May 5, 2015

Austin Integrated Water Resource Plan
Draft Process Outline

Summary

Scope Development Process Outline

A. Develop guiding principles and methodologies
B. Develop project scope, expectations, and limits
    1. Geographic limits
    2. Scenario planning
    3. Project schedule expectations
    4. Public involvement expectations
    5. City staff involvement expectations
    6. Coordination with other entities
    7. Draft methodology for options comparison
C. Background information to be provided to the consultant
D. Consultant team expertise areas

Plan Development Process Outline

Tasks listed below are interconnected and order does not indicate prioritization.

1. Conduct Public Outreach and Participation (throughout the process)
2. Develop Methodology for Options Comparison
3. Evaluate and Forecast Disaggregated Water Demands
~~3.~~4. Evaluate Impacts of Climate Change on Water Supply and Demand
~~4.~~5. Conduct Water Conservation Potential Assessment
~~5.~~6. ~~Evaluate Impacts of Climate Change on Water Supply and Demand~~
~~6.~~7. Evaluate Water Supply and Diversification Options
~~7.~~8. Score Demand and Supply Side Options
~~8.~~9. Develop and Evaluate Water Supply and Demand Management Portfolios
~~9.~~10. Conduct Financial Analysis and Evaluation
~~10.~~11. Score Demand and Supply Side Portfolios
~~11.~~12. Develop Plan Recommendations
~~12.~~13. Develop Plan Report

May 5, 2015

Scope Development Process Outline

A. Develop Guiding Principles

Based on 2014 Task Force IWRP recommendations. Not listed in order of priority.

- Sustainable and resilient
- Water use efficiency (conservation and demand management)
- Drought and climate change tolerant
- Improved drought preparedness
- Local focus with regional awareness
- ~~Supply diversity~~
- Affordable
- Cultural/community shift and change
- Environmentally conscious – avoid and minimize adverse environmental impacts
- Consider environmentally beneficial options
- Stewardship of water and environment
- Consistent with Imagine Austin
- Transparent
- Public involvement and collaboration
- Balanced regional water reliability
- Matching water quality to end-use needs
- Protect Public Health/including immuno-compromised
- Follow State and Federal Law
- Reduce Energy footprint

Comment [JW1]: Do not think that supply diversity is that should be a goal at the outset. We may come up with water supply options that would not be defined at "supply diversification" by some. Also….need to define supply diversity at some point.

Comment [JW2]: Not sure what this means?

B. Develop project scope, expectations, and limits

1. Geographic limits
   - AW Service Area
   - AE facilities (not to include the entire AE Service Area)
   - Other geographic areas of significance: Austin City limits, Austin Metro Area, Region K, river basins and watersheds, aquifers, "local" area, other areas as determined
2. Scenario Planning
   - Potential Conditions, including but not limited to:
     - Drought
     - Climate change
     - Wet conditions
   - Potential Time Horizons

- Year 2020
- Year 2039/2040 (Imagine Austin and City of Austin Bicentennial)
- Year 2070 (to match Region K & state water plan)
- Year 21150~~0~~ – 100 year projection

3. Project schedule expectations
   - Approximately two year project –starting with Task Force initial meeting
     - Approx. Spring 2015 to Spring 2017
   - Allow time for public meetings including Boards and Commissions
   - Broad stakeholder input in expected outside of B&C and Task Force meetings. Input opportunities should include a variety of tactics to gather community input.
4. Public involvement expectations
   - Public involvement and public meetings
   - 2015 Austin Integrated Water Resource Planning Community Task Force
5. City staff involvement expectations
   - Austin Water – Lead Department
   - Austin Energy
   - Watershed Protection
   - Office of Sustainability
   - Office of Innovation
   - Austin Resource Recovery
   - Parks and Recreation Department
   - Neighborhood Housing and Community Development
6. Coordination with other entities
   - Potential consultant coordination
     - Coordination with COA and LCRA Water Partnership
     - Coordination with other entities as appropriate
   - Other entities and governing bodies as appropriate
7. Draft methodology for options comparison
   - Refer to AWRPTF matrices with evaluation criteria: Water Conservation and Supply Project Evaluation Matrix as basis for development of evaluation criteria

