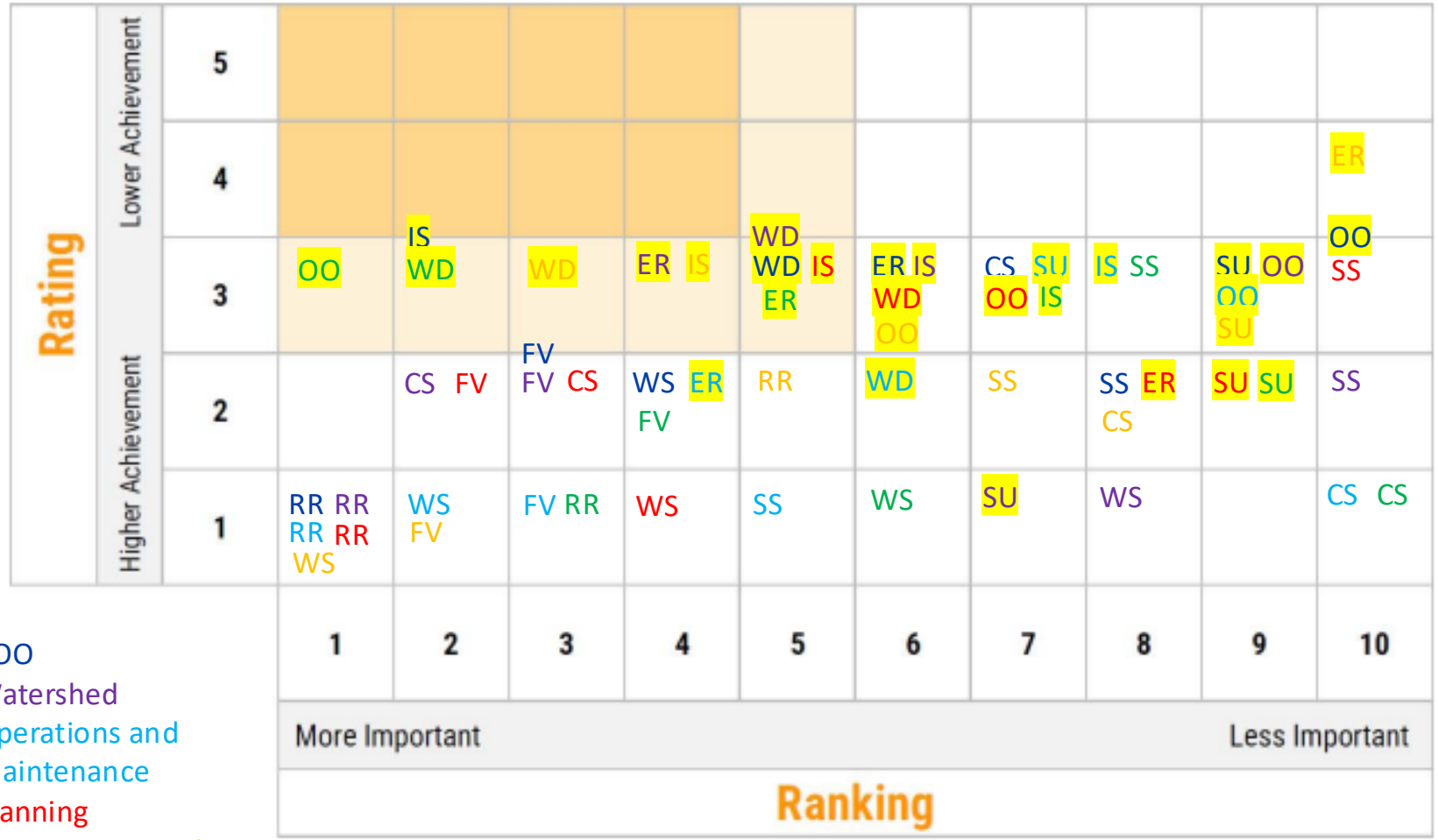
COO
Watershed Operations and Maintenance
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Opportunities

Step 3: Chart Results

Chart each Attribute based on your ratings and rankings.

