

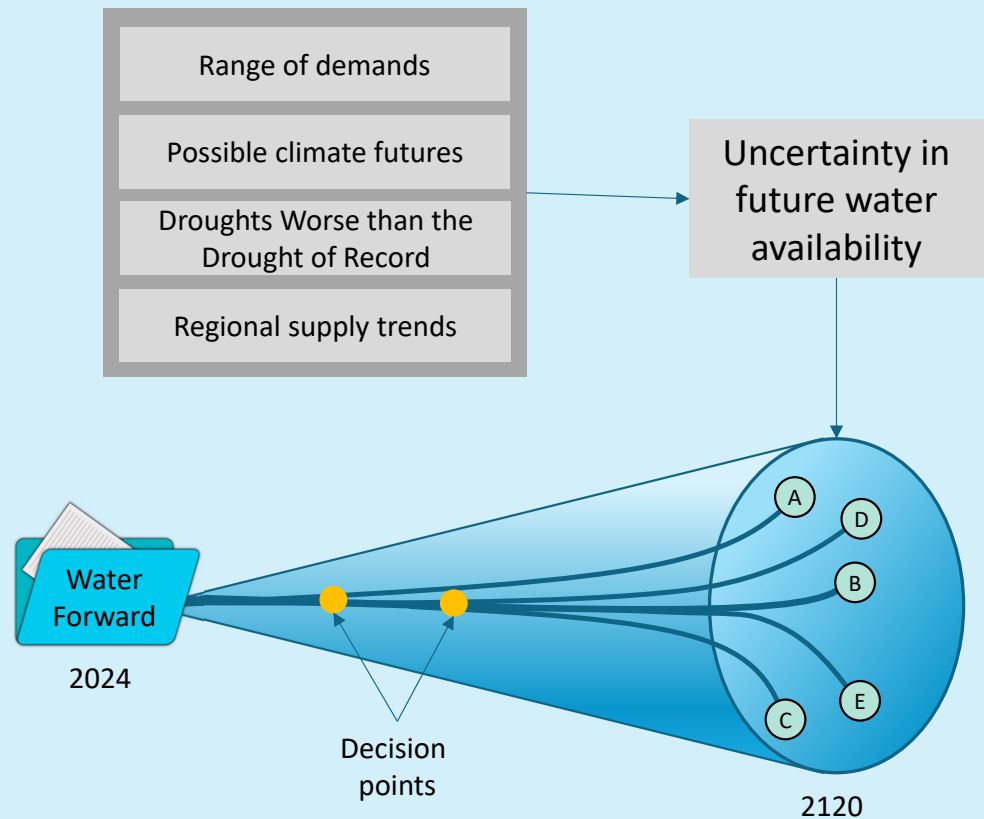


Water Forward 2024 initial list of water management strategies

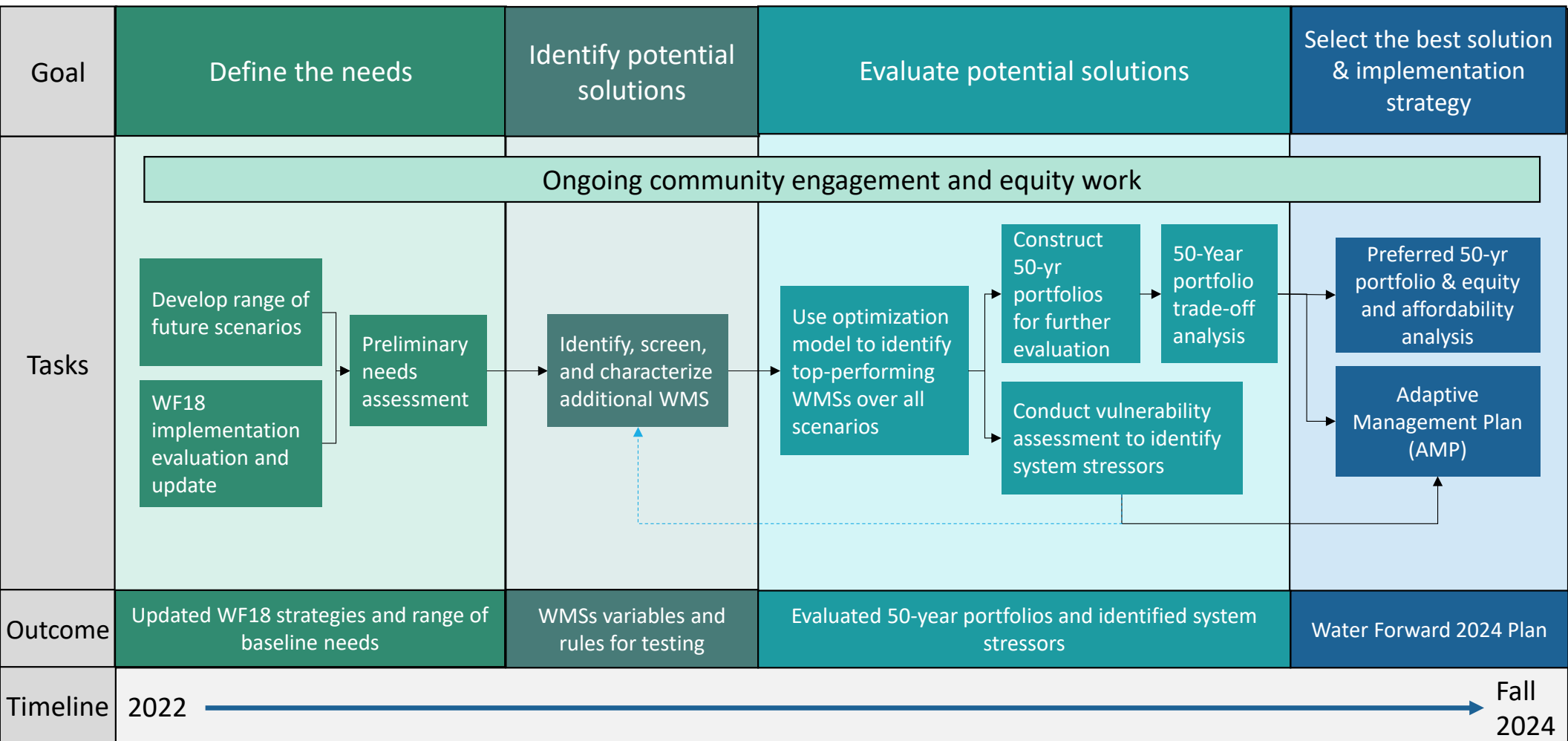
January 9, 2024

WATER FORWARD: PLANNING FOR UNCERTAINTY

- Develop a range of future conditions
- Find common near-term strategies that work for a broad range of futures
- Develop adaptive plan with key decision points
- Re-evaluate at key decision points



WF24 scenario planning methodology overview



2024 Water Forward Plan

- Strategy Characterization

- 💧 Review strategies considered and/or recommended in Water Forward (WF)18
- 💧 Review progress of ongoing programs
- 💧 Identify additional strategies for WF24 initial list
- 💧 Screen through feasibility filter (proven technology, sufficient data, etc.)
- 💧 Identify any variables (operational, scale)
- 💧 Update characterization

