Water Forward 2023 Preliminary Planning

5/7/2021

Water Forward 2018 (WF18) Overview

- Approved by Council in November 2018

- An Austin Water-led interdepartmental effort to develop a 100-year water plan that reflects our community's values

- Key drivers included population growth, droughts, and climate change

- Council-appointed Task Force met monthly

- Community outreach throughout the plan development process

- Goal is to ensure a diversified, sustainable, and resilient water future, with strong emphasis on water conservation

- Planned to be updated on a five year cycle
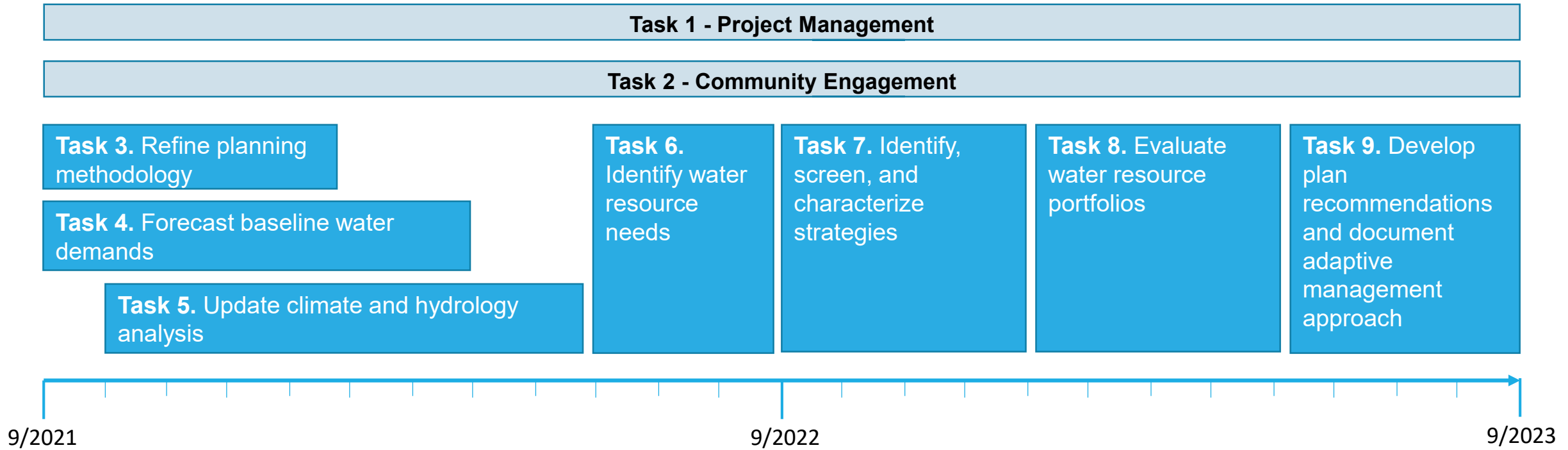
Key Takeaways

WF23 will build on the technical foundation and lessons learned of WF18.

This planning round will be led by AW staff with targeted consultant support.

- More robust approach to addressing risk and uncertainty

- Development of a Climate Technical Advisory Group

- Development of Community Advisory Group and an Equity and Affordability Roadmap and Tool

- Development of clearer approach to water needs identification

- Updated screening of WF18 and new strategies (with consideration for strategies underway)

- Screened strategies will have characterization updated or have new characterization performed

- Incorporation of Colorado River land analysis and potential drinking water quality protection strategies

- Updated approach to portfolio development and evaluation

- Development of adaptive management decision support frameworks to inform strategy implementation

- Better alignment between WF23 outputs and regional water planning considerations

Austin Water Project Team Roles and Responsibilities

AW Executive Team

- **Water Forward Steering Committee:** Provides review, input, and final internal approval of work.

- **Executive Project Sponsor**: Provides guidance and interim review and approval of work.

AW Project Core Team (Systems Planning Water Resources Team)

- **Project Manager:** Works with Task Leads to ensure tasks are being completed on time and in alignment with scope; Reports to Executive Team to seek guidance, review, and internal approval of work.

- **Task Leads**: Work closely with Primary Subject Matter Experts and Technical Teams to execute tasks; Resolves or elevate issues to PM and Review Teams as necessary. Each Task Lead will be assigned to several tasks.

AW Task Specific Teams

- **Primary Subject Matter Expert(s):** Works closely with Tasks Leads and provides guidance to the Technical Team.

- **Technical Team:** Staff performing the technical work for each task.

- **Review Team:** Team of City staff stakeholders who will receive updates on task progress, provide input on issues, review interim deliverables, and provide preliminary approval of work before it goes to the Executive level for final internal review and approval.

