King County Recycled Water Program Strategic Plan 2018–2037

King County

Department of Natural Resources and Parks

Wastewater Treatment Division

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Introduction

The King County Recycled Water Program plays a critical role in the King County Wastewater Treatment Division's (WTD's) vision of being an innovative and resilient clean water enterprise, revolutionizing the recovery of valuable resources for communities. King County has distributed recycled water for 20 years and has made steady progress in expanding recycled water use.

Recycled water has many benefits for the Puget Sound region. These include creating options for managing wastewater effluent, helping the region respond to drought and climate change, and saving drinking water. Recycled water is also an important resource for King County to mitigate current and future discharge limits and regulations. In 2015, for instance, when the Pacific Northwest experienced significant drought, recycled water provided irrigation for local customers, preserving water in rivers and streams for natural habitats and people. As climate change exacerbates drought conditions, recycled water will become increasingly important to the region's resiliency and sustainability.

Program Challenges

Despite the achievements of the Recycled Water Program and the benefits of recycled water use in general, WTD faces significant internal and external challenges to expanding recycled water use. Specifically, the Recycled Water Program must compete for capital funding and staffing resources with WTD's other priority programs and work. WTD's capital and operating program structures also lack flexibility, making it difficult to implement projects for private-sector customers in a timely manner. Additionally, the recycled water distribution system at Brightwater Treatment Plant, in particular, needs infrastructure improvements to reliably serve water—a factor that has inhibited customer development.

Additionally, recycled water use is not as common in the Pacific Northwest as it is in water-limited areas of the United States, and there is currently not a strong demand for additional municipal water supplies. This makes it hard to establish water supply partnerships with drinking water utilities and creates political and economic hurdles because many drinking water utilities perceive recycled water as a duplicative, competing water supply. Because of this environment, the program faces challenges meeting King County's Strategic Climate Action Plan targets. Still, recycled water is strongly supported by ratepayers and is recommended by many policymakers as a water supply solution to address climate change and regional salmon recovery.

Strategic Plan Purpose

The primary purpose of the Recycled Water Program Strategic Plan is to guide the program's efforts and decision-making and to facilitate the timeliness and reliability of serving existing and future recycled water customers. Because end uses and support for recycled water are constantly evolving, some elements of this strategic plan are on a five- to 10-year horizon, whereas some—such as those that involve capital funding and construction—are on a 10- to 20-year horizon.

The Recycled Water Program Strategic Plan explores the following questions:

- Where will the Recycled Water Program focus its efforts regarding customer connections and future expansion?
- How can the Recycled Water Program better meet customer requirements?
- How does WTD advance the Recycled Water Program and comply with existing policies and guiding principles?
- How can WTD's business, funding, and operational models be modified or adapted to accommodate recycled water project and customer needs?
- What political, advocacy, and research partnerships are needed to advance recycled water projects and what is the plan to cultivate them?
- How can the Recycled Water Program can best work with water utilities and purveyors to meet the needs of all parties?

The Recycled Water Program Strategic Plan will be used by WTD to:

- Provide information for the Systemwide Comprehensive Plan for King County's regional wastewater system
- Provide direction for future program activities and decision-making
- Prioritize resources for programs within the division
- Communicate with stakeholders about the program's direction

Strategic Planning Process

Strategic planning is a continuous, iterative process that involves envisioning a successful future, identifying where a program is in relation to that vision, developing goals to fulfill that vision, implementing strategies to achieve those goals, and monitoring progress toward implementation. Strategic plans are dynamic documents that need updates over time as conditions and situations change.

The Recycled Water Program followed six steps to develop its strategic plan:

1) **Standardized strategic planning elements** development across the Biosolids Program, Recycled Water Program, and Technology Assessment and Innovation Program (TAIP)
2) **Strategic postures** development
3) **Goals** and **objectives** development, and development of measures for tracking progress toward objectives
4) **Strategies** development
5) Strategies **prioritization**
6) **Actions** development

Program staff participated in team meetings at each step in the strategic planning process, one workshop involving the King County Biosolids Program and TAIP teams, and regular check-ins

with WTD management. The Recycled Water Program Strategic Plan was also informed by technical research conducted by a consultant-team subject matter expert.

Recycled Water Strategic Postures

Through this strategic planning process, Recycled Water Program team members and WTD management considered five potential, high-level "strategic postures" that could frame the program's decision-making over the next 5 to 10 years and 10 to 20 years. The strategic postures concept was derived from a Harvard Business Review article, *Strategy Under Uncertainty.*[1] Strategic postures are similar to, but broader than, strategic planning "alternatives" considered by the Biosolids Program and TAIP teams. Strategic postures created a framework around the types of strategies that could be identified for determining how Recycled Water Program goals and objectives would be achieved.

The range of strategic postures considered for the Recycled Water Program were based on different levels of uncertainty about the future, and included:

- *Shape the future*: Play a leadership role in establishing how the industry operates.
- *Adapt to the future*: Win through speed, agility, and flexibility in recognizing and capturing opportunities in existing markets.
- *Invest to stay in the game*: Invest sufficiently to stay in the game, but avoid premature commitments.
- *Minimal investment*: Continue external distribution, but recognize uncertainty and issues with reliability and customer service.
- *Decommission external distribution*: Halt external distribution and stop serving existing customers.

WTD management chose the following strategic postures:

- *Invest to stay in the game* to guide the Recycled Water Program over the next 10 years.
- *Adapt to the future* to guide the Recycled Water Program in the subsequent 10 years following the initial 10-year investment.

Invest to stay in the game poises WTD to be ready for future opportunities by investing now to better serve existing customers and continue with planned growth. *Adapt to the future* allows for further growth and expansion of the Recycled Water Program as regional opportunities arise. Both of these strategic postures are described in more detail in Table 1.

[1] Courtney, Hugh; Kirkland, Jane; Viguerie, Patrick (December 1997) *Strategy Under Uncertainty*, Harvard Business Review.

Table 1. Strategic Postures and Portfolio of Actions Based on Level of Uncertainty

Posture Attributes	***Invest to stay in the game* (10 years)**	***Adapt to the future* (20 years)**
Intent of posture	Invest sufficiently to "stay in the game" of the recycled water market, but avoid premature commitments.	Win through speed, agility, and flexibility in recognizing and capturing opportunities in existing markets.
Portfolio of strategies within posture	Strategic decision that results in "no-regrets" moves where positive payoffs occur in any scenario	Maintain options by making decisions that yield a significant positive payoff on some outcomes and small negative effects in others.
Positive aspects of posture	• Reliable service for existing customers • Enables expansion to adjacent customers • Improves current recycled water operating system so that the program can efficiently expand in the future	• Conserves drinking and fresh water • Increases sustainability and resiliency for the community • Increases resiliency to climate change • Recycles nutrients instead of discharging them to Puget Sound • Broadens acceptance of recycled water in the County • Expands recycled water revenue • Contributes toward meeting other policy goals or initiatives • Allows time to do research and build market support
Negative aspects of posture	• Some capital investment • Potential missed market opportunities • Decreased market agility if legal or regulatory driver occurs	• Possible high capital investment • Institutional coordination agreements likely will be complex

Strategic Plan Overview

The following table summarizes all final goals, objectives, strategies, and actions developed for the Recycled Water Program Strategic Plan.