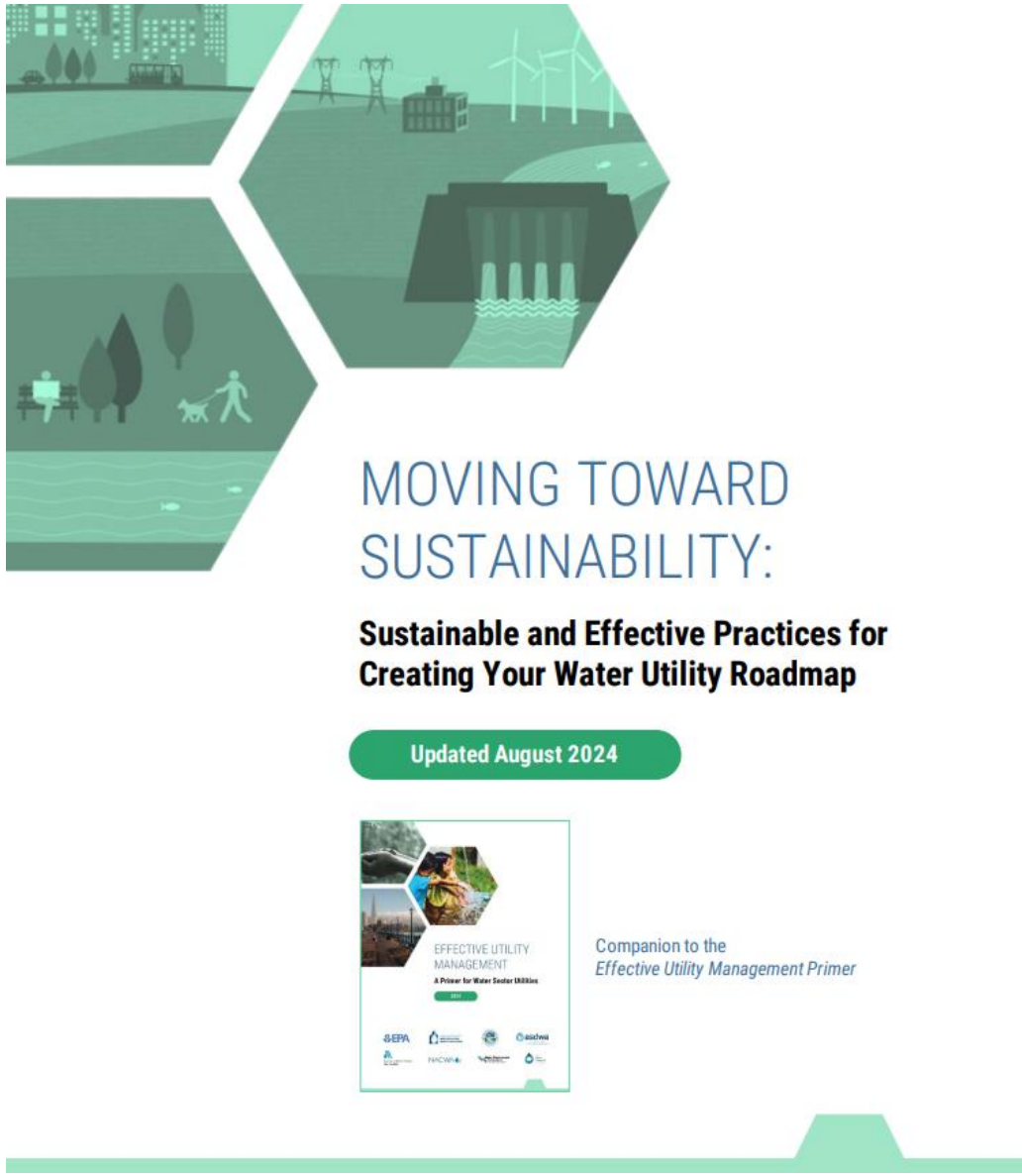


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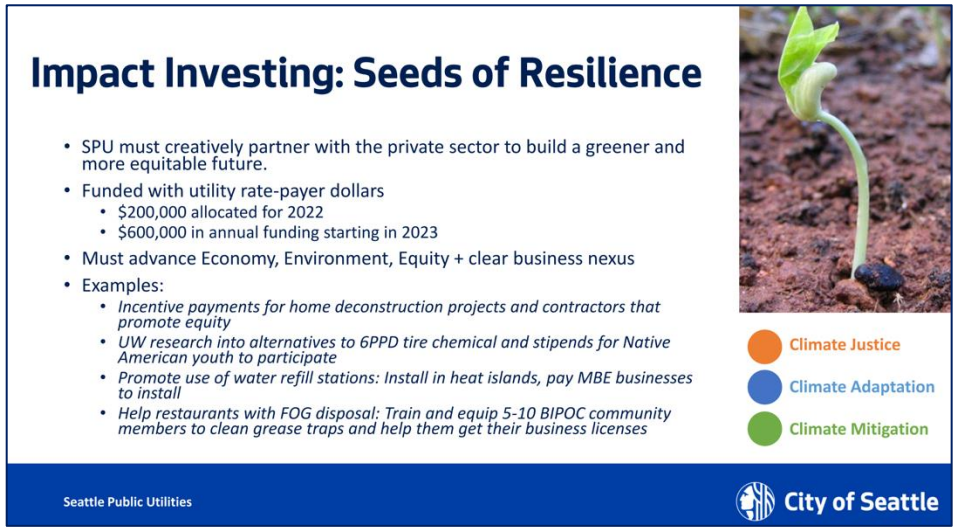
Next Steps