Task Force and Advisory Groups

- Water Forward Task Force
  - Eleven member Council-appointed Task Force created in December 2014 to support the Integrated Water Resource Plan (IWRP)

- Community Advisory Group (CAG)
  - Will provide input into the Equity and Affordability Roadmap and Education and Engagement Plan
  - Will provide input into the development and use of the Equity and Affordability Tool

- Climate Technical Advisory Group (CTAG)
  - Will advise on climate change and hydrologic modeling

Potential Consultant Resources

💧 Equity Grounding Consultant

- Task 2 Initial equity grounding workshop for Task Force, CAG, and City staff
- Task 2 Support for development of Equity and Affordability Roadmap

💧 Engineering Consultant

- Task 7 Strategy characterization and costing support
- Technical writing

💧 Climate Consultant

- Task 5 Updated climate data and streamflow projections

💧 Hydrology Consultant

- Tasks 5-9 Water availability modeling and supply analysis support

Task 1. Project Management

WF18

- AW research to develop scope and input from the Task Force

- RFQ procurement that resulted in selection of CDM Smith + subs

- Climate and Hydrology consultants procured separately

- AW led effort that included a number of AW and City staff supporting
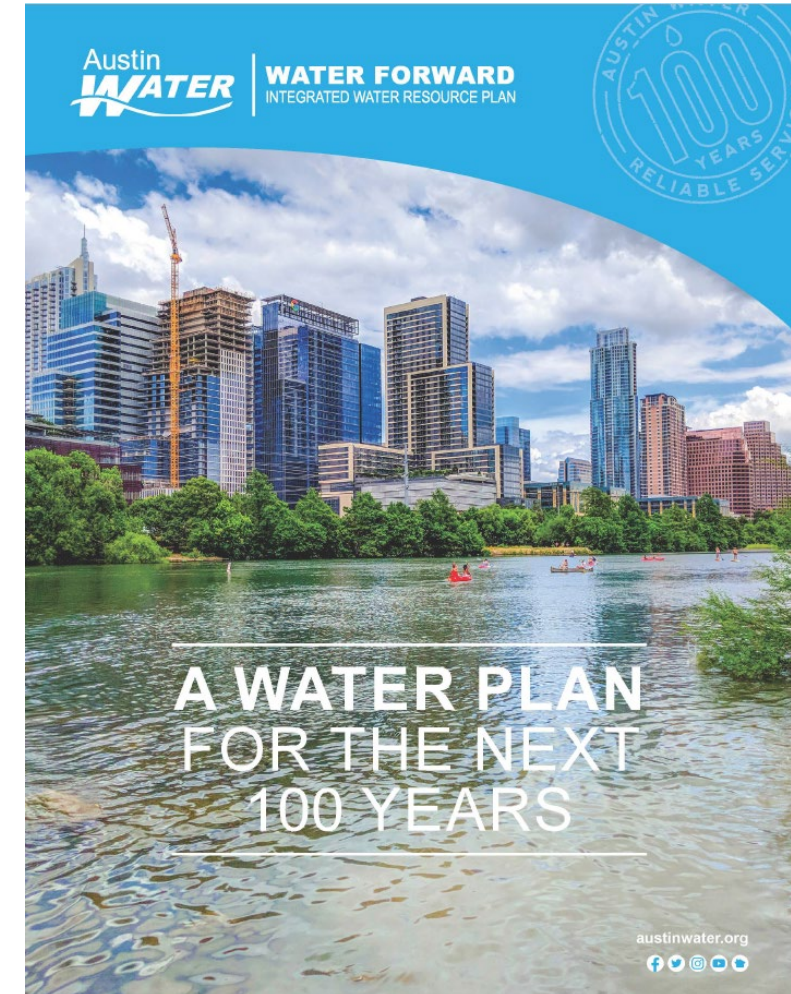
Task 1. Project Management

WF23 Task 1 Scope

1.1 Develop WF23 scope and targeted scopes for consultant procurement

1.2 Develop internal WF23 Working Group charter

1.3 Develop internal project management plan

1.4 Procure consultants

Key changes
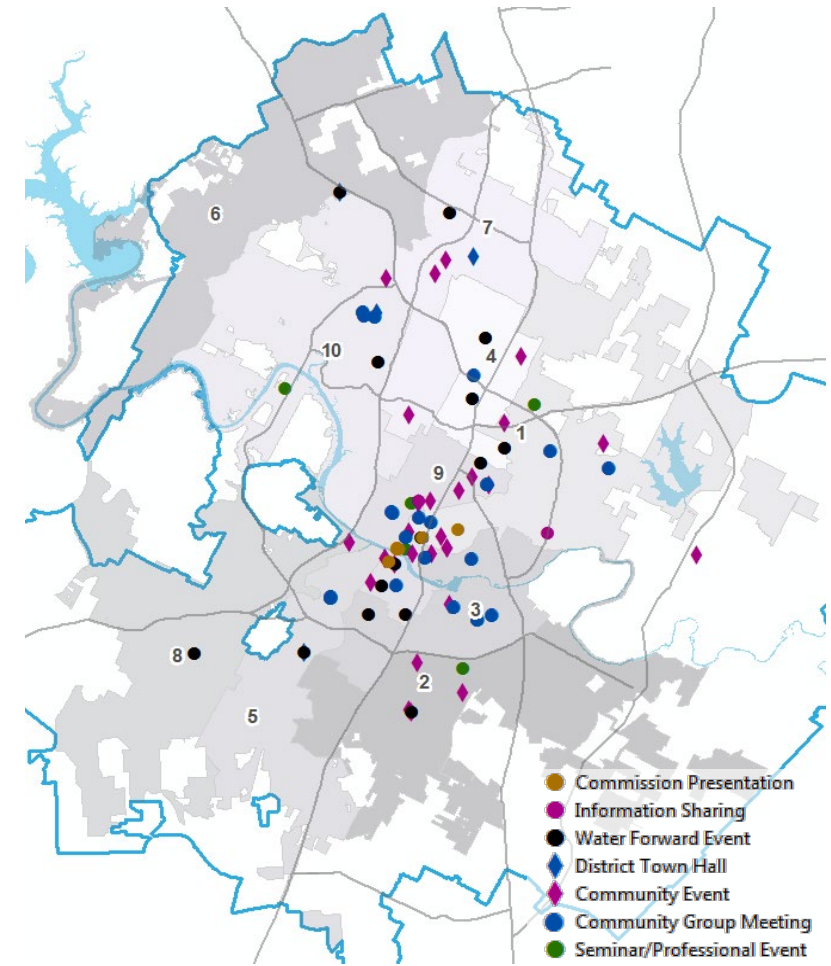
- Consultant resources will be used for targeted support rather than having a large prime + subs