GOALS[i]	OBJECTIVES[ii]	STRATEGIES[iii]	ACTIONS[iv]
1) Ensure reliable delivery and quality – Reliable recycled water delivery and water quality from South Treatment Plant and Brightwater is provided.	**1.1)** Water is reliably delivered 100% of the time to meet our customers' needs at the time they need it. **1.2)** Reliable water quality is provided for the permitted recycled water capacity.	**1a)** Seek permit changes at Brightwater that improve recycled water production and reliability.	**1a.1)** Implement projects such as instrumentation and programming changes for improved operations (2020). **1a.2)** Negotiate changes to the permit during the renewal process to improve distribution reliability while maintaining high water quality (2019).
		1b) Implement storage to improve reliability.	**1b.1)** Implement Brightwater recycled water storage project within the Resource Recovery sub-portfolio (2024). **1b.2)** Integrate Brightwater recycled water storage with other Brightwater projects and process improvements (2024).
		1c) Develop and implement operations and maintenance (O&M) improvements to improve reliability.	**1c.1)** Update the Brightwater electronic O&M manual to include all of the recycled water system, startup and shutdown procedures, fill station procedures, and the Preventative Maintenance Plan to include elements for the Brightwater distribution system and customer connections (2021). **1c.2)** Create an operations recycled water system improvement team to evaluate problems and develop solutions (2019). **1c.3)** Install non-permit required equipment and control strategies to measure and better manage water quality (2023). ○ Install a low-range ammonia analyzer and disinfection control strategy for when nitrifying/not nitrifying. ○ Install right-sized hypo flow meters. ○ Develop a control strategy for operations targets based on new CL17 Free Chlorine analyzer. **1c.4)** Install a free chlorine analyzer at York pump station (2023).
		1d) Prepare for future potential water quality needs.	**1d.1)** Evaluate point-of-use technologies to meet specific user water quality needs (2028). **1d.2)** Study options for sodium and phosphorus and nitrogen removal (long-term) (2028). **1d.3)** Consider recycled water quality needs when evaluating aeration and membrane capital projects at Brightwater (2023). **1d.4)** Explore other potential end uses of recycled water that may require higher levels of treatment (long term).
		1e) Develop recycled water infrastructure life span assessment, inspection and infrastructure replacement planning.	**1e.1)** Inspect and evaluate recycled water distribution system (2028). **1e.2)** Collaborate with Conveyance Inspection and Flow Monitoring, Asset Management, and Planning Inspection Modeling Monitoring and Mapping on inspection and replacement planning (2023).
2) Ensure timely customer connections – New customer connections and small projects are implemented in a timely manner.	**2.1)** Time-efficient methods are developed to connect *adjacent customers* along the existing distribution system within 6 months of customer commitment. **2.2)** Time-efficient methods are developed to connect *nearby customers* to the existing distribution system within one year of customer(s) commitment. **2.3)** The customer cultivation process is streamlined.	**2a)** Improve the speed of customer connections in the Sammamish Valley.	**2a.1)** Implement programmatic State Environmental Policy Act, permitting, and cultural resources efforts for areas with potential customers (2023). **2a.2)** Develop standard engineering details that can be used for design and construction of customer connections (2023). **2a.3)** Explore new funding for customer hookups (e.g., grants, partnerships with local utilities, rolling into contracts or rates) (2023). **2a.4)** Consider upfront investments in anticipation of future distribution expansion (2028). ○ Obtain easements and land for connections ahead of the actual hookup. ○ Pre-purchase recycled water equipment, such as meters. ○ Construct complex pipe routing for situations such as water crossings ahead of actual customer connections.
		2b) Enhance access to staff resources for capital project implementation.	**2b.1)** Develop options to provide adequate project management, engineering, permitting, environmental, and right-of-way staff for small opportunistic capital projects (2023). ○ Explore using consultants for project management and construction management to supplement internal staff. ○ Procure recycled water-only consultant and construction work-order contracts in anticipation of planned future work. ○ Explore having the Resource Recovery Section develop its own project management staff. **2b.2)** Identify project staffing and other needed resources for when opportunities arise and customers are ready. Identify the process for getting the right project managers and other essential staff (e.g., permitting, construction management) to implement projects (2023).
		2c) Streamline the recycled water customer connection administrative processes.	**2c.1)** Develop a standardized and simplified user contract (2023). ○ Develop an application style contract. ○ Develop better guidance on the appropriate division between WTD and end-user responsibilities. **2c.2)** Streamline training for recycled water customers and contractors (2023). **2c.3)** Develop a uniform pricing framework for recycled water such as customer classes, rate per unit volume, and connection fees (2028).

GOALS[i]	OBJECTIVES[ii]	STRATEGIES[iii]	ACTIONS[iv]
		2d) Improve recycled water information availability for existing or potential customers.	**2d.1)** Enhance website to include searchable service area feature, detailed information on the contracting process, and availability of recycled water (2020).
3) Reconcile competing policies – Reconcile the Recycled Water Program's principles, existing contracts, and policies.	**3.1)** Program and project decision-making processes are clear and consistent with policies and contract requirements.	**3a)** Seek better understanding from management of expectations around recycled water expansion.	**3a.1)** Develop a process to engage drinking water utilities and other interested parties when potential customers approach WTD or other future expansion opportunities emerge (2023). **3a.2)** Partner with water systems utilities or other potential customers on feasibility studies (ongoing).
		3b) Develop a framework for documenting how recycled water projects and WTD programmatic decisions align with policy objectives.	**3b.1)** Develop a tool to evaluate how the Recycled Water Program assesses competing policies when evaluating program direction and projects (2023). **3b.2)** Determine a method to communicate recycled water capital investment decisions internally and externally (2023). **3b.3)** Seek reaffirmation or updating of Regional Wastewater Services Plan policies (2028). **3b.4)** Provide input on recycled water conditions during the sewer service contract negotiations (2019).
4) Tackle funding issues for recycled water projects – Ensure a long-term funding approach to support operations and expansion of the recycled water system.	**4.1)** Explore non-traditional revenue sources.	**4a)** Integrate recycled water into existing capital decision-making process while also developing additional tools that can accommodate opportunistic, responsive project timing.	**4a.1)** Develop a process such that recycled water needs and potential synergies are considered early on in other WTD capital project development (2023). **4a.2)** Consider meeting recycled water needs through a variety of WTD capital project sub-portfolios rather than limiting project work to the Resource Recovery sub-portfolio (ongoing). **4a.3)** Explore how to address funding of opportunistic projects within capital improvement projects (2023). **4a.4)** Work with Project Planning and Delivery on the delivery of projects to meet customer timelines (2023). **4a.5)** Develop programmatic permits and design (2023).
	4.2) A pricing framework for recycled water, which is clear and easy to understand, is established and documented.	**4b)** Evaluate new supplemental revenue sources for recycled water investments.	**4b.1)** Evaluate a resiliency or sustainability fund as a surcharge within WTD rates or as an opt-in fund for recycled water projects (e.g., warm home fund) (2028). **4b.2)** Look at other cost-sharing agreements applied or developed by WTD (e.g., Soos Creek sewer cost-sharing project) (2028). **4b.3)** Look at non-traditional funding such as private funding, grants, environmental markets (2028). **4b.4)** Partner with groups that have the ability to fund/fundraise for recycled water capital improvements, gain political support, or influence attitudes (e.g., conservation groups) (2028).
		4c) Evaluate recycled water benefits and costs.	**4c.1)** Develop a benefit-cost evaluation framework that can be used to evaluate recycled water projects and investments (2028): ○ Quantify benefits and costs as much as possible using economic work developed in the Recycled Water Comprehensive Planning process. ○ Develop a risk model that can be applied to a benefit-cost framework. ○ For benefits/costs that cannot be easily quantified, develop qualitative descriptions to include in benefit-cost framework. ○ Evaluate use of recycled water for mitigation purposes as a revenue or funding source. ○ Consider future regulatory compliance. **4c.2)** Consider strategies to understand the full costs of recycled water and potable water (2028). **4c.3)** Explain why recycled water investments are worthwhile because not all projects will "break even" under traditional financial accounting practices (2023). **4c.4)** Develop recycled water pricing options that are clear, meet WTD legal obligations, and incentivize recycled water use (2028).
5) Increase recycled water use – Recycled water use is increased to reduce discharges to Puget Sound and to reduce ground and surface water withdrawal.	**5.1)** Recycled water treatment capacity, consistent with permits, is maximized. **5.2)** South Treatment Plant recycled water usage is increased by 50% from current	**5a)** Identify and address barriers to recycled water use.	**5a.1)** Implement research or demonstration projects to address potential customer or stakeholder concerns (2028). **5a.2)** Advocate for policies and rules at the state and local level that facilitate expanded recycled water use (ongoing). **5a.3)** Develop and implement a partners and advocates development plan (i.e., environmental groups, business groups, other utilities, agriculture organizations, tribes) (2023). **5a.4)** Conduct a survey of potential users to identify barriers. **5a.5)** Work in partnership with water purveyors to develop policies and/or plans and to identify barriers to recycled water use (2023).
		5b) Explore where and how to increase recycled water use.	**5b.1)** Evaluate recycled water expansion opportunities when implementing other WTD capital projects (2023). **5b.2)** Continue to pursue nearby customers to the Sammamish Valley recycled water distribution system (2028). **5b.3)** Partner with water systems and potential customers on recycled water feasibility studies to identify future uses (2028). **5b.4)** Assess long-term environmental enhancement opportunities (2038).