- Build on strengths
- Shore up areas of opportunity
- 2024 Companion to EUM Primer, *Moving Toward Sustainability*



Areas of Opportunity – Community Sustainability

- Watershed-based infrastructure planning
- Green infrastructure
- Greenhouse gas emissions
- Community economic development



Community-Centered, Equity-Based Strategies

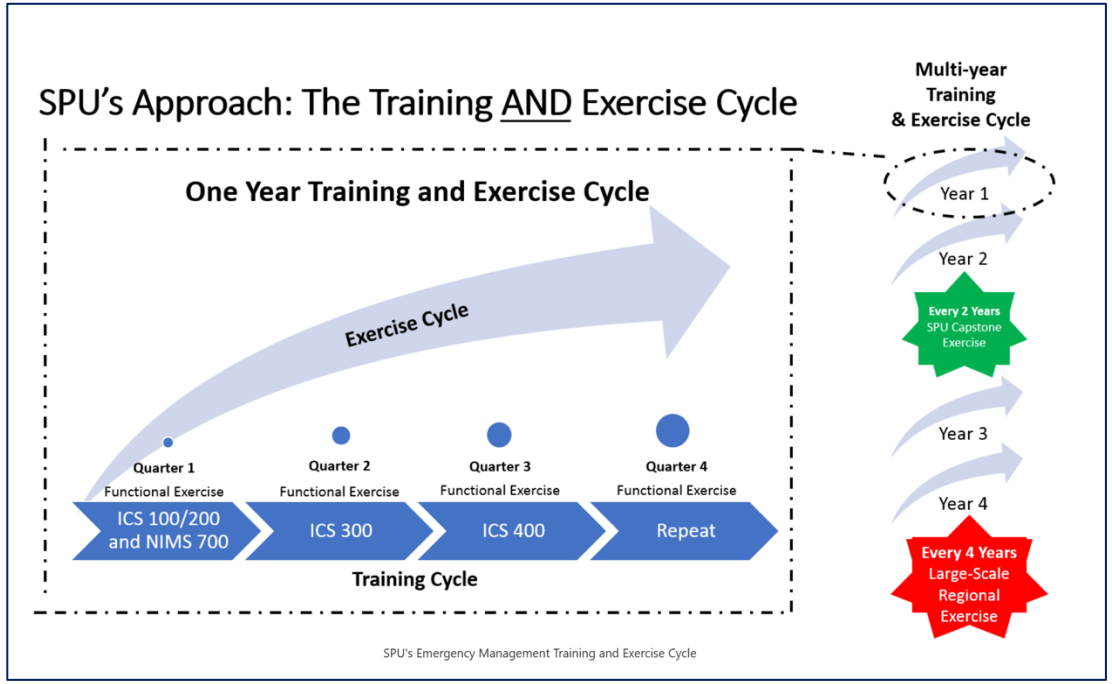
As a community-centered utility, our business planning and priorities must center on the voices of the communities we serve both internally (employees) and externally (neighborhoods) to SPU. CPP staff help innovate and advance SPU's community-centered, anti-racist, and anti-oppression approaches in several key areas.



South Park Wet Weather Preparedness Community Advisory Committee

Areas of Opportunity – Enterprise Resiliency

- Recordable incidents of injury/illness
- Insurance claims
- Risk assessment and response preparedness
- Ongoing operational resiliency
- Operational resiliency during emergencies
- Cyber security