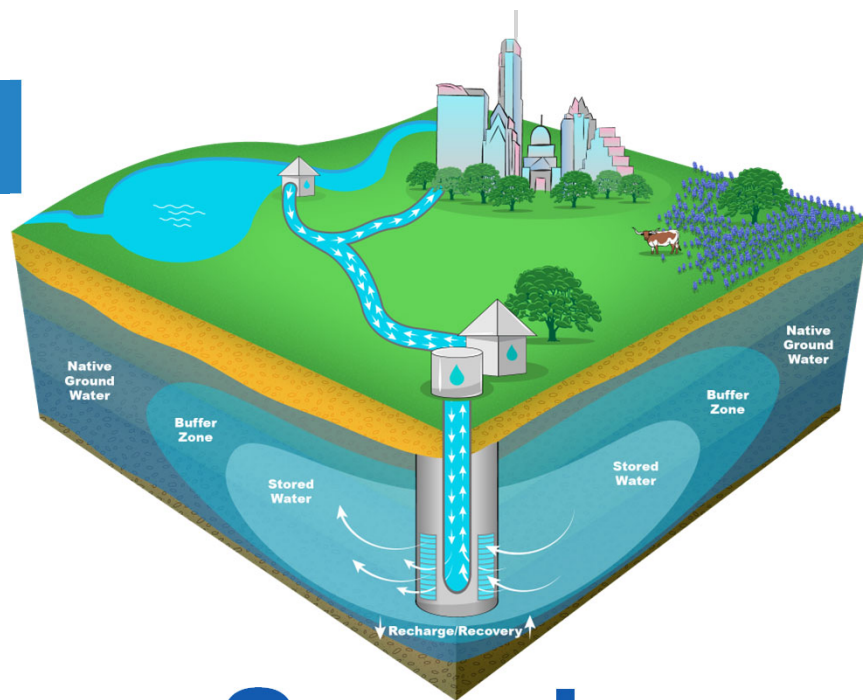


2024 Water Forward Plan

- Strategy Types

- Water Management Strategy (WMS) Characterization Update
 - Supply Strategies
 - Emergency Water Supplies
 - Demand Management Strategies
 - Best Management Practices





Supply Strategies



Photo credit: <https://www.austintexas.org/?asset=1570-ig-18008312938866305>

Initial List of Supply Strategies

Storage Strategies

- Aquifer Storage and Recovery (ASR)
- New Off Channel Reservoir with Lake Evaporation Suppression
- Off-channel reservoir supplied by Colorado River or reclaimed water (Decker Lake)

Water rights and water supply contracts

- Additional Supply from Lower Colorado River Authority (LCRA)
- Regional Partnership with Corpus Christi

Potable Reuse Strategies

- Indirect Potable Reuse through Lady Bird Lake and Capture Local Inflows to Lady Bird Lake
- Indirect Potable Reuse - Through Alluvial Aquifer or Bed and Banks
- Direct Potable Reuse from Wastewater Treatment Plant

New water supplies

- Seawater Desalination
- Conventional groundwater
- Brackish Groundwater Desalination
- Interbasin Transfers



Storage Strategies

Strategy	Origin	Status
Aquifer Storage and Recovery; Aquifer storage of drinking water for use during low surface water supply	Strategy included in Council-approved WF 2018 Plan	<ul style="list-style-type: none">• Implementation underway• Preliminary engineering (Phase 1a) to be complete March 2024
New Off Channel Reservoir with Lake Evaporation Suppression; Construction of an off-channel reservoir supplied by the Colorado River, managed by Austin Water, and using a surface film to minimize summer evaporation	Strategy included in Council-approved WF 2018 Plan	Implementation not started yet
Off-channel reservoir supplied by Colorado River or reclaimed water (Decker Lake); would include use of a limited operating range	Strategy considered but not included in Council-approved WF 2018 Plan	N/A



Potable Reuse Strategies

Strategy	Origin	Status
Indirect Potable Reuse through Lady Bird Lake and Capture Local Inflows; In drought emergencies , wastewater effluent is diverted to Lady Bird Lake and subsequently treated at Ullrich Plant to supplement potable water supply. Infrastructure could regularly capture seasonal flows to the Lake	Strategy included in Council-approved WF 2018 Plan	Implementation planning underway
Indirect Potable Reuse through Indirect Potable Reuse through either a groundwater infiltration or bed and banks	Strategy considered but not included in Council-approved WF 2018 Plan	N/A
Direct Potable Reuse from Wastewater Treatment Plant; Purify highly treated reclaimed water using advanced treatment (similar to desalination treatment) to supplement drinking water supply	Strategy considered but not included in Council-approved WF 2018 Plan	N/A