GOALS[i]	OBJECTIVES[ii]	STRATEGIES[iii]	ACTIONS[iv]
	average use within 10 years. **5.3)** Brightwater recycled water use is increased by 10% from current average use every five years. **5.4)** Worthwhile recycled water projects are identified. **5.5)** Stranded investments, and "spreading staff too thin" to be effective, are avoided. **5.6)** Recycled water pressure delivery is more reliable from treatment plants.	**5c)** Consider policies requiring recycled water use or incentives to use recycled water.	**5c.1)** Continue to build relationships with water purveyors to successfully deliver recycled water to new customers (ongoing). **5c.2)** Evaluate policy options for implementation up to 20 years in the future to incentivize recycled water use (2038). Some options initially considered are: ○ A County policy for mandating recycled water uses (an example policy is the County LEED mandate). ○ A policy requiring that recycled water be the primary non-potable water source if the distribution system is located within a specific distance. ○ Strategies addressing subsidies to incentivize recycled water use (such as tax breaks). **5c.3)** Initiate policies that target potential large recycled water users.
		5d) Expand the Recycled Water Program's marketing of recycled water to potential customers.	**5d.1)** Create a "tool kit" for customers to market their business and products, especially farmers (2023). **5d.2)** Cultivate local influencers, such as chefs to promote use of produce irrigated with recycle water (2025). **5d.3)** Re-engage with drinking water utilities regarding retailing recycled water (2019). **5d.4)** Integrate marketing campaign with sales strategy (2025).
		5e) Assess how recycled water can help achieve watershed management objectives.	**5e.1)** Reach out to other stakeholders engaged in watershed management (e.g., salmon recovery groups, agriculture) to determine recycled water alignment with watershed management objectives (2028). **5e.2)** Evaluate proposed actions in concert with result of recycled water assessments and water supply planning (2028). **5e.3)** Build a coalition in the Sammamish River Valley to assess how recycled water compliments watershed restoration (2028).
6) Integrate activities across the division – Ensure Biosolids, Energy, Recycled Water, and TAIP planning and projects are communicated across the division and within WTD's capital system.	**6.1)** A procedure/method exists for activating capital resources to take advantage of recycled water market and existing capital project opportunities. **6.2)** Partnerships and political support within WTD are cultivated. **6.3)** The Recycled Water Program is prioritized and integrated with other WTD capital programs.	**6a)** Communicate Recycled Water Program Strategic Plan and capital projects to other WTD sections.	**6a.1)** Consider current and potential recycled water customers in capital projects (2023). **6a.2)** Communicate recycled water priorities in the portfolio management process (2023).
		6b) Establish shared understanding of priorities across the division, increase collaboration with the capital project process, and seek opportunities to coordinate and formally integrate resource recovery considerations in the planning process.	Actions for Objective 6b will be developed as part of the WTD work planning process.

[i] Goals = broad, aspirational outcomes the organization wishes to achieve related directly to its values
[ii] Objectives = outcomes that represent progress toward goals and better define what success looks like for each goal. Objectives should be SMART—Specific, Measurable, Attainable, Relevant, and Time-Bound.
[iii] Strategies = specific types of actions taken to achieve goals and objectives. Strategies describe *how* goals and objectives will be achieved.
[iv] Actions = discrete, actionable tasks that implement one or more strategies; years in parentheses in the "Actions" column refer to when actions will be implemented.

Goals, Objectives, and Strategies Background

The goals, objectives, and strategies of the Recycled Water Program Strategic Plan address recycled water production quality and quantity, distribution, and use. This section describes how these goals, objectives, and strategies were developed.

Goals and Objectives

Recycled Water Program staff initially brainstormed a broad list of goals and corresponding objectives. After refining the initial list down to eight goals, program staff analyzed the positive and negative political, economic, social, technological, environmental, and legal (PESTEL) attributes of its goals. The PESTEL analysis helped program staff shape the wording of goals, identify measurable objectives, and consider potential strategies. Additional meetings and discussion as well as further refinement led to the six final goals.

Strategies

Recycled Water Program staff brainstormed a large, initial list of potential strategies to achieve program goals. Through extensive refinement and two rounds of prioritization, the Recycled Water Program team ended up with a final list of 21 strategies. Most of these strategies contain ideas and concepts from the initial, larger list of brainstormed strategies. Additional details are found in the Strategies Prioritization section of this plan.

Technical Research

The strategic planning consultant team subject matter experts conducted an assessment of other wastewater utilities to understand those utilities' customer connection processes and to inform WTD's Recycled Water Program strategies. Four utilities known for their recycled water programs were interviewed by phone: South Bay Water Recycling, Irvine Range Water District, City of Santa Rosa, and Denver Water. Key assessment outcomes addressed the culture of recycled water in a utility, customer schedule, customer connection process, recycled water policies, and customer incentives. The complete consultant assessment, including a summary of responses to all questions and lessons learned, can be found in Appendix C.

Goals Rationale

This section summarizes the Recycled Water Program's reasoning behind all six of its goals and strategies to achieve those goals. Recycled Water Program goals were developed to specifically address the program challenges and questions outlined in the Introduction section surrounding the delivery, quality, quantity, and funding for recycled water as well as partnerships within WTD and with external organizations to address these challenges.

Goal 1: Ensure Reliable Delivery and Quality

As of 2018, the Brightwater recycled water system has been experiencing frequent service outages during the operation season because of a challenging treatment and distribution infrastructure. These outages impact current customers and limit WTD's ability to add new customers. Goal 1 and several of its strategies were developed to both improve the reliability of the Brightwater system and maintain the reliability of the South Treatment Plant system. Once implemented, the strategies and actions should improve delivery, maintain recycled water quality, reduce staff time spent on maintaining distribution, and help WTD expand recycled water use.