- More clearly defined roles and responsibilities with a larger role for AW staff in work product development

- More transparent internal communication and decision making processes

Task 2. Community Engagement

WF18

- Core goals of community engagement
  - Identify community values that should be reflected in the IWRP
  - Seek input from the community which reflect the diversity of Austin's population and customers
  - Inform and educate the community throughout the plan development process

- AW collected public input at <80 events, including five Water Forward Public Workshops, four Targeted Stakeholder Meetings, and 10 Summer Series events

- Commission Presentation
- Information Sharing
- Water Forward Event
- District Town Hall
- Community Event
- Community Group Meeting
- Seminar/Professional Event

Task 2. Community Engagement

WF23 Scope

2.1 Develop Community Advisory Group (CAG)

2.2 Identify collaboration and information-sharing opportunities

2.3 Develop an Equity and Affordability Roadmap and Education and Engagement Plan

Key Changes

- Utilizing CAG to gather meaningful input from target communities

- Development of Equity and Affordability Roadmap

- Enhanced focus on equity and inclusion in engagement and planning
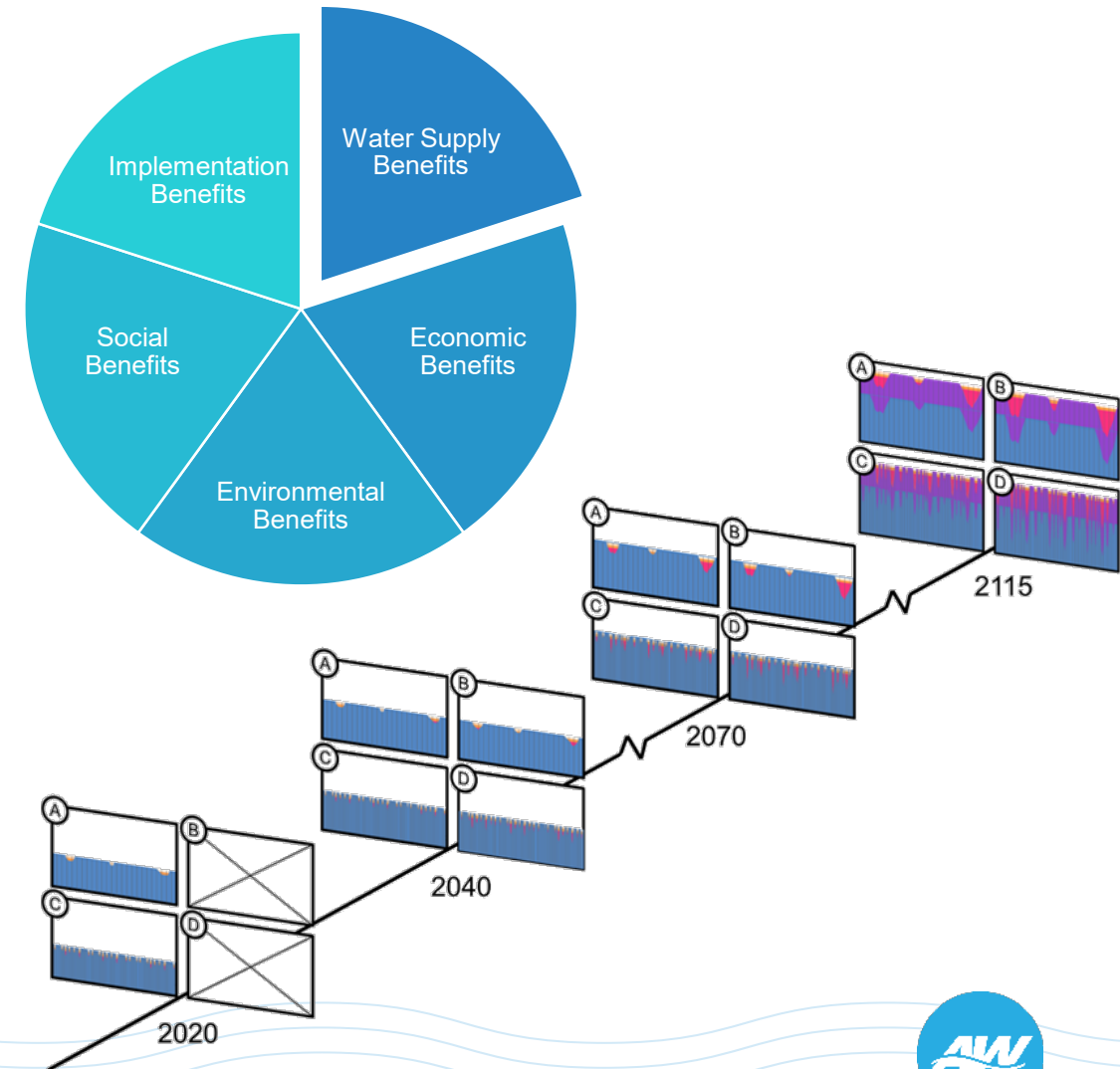
Task 3. Refine Planning Methodology