Water Rights and Water Supply Contracts

Strategy	Origin	Status
Additional Supply from Lower Colorado River Authority (LCRA); Secure additional supply from LCRA through a new or amended contract	Strategy considered but not included in Council-approved WF 2018 Plan	N/A
Regional Partnership with Corpus Christi; Participate in cost-sharing for a new seawater desalination plant in exchange for a portion of Corpus Christi's Colorado River water right	Strategy considered but not included in Council-approved WF 2018 Plan	N/A



New Water Supplies

Strategy	Origin	Status
Seawater Desalination; Source water from the Gulf of Mexico for treatment at a desalination plant, removing dissolved solids via high-pressure membrane filtration. Implement through a regional partnership.	Strategy considered but not included in Council-approved WF 2018 Plan	N/A
Conventional groundwater; Import water through acquiring groundwater permits & develop source, treatment, and disposal infrastructure	Strategy considered but not included in Council-approved WF 2018 Plan	N/A
Brackish Groundwater Desalination; Withdrawal and desalination of brackish (salty) groundwater to supplement drinking water supply	Strategy included in Council-approved WF 2018 Plan	Implementation not started yet
Interbasin Transfers; Importation of surface water supplies from outside of the Colorado River basin	Strategy considered but not included in Council-approved WF 2018 Plan	N/A



Summary of Supply Strategies

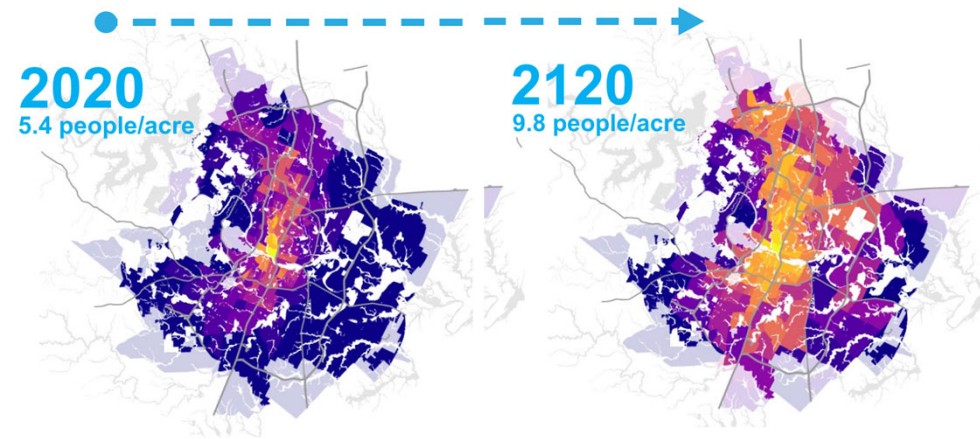
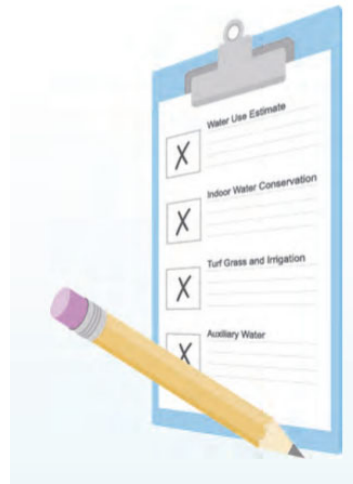
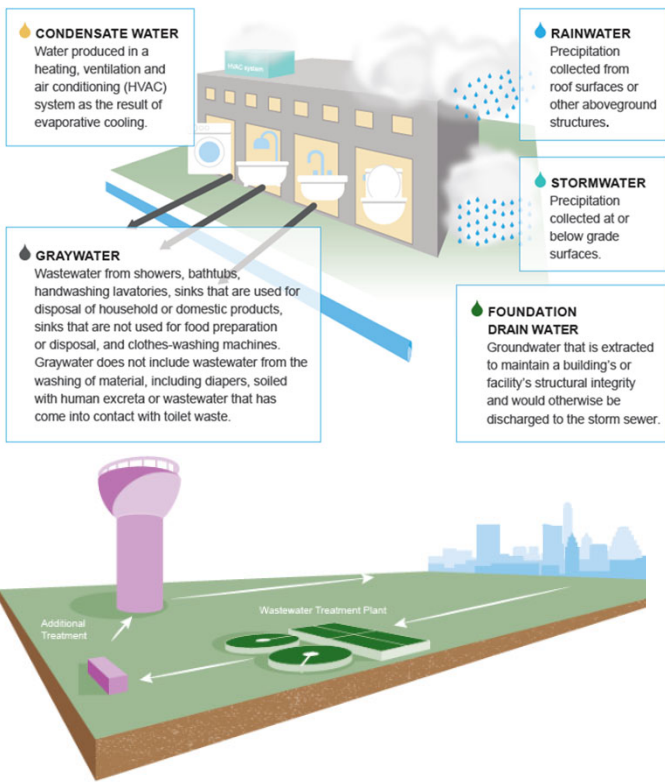
Strategy Name	Annual Community Unit Cost*	Estimated Yield in 2115*
Aquifer Storage and Recovery (ASR)	\$\$\$	🚰🚰🚰🚰
New Off Channel Reservoir with Lake Evaporation Suppression	\$\$	🚰🚰🚰
Off-channel reservoir supplied by Colorado River or reclaimed water (Decker Lake)	-	-
Indirect Potable Reuse through Lady Bird Lake and Capture Local Inflows to Lady Bird Lake	\$\$	🚰🚰🚰🚰
Indirect Potable Reuse - Through Alluvial Aquifer or Bed and Banks	-	-
Direct Potable Reuse from Wastewater Treatment Plant	\$\$\$	🚰🚰🚰(a)
Additional Supply from LCRA	\$	🚰🚰🚰(a)
Regional Partnership with Corpus Christi	-	-
Seawater Desalination	\$\$\$	🚰🚰🚰🚰(a)
Conventional groundwater	\$\$\$	🚰🚰🚰(a)
Brackish Groundwater Desalination	\$\$\$	🚰🚰🚰
Interbasin Transfers	-	-