Goal 2: Ensure Timely Customer Connections

Recycled water customers expect timely and efficient connection to the recycled water system. WTD's current connection process uses capital project management processes that were designed to implement large capital projects with large project planning timelines. Goal 2 seeks to connect customers in a timely manner and would be implemented through several strategies that would adapt existing capital delivery programs and customer contract administrative processes to speed up customer connections.

Goal 3: Reconcile Competing Policies

King County has several policies and plans that have competing goals for the Recycled Water Program. WTD and many other King County or external plans recommend expansion of recycled water use. However, WTD policies and principles discussed in sewer contract negotiation efforts create new evaluation criteria for recycled water projects and programmatic investments. Goal 3 and its strategies identify recommendations for clarifying recycled water expectations and create a framework for documenting how recycled water projects reconcile competing policy objectives.

Goal 4: Tackle Funding Issues for Recycled Water Projects

Funding recycled water projects is challenging for all recycled water programs in the United States. Lack of financial resources, and lack of clarity around funding, pose challenges for all aspects of the Recycled Water Program, including system infrastructure construction, customer connection, and ongoing operations. Funding is a challenge at all stages of the WTD Recycled Water Program, from initial system funding, determining what costs of customer connection will be borne by WTD or the customer, and determining what price to charge for the water. Goal 4 and its strategies address all of these funding aspects of the Recycled Water Program.

Goal 5: Increase Recycled Water Use

Recycled water represents a relatively new program for WTD and a new resource for the region. Recycled water also provides options for managing wastewater effluent. The plan lays out several strategies to increase and expand recycled water use.

Goal 6: Integrate Activities Across the Division

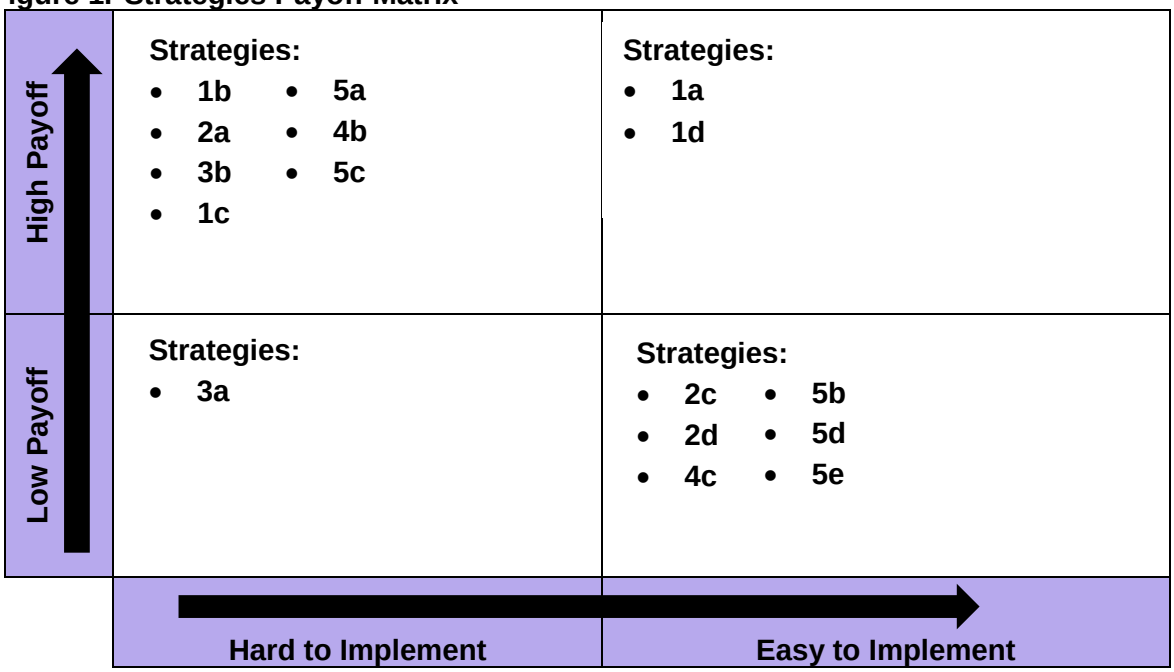
Goals, strategies, and actions developed in the Biosolids Program, Recycled Water Program, and TAIP strategic plans need to be communicated across the division and within WTD's capital project delivery system. The Recycled Water Program Strategic Plan contains several strategies for improving communication and consideration of recycled water goals in the work of other sections and the capital delivery system.

Strategies Prioritization

Prioritization is a critical part of the strategic planning process in which organizations compare strategies to one another in terms of their payoff/impact and the level of effort to implement. Prioritization helps programs determine the sequence of strategy implementation as well as where to focus their resources.

To prioritize strategies, Recycled Water Program staff ranked the strategies and then discussed the results to refine that ranking. Program staff also considered the amount of payoff and ease of implementation for each strategy, as shown in the strategies payoff matrix in Figure 1.[2,3]

Figure 1. Strategies Payoff Matrix



Key: 1b) Implement storage to improve reliability, 2a) Improve the speed of customer connections in the Sammamish Valley, 3b) Develop a framework for documenting how recycled water projects and WTD programmatic decisions align with policy objectives, 1c) Develop and implement O&M improvements to improve reliability, 5a) Identify and address barriers to recycled water use, 4b) Evaluate new supplemental revenue sources for recycled water investments, 5c) Consider policies requiring recycled water use or incentives to utilize recycled water, 3a) Seek better understanding from management of expectations around recycled water expansion, 2c) Streamline the recycled water customer connection administrative processes, 2d) Improve recycled water information availability for existing or potential customers, 4c) Evaluate recycled water benefits and costs, 5b) Explore where and how to increase recycled water use, 5d) Expand the Recycled Water Program's marketing of recycled water to potential customers, 5e) Assess how recycled water can help achieve watershed management objectives

[2] The payoff matrix in Figure 1 is an approximate representation of the payoff/implementation designations the Recycled Water Program gave to each of its strategies at a meeting in February 2018. At the time of that meeting, the wording of some strategies was different than the final wording.

[3] Note that the positioning of each strategy within the payoff matrix for the Recycled Water Program does *not* indicate relative importance of each strategy within each part of the matrix.

The payoff matrix evaluation was also helpful to the Recycled Water Program in prioritizing and refining the wording of its strategies and guiding the development of actions. After completing the priority matrix, but before developing actions to implement Recycled Water Program strategies, program staff identified the overall priority order of all of its strategies across all goals. The current order of strategies found in the Strategic Plan Overview section reflects the priority order of recycled water strategies within each goal.

Appendices

- **Appendix A**: Recycled Water Strategic Plan Charter
- **Appendix B**: WTD Strategic Planning Team Members
- **Appendix C**: Recycled Water Strategic Plan Interviews Summary

Appendix A

Wastewater Treatment Division
Project Charter

Project Identification

Project Name:	Recycled Water Strategic Plan
Project Number:	1120950
Project Sponsor:	Rebecca Singer
Project Manager:	Steve Tolzman

Project Need/Justification

Recycled Water is one of three resources currently produced by the Wastewater Treatment Division (WTD). Recycled water is also widely used in plant processes. In addition, recycled water plays a critical role in WTD's vision of an innovative and resilient clean water enterprise revolutionizing the recovery of valuable resources for communities. Recycled water is an important tool for King County to mitigate for current and future discharge limits and regulations. In 2015, when the Pacific Northwest experienced significant drought, recycled water played a role in providing irrigation to local customers and preserving water in rivers and streams for fish and people. As climate change exacerbates these conditions, recycled water will become more and more important in resiliency and sustainability.