WF18

💧 AW and Task Force developed a mission statement, guiding principles, plan objectives, sub-objectives, and weightings. Performance measures were developed by AW and consultant for each sub-objective.

💧 AW and the consultant proposed an overall plan methodology and incorporated Task Force and community input.

- Identification of potential water supply and demand management strategies
- Strategy consolidation and screening using a set of criteria
- Strategy characterization
- Five portfolios developed around objective-based themes and evaluated

Task 3. Refine Planning Methodology

WF23 Scope

3.1 Update mission statement, guiding principles, plan objectives, and sub-objectives

3.2 Define planning scenarios, planning horizons, and approach to addressing risk and uncertainty

3.3 Refine performance measures and decision support tools

3.4 Summarize implementation of WF18 plan to date

Key Changes

- Summarizing WF23's relationship to related AW and COA climate, resilience, sustainability, and equity planning efforts

- Changes to scenarios

- Use of ranges in population, demand projections, and strategy yields

- Portfolios developed to iterate through a range of feasible groupings of strategies rather than a few very divergent themes

- Development of Equity and Affordability Tool

Possible Scenarios
- Average conditions (historic, climate-change adjusted)
- Droughts (historic, stochastic, climate-change adjusted)
- Supply-related emergency events

Task 4. Estimate and forecast baseline water demands

WF18

- Disaggregated Demand Model (DDM) was used to produce baseline COA demand estimates for 2010-2015 and 2020, 2040, 2070, 2115

- DDM modeled water use spatially by sector, subsector, and end use

- Growth in water demand in DDM is driven by growth in population (residential unit) and employment projections

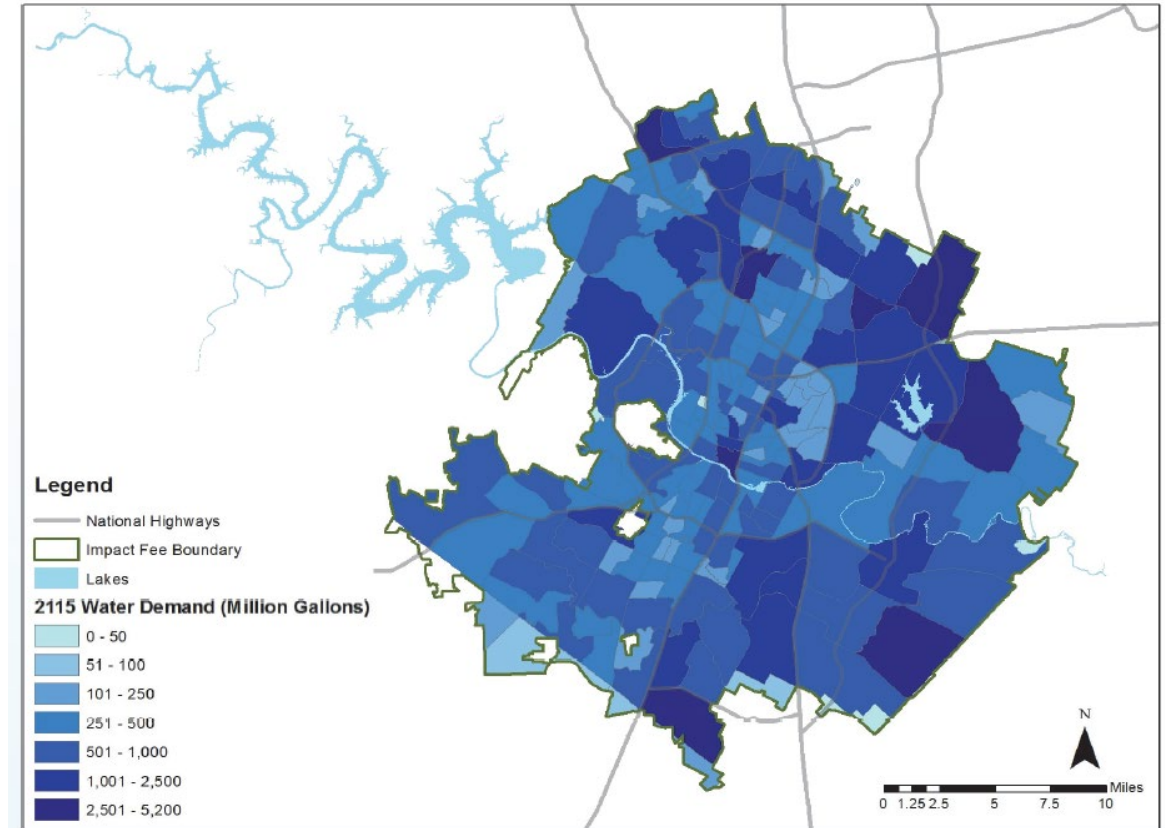- DDM was used to inform/incorporate estimates of water savings from demand management and decentralized strategies