Ranges: <\$500 - \$, < \$1,000 - \$\$, <\$5,000 - \$\$\$, >\$5,000 - \$\$\$\$, <1,000 - 🚰, <5,000 - 🚰🚰, <10,000 - 🚰🚰🚰, <60,000 - 🚰🚰🚰🚰 >60,000 - 🚰🚰🚰🚰

Note: * Community costs include utility and customer costs. Cost and Yield information were obtained from the 2018 WF Plan if available.

(a) Yield based on **annual average yield** from Appendix J of the 2018 Plan.





Demand Management Strategies



Photo credit: <https://www.floresartscape.com/our-services/ca-friendly-landscapes>

Initial List of Demand Management Strategies

♦ Utility-Side Water Loss Control

♦ Outdoor Water Use Reduction

- Water Efficient and Native Landscapes
- Irrigation Efficiency Code Change

♦ Non-potable Reuse

- Onsite Reuse
- Centralized Reclaimed
- Decentralized Reclaimed
- Community-scale Sewer Mining
- Community-scale Stormwater Harvesting
- Community-scale Rainwater Harvesting

♦ Customer Side Water Use Management

- Customer Side Data-Driven Water Use Management
- Water Use Estimates/Benchmarking - Seller Disclosure
- Commercial, Industrial, and Industrial (CII) - Swimming Pools
- Commercial, Industrial, and Industrial (CII) - Steam Boilers and Cooling Towers



Utility-Side Water Loss Control

Strategy	Origin	Status
<p>Utility-Side Water Loss Control; Enhancement to current program for further water loss reduction. Components include:</p> <ul style="list-style-type: none">• Production meter program (validation and calibration programs)• Customer meter program<ul style="list-style-type: none">• Large customer meter accuracy and as-needed replacement• MyATX Water (Advanced Metering Infrastructure) data analysis• Leak Detection program enhancements• Renewing Austin (pipeline replacement)	Strategy included in Council-approved WF 2018 Plan	Implementation underway