However, barriers exist to maintaining and expanding the Recycled Water Program. The strategic plan may evaluate:

- Lack of clarity on program goals
- Policy issues, both internal and external
- Regulations that drive users and WTD
- Operational and capital drivers, such as reliability (quality and quantity of product for customers), storage, and distribution
- Customer requirements may differ from what WTD processes can currently accommodate
- Funding and financial policies within WTD capital process
- Recycled water expansion is highly valued by ratepayers and is a key tool in King County climate action plan and WTD's vision of being a utility of the future. Yet, there is not clear guidance on how to get there, especially relating to appropriate division of financing between WTD and end-users.

Project Audiences

The Recycled Water Strategic Plan is being prepared to provide guidance for internal decision-making and to define the direction of the Recycled Water operating and capital programs. The primary audiences are DNRP and WTD management, WTD staff, the Executive and County Councilmembers as appropriate. Additional interest in WTD's Recycled Water, secondary audiences are (1) MWPAAC; (2) Existing and potential recycled water customers; and (3) Tribes and environmental groups.

Project Objective

The primary objective is development of a strategic plan that directs the program's efforts and decision-making and helps facilitates timeliness and reliability of serving existing and future recycled water customers. Because of the rapid changes that can occur in recycled water opportunities and support, a 10-year plan has been WTD's preference. For this plan, some elements—such as those that involve capital funding and construction—may continue beyond 10 years into the next plan iteration. The

Recycled Water Strategic Plan will be developed in coordination with similar plans for biosolids, and technology assessment.

Project Scope

The four core questions that management team and project staff will explore in the development of the Plan are as follows:

- What recycled water project work and expansion should be accomplished and what type of uses or types of partnerships our focus in the strategic planning horizon?
- How can we better meet Customer requirements?
- How does WTD advance the recycled water program and comply with existing policies and guiding principles?
- How can WTDs business, funding, and operational models be modified or adapted to accommodate recycled water project and customer constraints?
- What political and advocate partnerships and research are needed to advance recycled water projects and what is the plan to cultivate them?

Project Cost Rough Estimate

The budget below is the consultant costs for all three strategic plan. Tasks 100, 200, 600, 700, and 800 are common among all the strategic plans. Tasks 300, 400, and 500 have separate budgets for each plan. The budget listed below does not include WTD staff time.

Task	**Budget**
Task 100: Project Management and Kick-Off	57,473.00
Task 200: Standardization of Strategic Planning Elements	21,056.00
Task 300: Discovery and Work Plan	
Sub-Task 300: Biosolids	5,549.00
Sub-Task 300: Recycled Water	5,549.00
Sub-Task 300: Technology	5,548.00
Task 400: Development of Strategic Plans	
Sub-Task 400: Biosolids	56,111.00
Sub-Task 400: Recycled Water	56,111.00
Sub-Task 400: Technology	56,111.00
Task 500: Writing the Strategic Plans	
Sub-Task 500: Biosolids	8,049.00
Sub-Task 500: Recycled Water	8,049.00
Sub-Task 500: Technology	8,048.00
Task 600: Stakeholder Engagement Tool Output and Implementation	4,195.00
Task 700: Final Strategic Planning Reports	4,062.00
Task 800: Contingency	4,091.00

Project Schedule

- A draft plan is expected to be ready for WTD Division Director's review by spring 2018. The goal date for a final draft for DNRP Director's Office review is May 2018.

Project Deliverables

The major deliverable is a strategic plan that defines the division's vision for its Recycled Water Program, including guiding principles and implementation consistent with its vision of a *Utility of the Future*. The plan will address policy issues, prioritize program goals and identify strategies to achieve those goals. Alternatives may be developed, analyzed, and prioritized. If schedule and budget permit, near-term and long-term actions will be included, however the primary driver for the Recycled Water strategic plan is the need for insight on goals and strategies. The report will also identify next steps, opportunities, challenges, and issues that need to be addressed in order to implement the strategic plan.

Initial Project Assumptions

- The initial project assumptions are that: (1) the effort to complete the project is staff-driven and (2) that the staff needed to complete this project will be available and not have competing priorities.

Initial Project Constraints

Primary project constraints include staff availability, budget availability, and the schedule – the need to complete the plan by June 2018.

Initial Project Driver

Budget is the initial project driver.

Project Priority

Meeting the project schedule is the project's priority.

I have reviewed and approved this Charter.

Rebecca Singer
Stewardship and Sustainable Resources and
Office of Sustainability and Innovation Section Manager

7/19/17
Date

ATTACHMENT A

Questions and Topics to be Considered in the Development of WTD's Recycled Water Strategic Plan
(subtopics to the major questions outlined in the plan's charter)

Policy & Principles

- What is our goal measure of program success (i.e. percentage incoming wastewater treated and distributed as reclaimed water, number of customers, or volume of reclaimed water use)?
- What is our goal for customer service expectations including distribution outages?
- Where should WTD's reclaimed water efforts be focused (i.e. Agricultural and environmental uses vs. urban commercial/irrigation distribution systems)? How do we want to evaluate projects?
- How do we meet WTD's vision of "revolutionizing the recovery of valuable resources"?
- What are the current policies and initiatives that guide WTD's recycled water (such as RWSP, KC Strategic Plan, KC Comp Plan, SCAP; MWPAAC guiding principles, RCW 90.46 and related water and wastewater law)? Are additional policies needed?
- What is the framework for defining the implementation of broad directives that might conflict or challenge meeting our vision (e.g., SCAP goals, line of business, guiding principles)?
- How do we balance other SCAP goals that may conflict with some recycled water projects (for example, energy usage)?

Business, Funding, and Operating Models

- How can we develop customer connections in a timely manner given the long term planning nature of other WTD capital planning work associated allocation of capital project team staff resources?
- What capital investments are required to move WTD toward its vision?
- What capital improvements are needed to increase reliability of the water?
- How do we fund recycled water projects while recognizing:
    - Recycled water development projects don't complete well with wastewater system project under our current decision making template
    - The inherent difference in long range utility capital planning and the short decision making time frame of businesses that might want connect to recycled water.
    - Customer development work is opportunistic nature. When the customer is ready to connect to an existing line they expect that should be accomplished in 6 months or less.
    - All recycled water programs in the nation are supported partially by wastewater and/or water rates and not solely by recycled water user fees.
    - How do we balance operational decision making regarding
        - Wastewater treatment performance and permit compliance
        - Reclaimed water permit compliance
        - Customer contract, reclaimed water quality, and needs

- For environmental uses, what can WTD to limit nitrogen and phosphorus in the recycled water?

Customer Requirements

- Timeliness: Currently we are not meeting customer expectations for timely connections. Create a goal for customer connections and determine how WTD business, operations and funding models can be modified to meet the goal.
- Reliability: What capital, operations, regulatory, and programmatic steps are needed to increase reclaimed water distribution reliability and water quality to meet customer's expectations?
- Customer onboarding: What can we do to streamline our process for onboarding customers (e.g., contracting, training)?