Legend
- National Highways
- Impact Fee Boundary
- Lakes

2115 Water Demand (Million Gallons)
- 0 - 50
- 51 - 100
- 101 - 250
- 251 - 500
- 501 - 1,000
- 1,001 - 2,500
- 2,501 - 5,200

Figure 4-11. Baseline Water Demand Schematic 2115

Task 4. Estimate and forecast baseline water demands

WF23 Scope

4.1 Estimate and forecast population, employment, and relevant land use and development information

4.2 Make structural improvements to disaggregated demand model and develop baseline water demand forecast

Key Changes

- Additional demographic/land use data may be developed to support later strategy characterization

- Demand baseline will be updated with more recent historic billing data

- DDM adjustments will include monthly timescales, additional knobs for weather, climate, and passive conservation trends

- Use of ranges in projections

Task 5. Update climate and hydrology analysis

WF18

- Temperature and precipitation data from 20 Global Climate Models were used to drive regression models to replicate historical streamflow in the Texas Colorado River basin

- Future projected temperature and precipitation was then used to develop 20 projections of streamflow at each of the 43 gages in the basin

- An ensemble created from the projections was used in river modeling

- Two 10,000-year hydrologic scenarios were developed by resequencing years from observed or climate-adjusted hydrology. A range of droughts were selected from these sequences to represent droughts worse than the worst drought in the historical period.
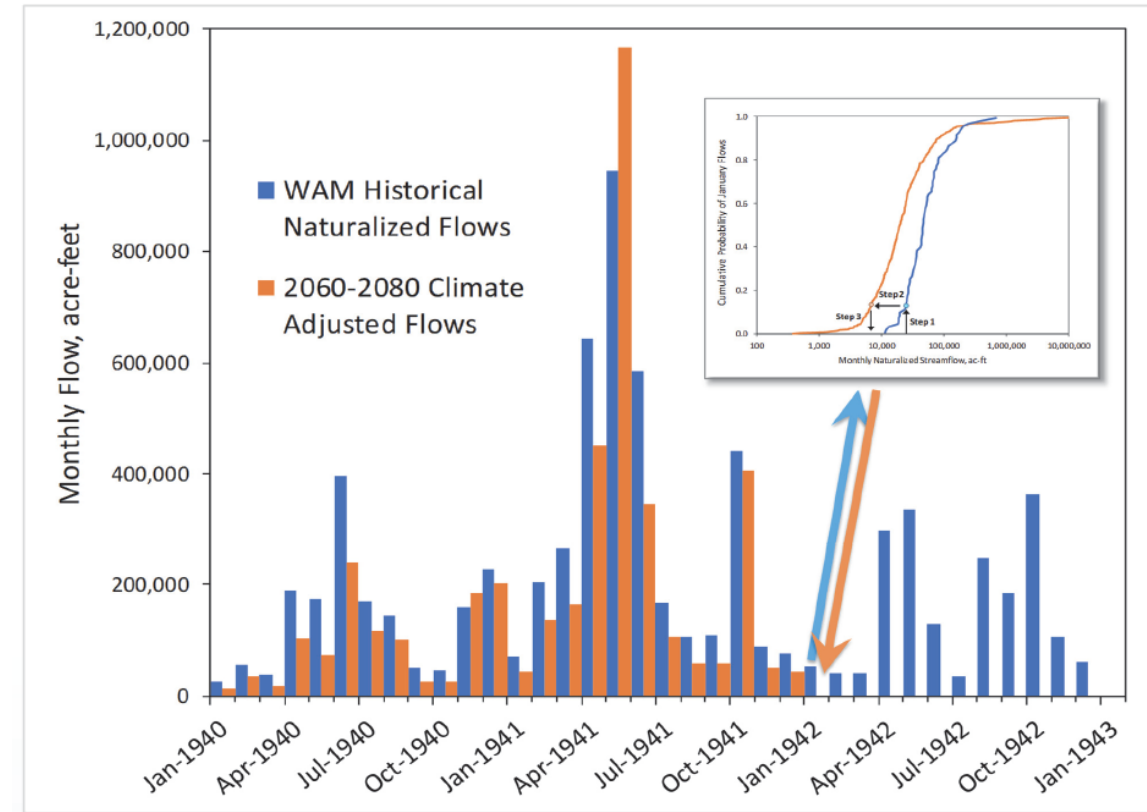