Outdoor Water Use Reduction

Strategy	Origin	Status
Water Efficient and Native Landscapes; Requirements and incentives for irrigation systems and landscapes in new single-family homes to reduce outdoor irrigation demand. Components include: <ul style="list-style-type: none"> • Irrigation and Landscape Ordinance for new single family residential developments • Landscape Transformation Incentive • Irrigation Efficiency Incentives 	Strategy included in Council-approved WF 2018 Plan	Implementation underway
Irrigation Efficiency Code Change; Proposed code changes: From: Requirement of installation of a permanent irrigation system To: allows for installation of a temporary irrigation system to establish permanent landscaping	Strategy considered but not included in Council-approved WF 2018 Plan	N/A



New Ordinance on Landscape Transformation Activities

Task	Anticipated Implementation
Soil and compost requirements in new homes	June 2023
Inspection of new irrigation systems	January 2024*
Builder-scale rainwater harvesting rebate for new homes	March 2024
Irrigation check ups for new irrigation systems	May 2024*
Required plant list in new homes	July 2024
Limit irrigation area in new homes	January 2025
Require irrigation pressure devices for new irrigation systems	January 2025
Require plumbing for laundry to landscape reuse in new homes	January 2025



Non-Potable Reuse Strategies (1/2)

Strategy	Origin	Status
Onsite Reuse; Codes/incentives to require or encourage lot-scale, non-potable reuse for indoor and outdoor uses. Sources include rainwater, stormwater, Air Conditional (AC) condensate, graywater, or black water. Components include March 2024 ordinance requiring rainwater and AC condensate reuse, future phases of onsite reuse implementation, and incentives.	Strategy included in Council-approved WF 2018 Plan	Implementation underway
Centralized Reclaimed; Centralized reclaimed water system will expand to meet growing non-potable demands including irrigation, cooling, manufacturing, and toilet flushing from the city's two largest centralized wastewater treatment plants (South Austin Regional and Walnut Creek). Components include ordinance required connections and incentives	Strategy included in Council-approved WF 2018 Plan	Implementation underway