Coordinated Planning Within and Between Divisions

- Several plans underway in WTD and other parts of DNRP will require coordination:
    - WTD: Strategic Plans for biosolids, technology assessment, recycled water, energy

Appendix B

King County Wastewater Treatment Division

2017-2018 Strategic Planning Team Members

<table>
<tr><th colspan="2">Biosolids Team</th><th>Recycled Water Team</th><th>Technology Assessment & Innovation Team</th></tr>
<tr><td colspan="2">Ben Axt
Rick Butler
Henry Campbell
Tony Chiras
Dave Dittmar
Scott Drennen
Jake Finlinson
Sharman Herrin
Isaiah Langi
Sekhar Palepu
Alison Saperstein
Rebecca Singer</td><td>Rick Butler
Dave Dittmar
Sharman Herrin
Steve Hirschey
Jacque Klug
Sue Meyer
Matt Nolan
Alison Saperstein
Kristina Westbrook</td><td>Bob Bucher
Pedro de Arteaga
John Smyth
Curtis Steinke
Andy Strehler
Pardi Sukapanpotharam
Bruce Tiffany</td></tr>
<tr><th colspan="2">Oversight and Management Teams</th><th colspan="2">Consultant Team</th></tr>
<tr><td>Project Management Team
Ashley Mihle
Steve Tolzman

Oversight Team
Sue Kaufman-Una
Sandra Kilroy
Sarah Ogier
Rebecca Singer
Chris Townsend</td><td>WTD Management Team
Tim Aratani
Mark Isaacson
Bruce Kessler
Rebecca Singer
Lisa Taylor
Chris Townsend
Robert Waddle</td><td>Triangle Associates, Inc.
Betsy Daniels
Shay Huff
Evan Lewis
Bob Wheeler</td><td>O’Brien & Company:
Justus Stewart

Kennedy/Jenks Consultants, Inc.
Mark Cullington
Dana Devin-Clarke
Jean Debroux
Heather Stevens
Chris Stoll
Stephen Timko</td></tr>
</table>

14 June 2018

Memorandum

To: Kristina Westbrook and Jacque Klug, King County Wastewater Treatment Division Recycled Water Program

From: Christopher Stoll and Mark Cullington and, Kennedy/Jenks Consultants, Inc.

Subject: King County Recycled Water Program
Strategic Plan Technical Task 1 Interview Summary
K/J 1797003*00

The King County Wastewater Treatment Division (WTD) Recycled Water (RW) Program is currently undergoing a strategic planning process to establish future goals and strategies, with specific focus on streamlining customer connections to grow demand for RW. WTD asked Kennedy/Jenks Consultants to conduct interviews with four different RW providers to discuss their process for connecting customers. The interviews were conducted over the phone between December 2017 to January 2018, with the following four providers:

- South Bay Water Recycling (SBWR),
- Irvine Ranch Water District (IRWD),
- City of Santa Rosa (SR), and
- Denver Water (DW).

The questionnaire used during the interview is included at the end of this technical memorandum in Appendix A.

Program History and Size

SBWR began their RW program in 1996 under a regulatory requirement to mitigate fresh water discharges to the South Bay of the San Francisco Bay to protect salt water marine life. SBWR adopted two strategies to address this regulatory requirement. The first strategy was to install more low flow toilets and encourage water conservation. The second strategy was to develop a RW program. SBWR produces 10 to 12 million gallons per day (MGD) of RW which is about 10% of its total wastewater flow. SBWR produces Title 22 disinfected tertiary treated RW for unrestricted use (T22DT), which is analogous to Class A RW in Washington State. SBWR is considering adding $250M of infrastructure to meet growing demand for RW.

IRWD started their RW program in 1967 when they were supplying water for undeveloped areas and agricultural use. The RW program started because management at the time knew they had a blank canvas to begin developing the program and could install pipes early in order to protect local water resources (mainly groundwater) in the future. IRWD produces approximately 8.8BG/yr of T22DT which is about 25% of the wastewater flow.

SR began their RW program in 1974 because of discharge limits to the Russian River. SR could not discharge at any time during the summer months, and no more than 5% of the flow in the river during the winter months. In the 1980's, SR experienced a spill event where RW overflowed from their storage facility after a large storm event (the facility is uncovered and the treatment plant experienced peak flows). After this spill event, SR decided to distribute its treated water on a more consistent basis and not rely as heavily on seasonal storage. SR produces approximately 7 billion gallons of T22DT each year. During high precipitation years, SR might discharge a small amount of water to the Russian River, but most years recycles 100% of its treated water.

DW started looking at RW with the Blue River Decree when they were looking to use more water from the Western Slope of Colorado. Part of the Decree is that they need to reuse water to the maximum extent possible and DW started the RW program to offset potable water demand. In the 1970's DW conducted a feasibility assessment and in the 1980's they built and operated a demonstration plant. DW made the choice to go non-potable and started operating their RW facility in 2004. Metro Wastewater provides DW with secondary effluent and DW produces about 2 billion gallons each year of disinfected tertiary RW which constitutes about 3% of DW's production.

Customer Base

SBWR provides wholesale RW to four retailers including, City of Milpitas, City of Santa Clara, City of San Jose, and San Jose Water Company. The retailers were interested in joining the program because they can generate more revenue off the distribution of recycled water than the distribution of potable water. They generate more revenue because the difference between retail rate and wholesale/purchase rate is greater for RW than for potable water. SBWR produces RW at the north end of the system and has a large trunk line that runs north/south where retailers connect and distribute the water to individual customers. Individual customers include golf courses, cooling towers, and other commercial/industrial uses with about 65% of the demand going to irrigation. SBWR serves approximately 850 customers through the retailers with 143 miles of pipeline. The largest individual customer uses the RW for cooling towers with the subsequent largest customers being golf courses and cemeteries. The smallest customers are planting strips at parking lots and shopping centers. Individual customers use recycled water because of the cost incentive of lower water rates, policies requiring use and the fact that water restrictions during drought years do not apply to RW. Policies requiring use vary by the individual retailers and circumstance, but in general large landscape irrigation demands are required to use RW or have the ability to use RW when it becomes available.

IRWD RW serves many uses including dust control, compost production, concrete production, ice rinks, and agriculture. IRWD has about 5,800 metered connections with about 120-150 added each year. They have 500 miles of pipeline to serve these customers. The largest customers are cooling towers and golf courses and the smallest are medians and single-family homes (front and back yard irrigation, no piping in the house). IRWD requires customers to use RW based on California Water Code 13.550 which encourages RW usage except when water quality is insufficient, no water rights issues exist, public health is addressed and the cost is reasonable (IRWD defines this as a 10-year payback period).

SR wastewater division (SRW) provides wholesale water to SR drinking water division (SRDW)and Rohnert Park and retails water to other direct customers. SRW provides RW for agriculture, groundwater recharge (including geyser steam fields), cooling towers, toilet flushing, and firefighting. SRW's largest consumer (approximately 67% of their RW) goes to recharge geyser steam fields for geothermal energy generation. SRDW's smallest customers are traffic medians and urban sites. SRW and SRDW currently serve 101 and 31 customers, respectively, but not many customers have been added in the recent past. SRW serves about 50 agricultural customers ranging from 4 to 250 acres in size. SRW was able to connect these agricultural sites at the beginning of the RW program by providing zero interest loans and incentive contracts. The loans helped the customers pay for needed improvements for their farming/ranching business and the incentive contracts provided RW at a low rate. SRW was able to provide these packages for the farmers because their use of RW offset the cost of discharge. Discharge for SRW is expensive due to needing to buy/use nutrient credits and the testing and monitoring of discharging to the Russian River. SRW has also set up a dairy waste program to decrease nutrients running-off into water bodies and to protect groundwater.