Figure D-10. Example of adjusted naturalized streamflows for the historical period of record

Task 5. Update climate and hydrology analysis

WF23 Scope

5.2 Identify general circulation models (GCMs) and climate scenarios to be used in analysis

5.3 Identify downscaling methodology and downscale GCM outputs

5.4 Develop models of naturalized flow, spring flow, and net evaporation

5.5 Run models developed in Task 4 with downscaled GCM weather data

5.7 Adjust the historical record according to future hydrologic projections

5.8 Develop stochastic drought sequences
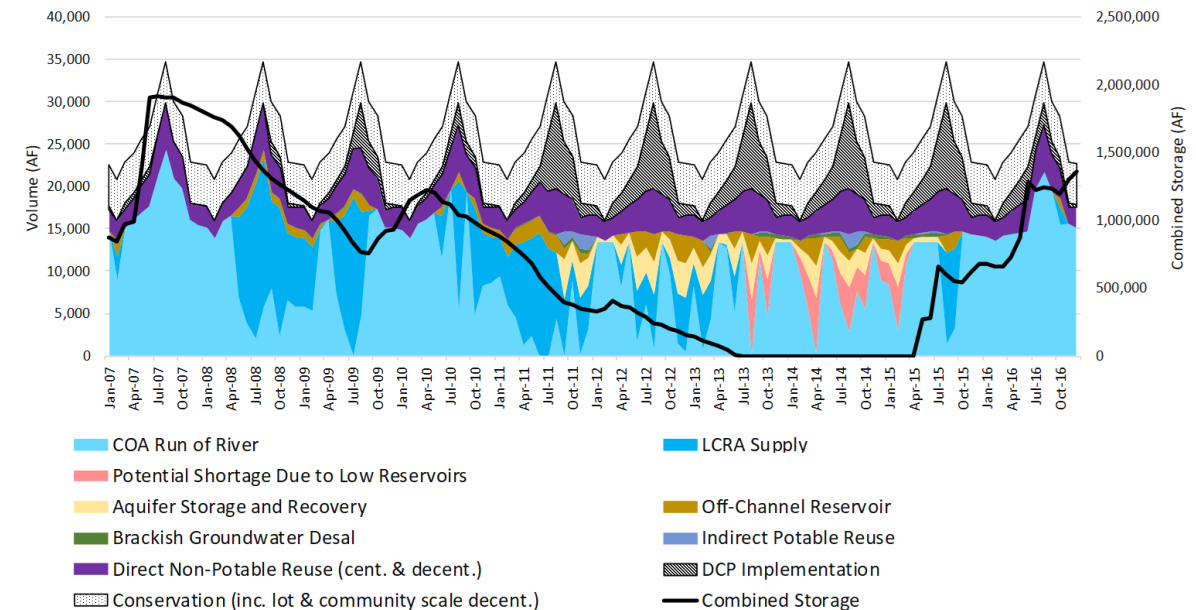
Key Changes

- Greater transparency and focus on capacity-building in analysis development

- Possible adjustment to evaluating impacts of degrees of warming rather than impacts of emissions scenarios

- More robust evaluation of extreme events (droughts or floods) and changes in frequency, magnitude, and duration

Task 6. Identify water resource needs

WF18

- Water Availability Modeling was used to identify baseline COA water resource needs

- Type 1: equal to the estimated reduction in water demand that would occur from implementation of the City's Stage 4 Drought Contingency Plan

- Type 2: equal to 50% of the amount of water Austin would expect to receive from LCRA stored water at extremely low lake levels (<450,000 AF)

- Type 3: equal to the amount of water above Austin's current 325,000 AF of supply

Task 6. Identify water resource needs

WF23 Scope

6.1 Estimate regional demands to be included in preliminary water need analysis

6.2 Identify preliminary baseline water supply needs

Key Changes

- Preliminary needs may be estimated without incorporating DCP savings

- Planned development of clearer approach to water needs identification

Task 7. Identify, screen, and characterize strategies

WF18

- Demand management and supply strategies were identified based on AW, Task Force, and community input

- Identified strategies were consolidated and screened by a set of screening criteria