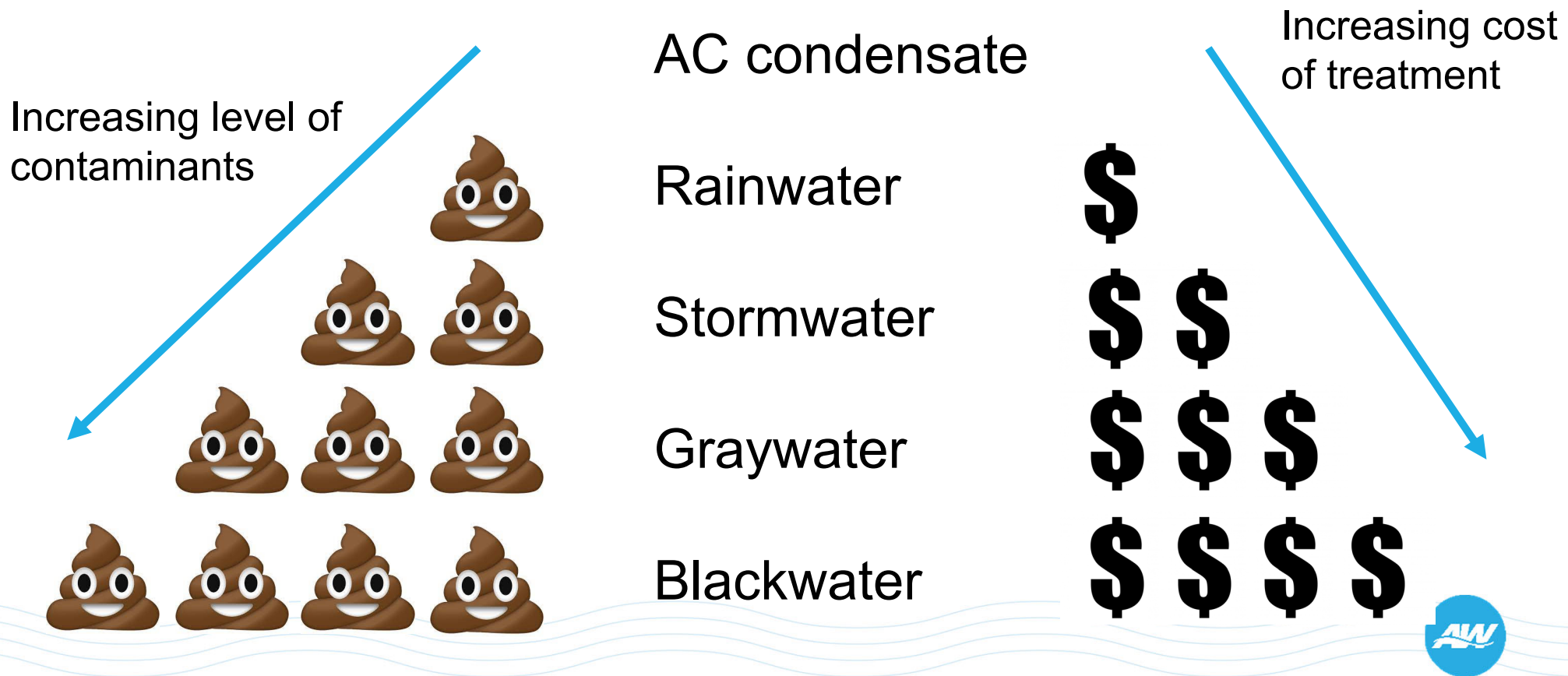


Non-Potable Reuse Strategies (2/2)

Strategy	Origin	Status
Decentralized Reclaimed; Decentralized facilities in new developments collect and treat wastewater effluent for community-scale reuse. Components include ordinance required connections and incentives.	Strategy included in Council-approved WF 2018 Plan	Implementation underway
Community-Scale Sewer Mining; Extraction and treatment of wastewater from sewers for reuse through a separate community-scale reclaimed water distribution system	Strategy included in Council-approved WF 2018 Plan	Implementation underway
Community-scale Stormwater Harvesting; Stormwater capture, treatment, and distribution for non-potable use at a neighborhood-scale	Strategy included in Council-approved WF 2018 Plan	Implementation not started yet
Community-scale Rainwater Harvesting; Rainwater capture, treatment, and distribution for non-potable use at a neighborhood-scale	Strategy considered but not included in Council-approved WF 2018 Plan	N/A



Onsite Water Sources in Buildings



Customer Side Data-Driven Water Use Management

Strategy	Origin	Status
Customer Side Data-Driven Water Use Management; Leveraging AMI and benchmarking data with water budgeting tools to reduce customer water use.	Strategy included in Council-approved WF 2018 Plan	Implementation underway
Water Use Estimates/Benchmarking - Seller Disclosure; Sellers of commercial property must disclose non-compliant water equipment or fixtures to buyers and City staff in writing at the sale point.	Strategy considered but not included in Council-approved WF 2018 Plan	N/A
Commercial, Industrial, and Industrial (CII) - Swimming Pools; Swimming pool retrofit requirement	Strategy considered but not included in Council-approved WF 2018 Plan	N/A
Commercial, Industrial, and Industrial (CII) - Steam Boilers and Cooling Towers; Mandates existing/new cooling towers to comply with efficiency standards set since 2008.	Strategy included in Council-approved WF 2018 Plan	Implementation Completed