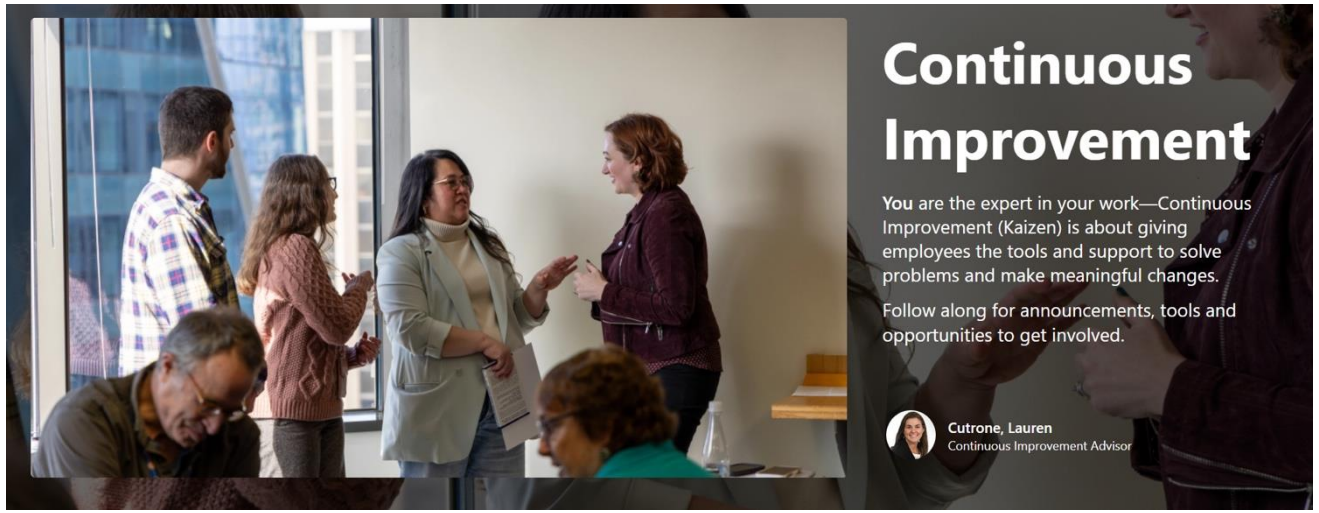
Areas of Opportunity – Infrastructure Strategy

- Asset inventory
- Asset renewal/replacement
- Water distribution system integrity
- Infrastructure planning and maintenance



Areas of Opportunity – Operational Optimization

- Resource optimization
- Water management efficiency



Areas of Opportunity – Workforce Development

- Employee retention and satisfaction
- Management of core competencies
- Workforce engagement

As the program gets underway, SPU remains committed to investing in the next generation of utility workers and providing career advancement opportunities. Water Line of Business and Utility Operations & Maintenance Deputy Director Alex Chen shared that "Apprenticeship is an important part of succession planning at SPU. Every year, we're either starting a two-year Water Pipe Workers or Drainage and Wastewater Collection System Workers Apprenticeship Program class."

"After graduating from the programs, they have the opportunity to assess what their careers at SPU will bring and work with their supervisors to achieve their personal and professional goals. Encouraging all staff to have conversations about ways they can grow, develop, and learn new skills is something we strongly support at SPU," concluded Chen.

Learn more about SPU's Apprenticeship Program.



Executive Summary

Participation: 50% (722/1447)

Overall Favorability Score: 69% (+1% from 2023)

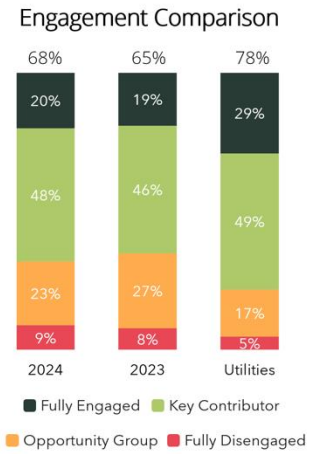
Global Benchmark Comparison: 77%

Utilities Industry Comparison: 74%

Strengths
- Belonging
- Feeling Valued
- Coworker relationships

Opportunities
- Communication
- Meaning & Purpose
- Internal Processes

Insights:
- Big decrease in participation from 2023
- Overall scores increasing but still lower than external benchmarks
- Engagement Scores Increased



Competencies

Values Diversity, Equity, Inclusion, and Belonging

All SPU Employees
1. Action Oriented
2. Customer Focus
3. Collaborates
4. Communicates Effectively
5. Instills Trust
6. Nimble Learning

People Managers
1. Builds Effective Teams
2. Decision Quality
3. Ensures Accountability
4. Manages Conflict
5. Organizational Savvy
6. Situational Adaptability

Executives
1. Business Insight
2. Cultivates Innovation
3. Drives Vision and Purpose
4. Interpersonal Savvy
5. Manages Ambiguity
6. Strategic Mindset

Questions?

Alex Chen, P.E. 206-684-7414