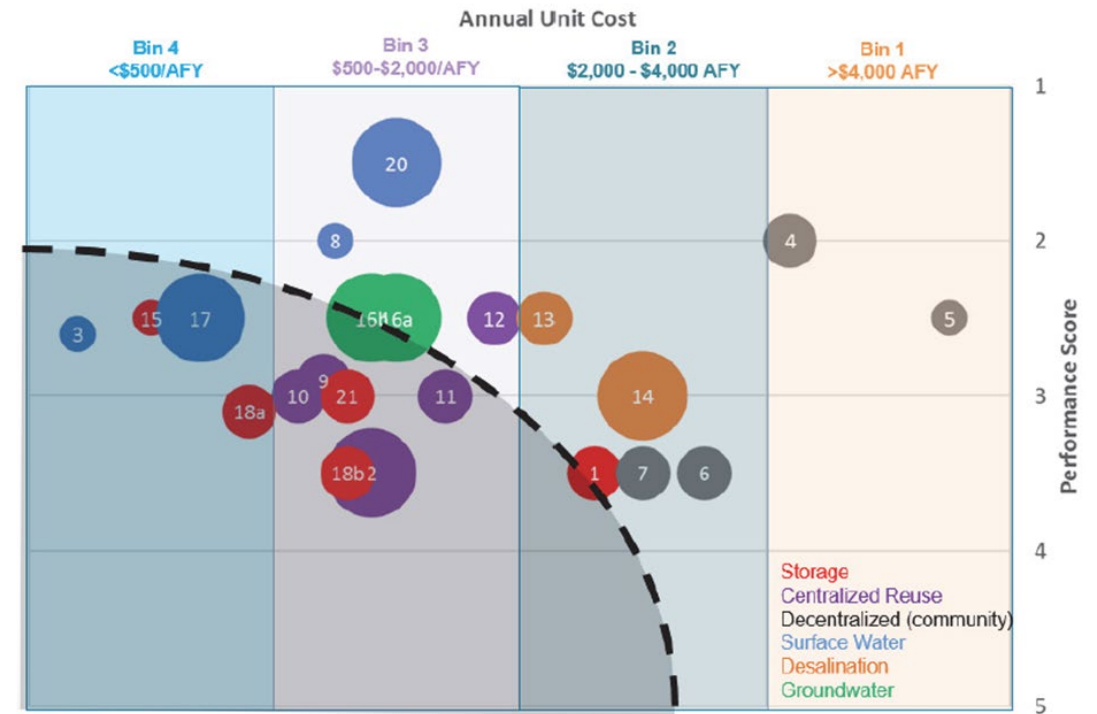- Strategies passing through screening were characterized independently of one another

Figure I-2. Supply screening results with relative yield (final option selection based on screening analysis and task force feedback)

Task 7. Identify, screen, and characterize strategies

WF23 Scope

7.1 Identify strategies for consideration

7.2 Identify land conservation strategies to protect drinking water quantity and quality

7.3 Consolidate and screen strategies

7.4 Characterize screened strategies

7.5 Perform demand management and reuse strategy reconciliation

Key Changes

- WF18 and new strategies will go through updated screening process (with consideration for strategies underway)

- Screened strategies will have WF18 characterization updated or have new characterization performed

- Yield will be geospatially reconciled across strategies to prevent double-counting

- Conservation, decentralized, and reclaimed strategy yields will primarily be developed by AW

Task 8. Develop and evaluate water resource portfolios

WF18

- Theme-based portfolios were developed with different combinations of demand and supply strategies to meet water supply needs

- Thematic portfolios were designed to push boundaries and allow trade-offs to be more easily seen

- Portfolio evaluation performance measures included both quantitative and qualitative metrics
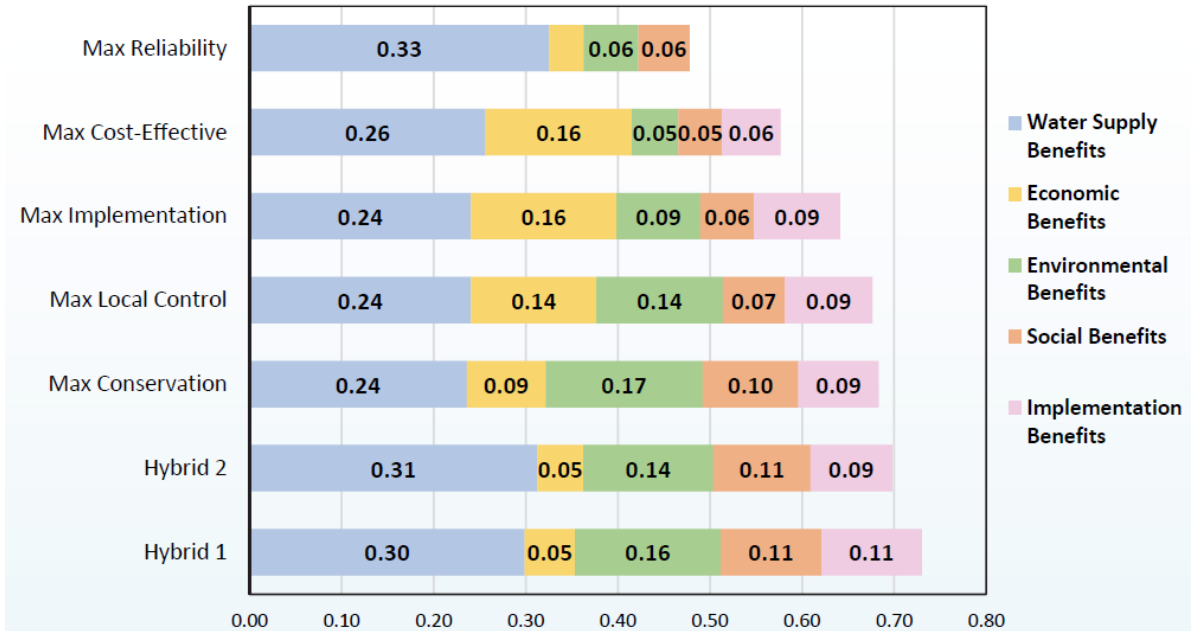