Summary of Demand Strategies

Strategy	Components	Annual Community Unit Cost *	Estimated Yield in 2115*
Utility-Side Water Loss Control	FGM0 AMI Data Analysis	\$\$\$	△△△
	•Renewing Austin (pipeline replacement) •Leak Detection	\$\$\$	△△△△
	•Air Conditioning Condensate Reuse	\$\$\$	△△△
Onsite Reuse	-	\$\$\$	△△△△
Centralized Reclaimed	-	\$\$\$\$	△△△
Decentralized Reclaimed	-	\$\$\$\$	△△△
Community-scale Sewer Mining	-	\$\$\$\$	△△△
Community-scale Stormwater Harvesting	-	\$\$\$\$	△△
Community-scale Rainwater Harvesting	-	\$\$\$	△△△
Water Efficient and Native Landscapes	•Irrigation and Landscape Ordinance	\$	△△△△
	•Landscape Transformation Incentive	\$	△
	•Irrigation Efficiency Incentives	\$	△
Irrigation Efficiency Code Change	-	-	-
Customer Side Data-Driven Water Use Management	•AMI Data Analysis	\$\$\$	△△△
	•Water use benchmarking data analysis	\$	△△△△
	•Water use budgeting		
Water Use Estimates/Benchmarking - Seller Disclosure	-	-	-
CII Ordinances - Swimming Pools	-	-	-
Commercial, Institutional, and Industrial (CII) Ordinances	-	\$	△△

Ranges: <\$500 - \$, < \$1,000 - \$\$, <\$5,000 - \$\$\$, >\$5,000 - \$\$\$\$, <1,000 - △, <5,000 - △△, <10,000 - △△△, >10,000 - △△△△

Notes: * Community costs include utility and customer costs. Cost and Yield information were obtained from the 2018 WF Plan if available.



Existing Water Resource Portfolio Strategies

- Colorado River and Highland Lakes Supply
- Drought Contingency Plan
- Austin Water Conservation Programs
- Centralized Reclaimed Water System



Best Management Practices

- ◆ Protect Austin's Core Colorado River Supplies
- ◆ Lake Austin Operations (Lake Level Variations)
- ◆ Steam Electric Water Rights Amendments
- ◆ Water-efficient Fixtures



Summary of Feedback Received on Potential Additional Strategies For Screening

- Commercial non-functional turf irrigation ban (exceptions for sports fields, parks and non-potable irrigation)
- Turf buyback
- Toilet rebates
- Pool water use reduction program
- Single family home greywater systems, greyter/hydroloop
 - Incentive/permitting pathway
- Expanded/improved enforcement
- Expanded/improved educational programs
- Encourage single family properties to connect to reclaimed system
- Water efficiency do-it-yourself (DIY) audit for homeowners
- Minor plumbing repair program for low income customers



Next Steps

- ◆ Incorporate additional feedback on potential strategies into the initial list for screening
 - Feasibility screening for each strategy
 - Up to 14 demand management and 14 supply strategies will be characterized
- ◆ Update cost and yield estimates by reassessing 2018 plan assumptions and updated data
 - Establish ranges for costs and yields
 - Categorized by decadal planning horizon
- ◆ Strategy characterization information to be used as input in WMS Assessment and Vulnerability Evaluation (WAVE) Model



Schedule



Month	Date	Proposed Agenda Items	Backup
January 2024	9th	Preliminary Water Management Strategy (WMS) characterization; gather feedback on portfolio themes	
March 2024	5th	Final WMS characterization; Introduction to WMS Assessment and Vulnerability Evaluation (WAVE)	3/19
May 2024	14th	Present preliminary WAVE results	5/21
June 2024	4th	Present final WAVE results; Introduction to 50-yr portfolio development process	
July 2024	9th	Present 50-yr portfolio multi-criteria decision making analysis results	
August 2024	13th	Present preferred 50-yr portfolio and Equity and Affordability evaluation results	
September 2024	10th	TBD	
October 2024	8th	Present draft WF24 plan report and adaptive management plan; seek Water Forward Task Force recommendation for Council approval for plan	
December 2024	3rd	TBD	





Questions?

Austin
WATER