DW serves 85 customers including a natural gas fired energy plant, irrigation, geothermal heat pumps and the Denver Zoo for cleaning and animal pools. Their largest user is the gas fired energy plant and it takes about one third of DW's RW. The smallest users are restaurants and medians for irrigation. Customers are required to use recycled water when near a recycled water pipe and are incentivized to use recycled water with the discounted rate from potable. Table 1 summarizes the RW providers' customer base and beneficial uses.

Table 1: Recycled Water Providers and Customer Information

Recycled Water Provider	Number of Recycled Water Customers	Uses Served by Recycled Water
South Bay Water Recycling, CA	850	Irrigation, Cooling Towers
Irvine Ranch Water District, CA	5,800	Irrigation, Agriculture, Cooling Towers, Concrete Production, Dust Control
City of Santa Rosa, CA	132	Agriculture, Geyser Steam Field Recharge, Toilet Flushing, Firefighting
Denver Water, CO	85	Irrigation, energy generation (steam and cooling), zoo keeping, geothermal heat pumps

Rate Structure and Funding

SBWR currently charges a wholesale rate of $2.20 per 100 cubic feet (CCF) with increases being tied to a discount on the rate established for groundwater by the Santa Clara Valley Water District. When SBWR started their RW program, the rate was very low to incentivize use. The four retailers have different rates for individual customers once they are connected. The basis for infrastructure improvements is set in the agreements between SBWR and the four retailers, but typically SBWR will construct the infrastructure up to the meter box (this is for both individual service lines and larger intertie flow meters) and then the retailers are responsible for the smaller diameter piping to connect individual customers. When SBWR needs to execute capital projects related to meeting regulatory requirements, they look to grant funding as a main component of the funding source.

IRWD is the retailer for RW except for emergency interties with neighboring utilities. IRWD has a different rate for irrigation (currently $1.36/CCF) versus non-irrigation (currently $0.95/CCF) uses. The irrigation rate is a 10% discount off the potable water rate. IRWD uses an increasing block rate structure. They will establish a base volume/allocation for each customer and then rates increase as use increases over that base volume/allocation. IRWD typically pays for connections up to the meter and then the customer is responsible from there. If customers need help financing, IRWD will charge the potable rate with the typical discount going to fund the improvements. Funding for capital improvements is funded through capacity fees or may be paid for by developers (depending on the situation). IRWD conducts master planning with sub area plans to address infrastructure needs for the entire system and for localized areas, respectively.

SR utilizes a varied rate structure depending on the use of the water. Rates are set to demonstrate the value of the water to the customers and go to pay for the purchase of RW from the WWTP, the distribution operation, inspections, and administration of the RW program. Agricultural rates are significantly lower than other rates ($0 to $0.11/CCF) and SR is currently looking at updating the agricultural rates to more of a commodity rate instead of the incentive rate. They are anticipating decreased RW usage when enacting higher rates and will need to develop more customers to offset the decrease in RW use. Because SR defines agricultural RW service as interruptible, SR can charge very low rates (or nothing at all) and have it not considered a gift of public funds. The RW program has been around long enough that there is no push back. SR also uses a tiered rate system that calculates in real time the agronomic rate for irrigation/agricultural and increases the rate for RW when customers are being inefficient with the water. Funding for capital projects comes in two ways. First, the WWTP serves many communities and if WWTP upgrades are needed related to system aging or regulatory updates, all the communities will pay for the project. If a project is needed to expand the RW service area for potable water offset or some other factor, the community that is benefitting will pay for that. SR also charges connection fees to pay for capital infrastructure, similar to a potable water utility. Sewer rates go to pay for the WWTP and the sewer collection system.

DW charges $0.74/CCF for their RW and this structure does not include any tiered structure. This pricing strategy has been used for a long time and prices RW at about 25% of the potable water rate. Since DW is the potable water retailer, they have instituted a retail program for RW. Improvements to the RW system are funded by both the RW rate and the potable water rate. Since the RW offsets potable water demand, the potable water rate can be used to pay for RW system improvements as this is the more cost-effective alternative to developing further capacity and water resources for the potable water system. When the RW system is expanded to accommodate more customers, the responsibility for this cost depends on the situation. If DW would like a customer to connect, they will approach them and pay for the connection. DW has a policy that gives them authority to dictate to customers which water they must use. However, DW cannot dictate to customers to construct infrastructure in the Right-of-Way so the policy only becomes relevant if there is RW distribution infrastructure that the customer can readily connect to. DW only uses this policy as a last resort and prefers a collaborative method instead for connection customers. If a customer approaches DW, this is typically paid for by the customer, but can also be negotiated. New development near a RW pipeline is required to connect and the customer will pay for the connection. Table 2 summarizes the providers' RW rates.

Table 2: Recycled Water Providers and Rates

Recycled Water Provider	Recycled Water Rate
South Bay Water Recycling, CA	$2.20/CCF wholesale rate
Irvine Ranch Water District, CA	$1.36/CCF irrigation rate $0.95/CCF non-irrigation rate $1.40/CCF agricultural rate Full rate schedule at: http://www.irwd.com/rates-charges
City of Santa Rosa, CA	$0 - $0.11/CCF agricultural rate (SRW) $3.96/CCF irrigation rate (SRDW) $4.18/CCF commercial/industrial rate (SRDW) Full rate schedule at: https://srcity.org/DocumentCenter/View/15958
Denver Water, CO	$0.74/CCF

Customer Connection Process

The connection process for SBWR typically takes two to three months if customers have connection plans that are complete and correct. This includes one month for review of plans and then one month after construction for closeout. The process is typically developer-driven and starts with the customer desiring a connection contacting a retailer with a paper application. After the retailer's review, the application gets sent to SBWR for overall compliance with the RW permit and to the California State Office of Drinking Water for approval. Then the retailer will inspect construction of the connection and the cross-connection test, which are typically performed by the customer. Once those pass, the customer is given a meter and a permit for RW use. The funding for the individual connections depends on the retailer and the customer and is negotiated accordingly. SBWR is currently working on a method for customers to sign up online for RW, but it is not fully operational at this time. SBWR strives to be very responsive to customers and understand construction schedules. They have also developed very clear rules and expectations for connection plans in order to streamline the process for customers to connect. SBWR has been consistently improving the process. SBWR has around 8 full time employees (FTEs) to administer their recycled water program including customer service, compliance and engineering. SBWR also pays a percentage of staff time as well for communications, maintenance and other staff as needed. The individual retailers have their own staff in addition to the SBWR staff.

The customer connection process for IRWD involves a review of plans from the customer, field inspection, and then beginning service. In an ideal situation, this process takes six to nine months if the customer is ready to construct with complete plans. Applications are made with paper applications. IRWD strives to meet customers' construction schedules and not be on the critical path for projects. IRWD has 6 FTEs that handle processing of plans, inspections and customer service. This does not include maintenance staff needed for the infrastructure. On-going inspections and testing of the connections is contracted to an outside entity and they employ around 3 FTEs for this work.

SR has not added a new customer in several years, so the process for customers to connect has seen many changes. Customers can connect in two different ways. First, developers can pay for a connection. This would involve plan review, inspection, and connection with the developer actually building the connections. Second, SR will pay for retrofits for customers to use RW. Customers can apply for retrofit services (no online application yet) and SR will take care of all aspects of the project including design and construction (to a reasonable amount). This process is highly variable in the time it takes but can average about one year. SR has about 2 FTE's to administer the RW program including weekly inspections, database management and reporting. SR tends to employ interns to help with these items too.