Figure 8-4. Scoring of portfolios using decision software

Task 8. Develop and evaluate water resource portfolios

WF23 Scope

8.1 Create water resource portfolios

8.2 Evaluate water resource portfolios

Key Changes

- Portfolios may be developed to iterate through a range of feasible groupings of strategies rather than a smaller number of very divergent themes

- Seeking to better identify adaptive management approaches to risks and uncertainty through portfolio iteration

- Equity and Affordability Tool will be incorporated into portfolio evaluation process

Task 9. Develop plan recommendations and document adaptive management plan

WF18

- Plan recommendations were based on the hybrid portfolio that was evaluated and ranked the highest

- A near-term (20 year) implementation plan was developed

- Metrics were developed to annually assess plan implementation progress

Strategy	2040 Target (acre-feet/year)	2070 Target (acre-feet/year)	2115 Target (acre-feet/year)
Advanced Metering Infrastructure (AMI)	3,880	5,770	9,370
Utility-Side Water Loss Control (savings)	9,330	10,918	13,060
Commercial, Industrial, and Institutional (CII) Ordinances	1,060	1,060	1,060
Water Use Benchmarking and Budgeting	5,950	11,670	25,230
Landscape Transformation Ordinance	3,040	7,430	15,050
Landscape Transformation Incentive	320	630	930
Irrigation Efficiency Incentive	210	430	390
Onsite Water Reuse	6,410	16,900	37,230
Sewer Mining	1,000	2,210	5,280
Distributed Wastewater Reuse	3,560	14,470	30,050
Centralized Reclaimed Water System	15,480	25,000	54,600
Indirect Potable Reuse (IPR) through Lady Bird Lake	11,000	20,000	20,000
Capture Local Inflows to Lady Bird Lake	3,000	3,000	3,000
Aquifer Storage and Recovery	60,000	60,000	60,000
Brackish Groundwater Desalination	-	5,000	16,000
Off Channel Reservoir	-	25,000	25,000

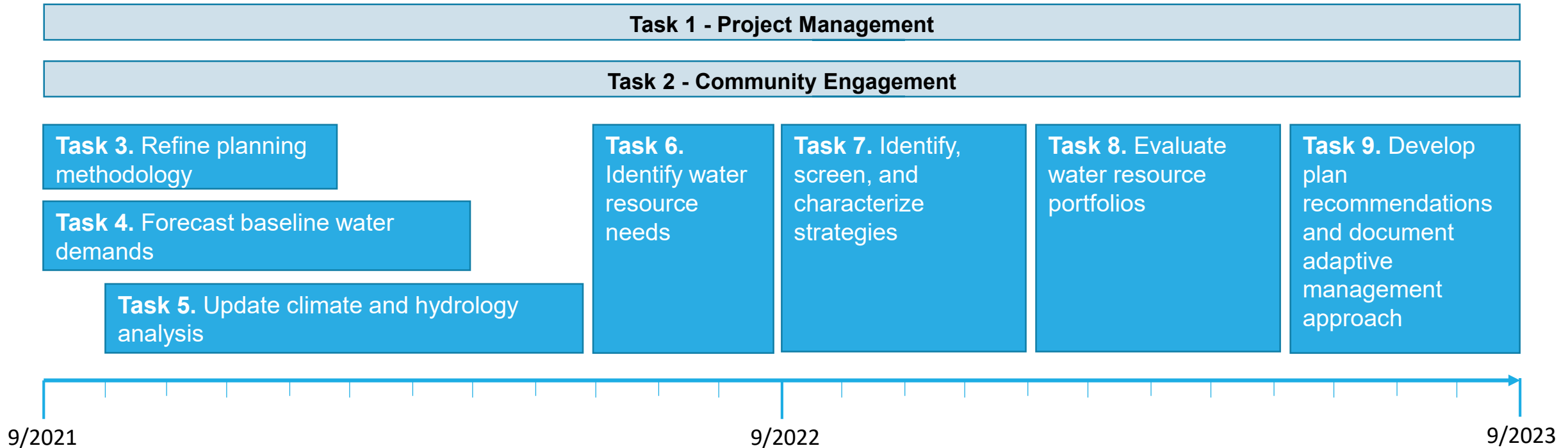# Task 9. Develop plan recommendations and document adaptive management plan

WF23 Scope

9.1 Develop plan recommendations

9.2 Create adaptive management plan and update near-term plan implementation timeline

9.3 Update metrics to assess plan implementation progress

Key Changes

- Development of an adaptive management plan incorporating triggers for decision making and strategy implementation

Questions and Discussion