DW adds about 2 to 3 new customers each year and is working to standardize their connection process. As described above, the connection process can vary depending on the situation. The only standard process is for new development near a RW pipeline. This process is like connecting to the potable water system where plans are reviewed, there is an inspection and the customer pays for the meter. Customer connection process improvements are mostly focused on standardization and not the speed of the process as this is not a driver for DW. It can typically take up to 6 months for customers to connect with about 4 to 6 weeks of that being DW's responsibility. DW has about 2 FTE's to administer the RW program.

Lessons Learned

For SBWR, the critical piece has been to have customers work with retailers and only have SBWR get involved when needed. It has been very important to keep the process very clear for customers and eliminate steps and people that are not needed to be involved. SBWR has also helped and encouraged customers to perform application reviews, construction and other tasks for connecting in parallel.

For IRWD, their success has come about because of a culture of using RW along with public acceptance. This idea is built into projects with policies in place so that the cost of retrofitting is not a deterrent for use. IRWD has found that a commitment to RW on all levels of an organization is very important to making a successful program. IRWD also strives to reassure their customers they will be there to support them and won't be forced into using RW without support. IRWD has also developed a method for making business decisions on when, where, and how to expand, and making it easier for customers to make business decisions. IRWD also

encourages having an approach to the cost of installing a meter as large meters can sometimes consume all of a customer's savings from using RW.

The strategy that SR feels gave them a lot of success was pushing very hard to develop policies related to RW use. They included flexibility in the policies (i.e. giving management the ability to make certain determinations and decisions) to allow for them to quickly adapt to regulatory changes. One such policy is the ability to pay for retrofit services. SR felt that it would be hard to ask for customers to pay for the entire retrofit when they have already paid a connection fee for the potable water service. SR also stresses the importance of public outreach and pricing the water to demonstrate its value as other strategies to employ for a successful RW Program. For agricultural customers, SR stresses the benefits of RW with nutrient offsets and keeping the RW rate low to incentivize use. Since agricultural customers can use a large amount of water, it is important to have a resilient demand in case a customer does not use as much water as anticipated.

DW started their program with a "if you build it, they will come" mentality, but learned they did not communicate the rate benefit well enough and that the training and monitoring with RW use was a disincentive for customers. They have developed guidance for new developers to counter these issues. DW also stresses the need to forecast customers' demands to understand a RW's program demands. Customer demands can change from year to year and building this into planning documents is important. DW also stresses the need to develop buy-in and pride internally around the RW program. DW has struggled with this and found it a challenge.

Summary

Based on the interviews with the four RW providers, the following items should be considered to inform the strategic planning process for King County:

- **Culture of RW:** Without a clear regulatory driver for producing RW, WTD should strive to develop a culture of using RW (both internally with WTD staff and externally with customers, elected officials, and other stakeholders) whether through policies, education, or other methods. The culture will help elected officials, municipalities, customers, and developers think about the potential value of using RW from the beginning of their projects.

- **Customer Schedule:** WTD should prioritize understanding and working with customers' schedules for project implementation and construction in order to make new connections. There will need to be staff flexibility and enthusiasm for working with customers.

- **Connection Process:** WTD should strive to develop a clear process for customers to connect, and clear expectations for plans and ongoing reporting/maintenance. This will allow customers to keep their projects on track and have a clear idea of the time and effort required to connect. WTD should strive to make this an online application process to make

it easier for potential customers as well as allow for more effective tracking by the WTD RW staff.

- **RW Policies:** WTD should consider developing policies that would support or require customers to use RW. This process will need thoughtful discussions with elected officials and strategic elements to address future challenges while examining the legal authority to implement it.

- **Customer Incentive:** WTD should create a strategy for incentivizing use of recycled water. Economic incentives are the most common and the economic incentive needs to be strong enough to justify the additional effort for customers to connect and comply with regulations.

APPENDIX A: INTERVIEW QUESTIONAIRE AND ANSWERS

King County Wastewater Treatment Division
BRET Strategic Plans
Recycled Water Interview Questions and Answers

Question	South Bay Water Recycling, CA	Irvine Ranch Water District, CA	City of Santa Rosa, CA	Denver Water, CO
Contact Information:	Michele Young 408.794.6781 michele.young@sanjose.gov	Mark Tettemer 949.453.5592 tettemer@irwd.com	Jennifer Burke 707.543.3359 jburke@srcity.org	Damian Higham 303.628.6537 damian.higham@denverwater.org
What is a brief overview of your recycled water program?	Began in 1996	Started program in 1967	Began distribution in 1974	Began distribution in 2004
Why does your utility implement a recycled water program (i.e., what are the drivers)?	Discharge regulations	Water resource protection	Discharge regulations	Potable water offset
What type of recycled water do you produce (basic treatment train, nutrient removal)?	Disinfected tertiary	Disinfected tertiary	Disinfected tertiary	Disinfected tertiary
What volume of recycled water do you produce, and what percentage is that of your total facility flow?	10 to 12 MGD, 10%	8.8 BG/yr, 25%	7 BG/yr, 100%	2 BG/yr, 3%
What types of beneficial uses do you serve with recycled water?	Irrigation, cooling towers	Irrigation, industrial, agricultural	Agricultural, geyser recharge, industrial	Irrigation, industrial, commercial
What do you charge for recycled water for the different uses? Has your pricing approach changed over time?	$2.20/CCF	Depends on use	Depends on the use	$0.74/CCF
If the recycled water was given to customers for free, what was the basis for not considering it a gift of public funds?	NA	NA	Defined as interruptible	NA
How many customers do you serve with recycled water?	850	5800	132	85
What are your largest and smallest connections for recycled water?	Cooling towers, parking lots	Cooling towers and golf courses, medians	Geyser steam fields, medians	Energy generation, median irrigation
Do you wholesale or retail your recycled water?	Wholesale	Retail	Both	Retail
If you are a wholesaler or retailer only, how did you negotiate the terms of infrastructure responsibility and cost allocation?	Developed in agreements with retailers	Depends on the flow	Treatment and distribution costs allocated separately	Driven by instigator
What is the process like for customers to connect to your system?	Plan review, inspection, testing	Plan review, inspection, testing	Application for retrofit services or plan review	Similar to potable water connection
How are connection costs paid for? By the customer? By the agency?	Both	Typically the agency	Both	Both
Who constructs the connection (utility contractor, hired by the customer)?	Mostly customers	Typically the customer	Both	Both
Can your customers sign-up for recycled water online?	No, but working on it	No	No	No
Does your process allow customers to connect quickly? If so, how?	Yes	No	Unknown	No
Have you had to adjust your process to allow customers to connect faster?	Changing order of operations	No	No	No
How long does it typically take for a customer to connect?	1 month for plan review, 1 month for closeout	6 to 9 months	1 year	6 months
If you need capital improvements to your recycled water system, how do you typically fund those improvements?	Grants and cost sharing	Typically capacity charges	Connection fees	Potable water capital fund
Are capital improvements or recycled water operation partially funded by potable water or wastewater rates?	No	-	Both	Yes
Do you have any information (brochures, handouts, information given to the public or prospective recycled water users) you could share with us or let us know where we can obtain them?	Yes, see attached	No	Yes, see attached	Yes, see attached
Do you have any other lessons learned that would be valuable to know about the process for customer connections and capital improvements for connecting customers?	Clear connection process, delegate to retailers	Culture of RW, internal commitment, incentives	Policy creation, customer incentives	Internal buy-in, incentive pricing