C. Background information to be provided to the consultant

1. Consolidate deliverables from prior water supply and water efficiency engineering analyses
2. Imagine Austin Comprehensive Plan

D. Consultant Team Expertise Areas (from Resolution and 2014 Task Force Report)

1. Demonstrated commitment to and expertise in (as stated in Council Resolution 20141211-119)
    - Water conservation and efficiency
    - Water reuse/Water reclamation
    - Distributed and Decentralized Water Systems
    - Sustainable water resource planning
    - Alternative water utility financial models
2. Additional areas of expertise (from the 2014 Task Force report)
    - Scenario planning
        - Hydrology and climate
        - Drought scenario water resource planning
    - Modeling
        - Water supply and demands
        - Water Availability Modeling
        - Finance, Econometric
    - On-site systems for reuse
        - Stormwater, Graywater, Wastewater, AC Condensate, Recycled process water
    - Beneficial use of stormwater runoff
        - Rainwater harvesting and catchment
    - Environmental engineering
        - Water treatment and distribution and wastewater collection and treatment
    - Water supply
        - Aquifer Storage and Recovery (ASR)
        - Groundwater, with emphasis on karst systems
        - Legal/Institutional: Texas surface and groundwater law
    - Energy-water nexus
        - Energy efficiency
        - Water use for power production
    - Public outreach
        - Demonstrated experience in Public Outreach
    - Public policy

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~~PlanningIrrigationPlan~~ Development Process Outline

This document is a preliminary proposed sequence of task modules. For the purposes of this document, "Lead" refers to the lead party associated with a task and is not meant to exclude the participation of and input by the public , other City departments, the 2015 Austin Integrated Water Resource Planning Community Task Force (Task Force), and others.

Task 1 Conduct Public Outreach and Participation

a. Develop framework for public outreach and participation process with Task Force and others
   - Incorporation of public input into plan development process
   - Identification of local and regional stakeholders
   - Consider conducting focus groups to get targeted feedback from particular stakeholder groups (large businesses, multi-family property owners, larger institutions, wholesale customers, developers, environmental, low-income community)
   - Consider conducting customer survey of water use
   - Develop clear and publicly available outreach plan

b. Throughout the process, conduct public and stakeholder outreach and public participation efforts to provide opportunities for meaningful public input

c. Throughout the process, coordinate with Austin Integrated Water Resource Planning Community Task Force (Task Force)

d. Facilitate coordination among City departments, programs, and local and regional stakeholders (including customers)

Task 1 Work Products

- Public outreach and participation plan
- Documentation of public outreach and participation process

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Comment [JW3]: All City Partners should participate fully to maximize public outreach.

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Task 2 Develop Methodology for Options Evaluation

a. Refine methodology to provide framework for evaluation of demand-side and supply-side options

- Refer to 2014 AWRPTF matrices with evaluation criteria and recommended scoring system (see attached – Appendices A, B, and E from July 2014 Task Force Report to Council): Demand Management and Supply Management Evaluation Matrices as basis for development of evaluation criteria
- Methodology should include consideration of, but not be limited to:
  - Potential yield for demand and supply side options
  - Water supply benefits
    - ~~Supply diversification potential~~
  - Economic impacts
    - Cost comparisons ("apples to apples"): Including capital costs and operations and maintenance costs, lifecycle costing (including energy and carbon emissions), cost savings, cost benefit analysis
    - Consideration of potential financial incentives
  - Environmental impacts and considerations
  - Social impacts
  - Implementability
    - Intergovernmental partnerships
    - Permitting and regulatory considerations
    - Timing of Implementation
  - Risk
    - Water availability
  - Others

Task 2 Work Products

- Summary of methodology recommendations for options evaluation
  Standard template for presentation of options evaluation

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Task 3 Evaluate and Forecast Disaggregated Water Demands

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a. Develop disaggregated demand model. Consider both top down and bottom up approaches.

- Potential categories
  - Austin Water demands
    - Single-family residential, multi-family residential, commercial, large volume, wholesale, City of Austin
    - Customer end uses
    - Indoor, outdoor
  - Austin Energy: steam-electric (water demands at power plants), other uses (consumptive v. non-consumptive)
  - Potable, non-potable (reclaimed and auxiliary water)
  - Other regional water demands
    - Parkland irrigation, recreation
    - Trees, farms, and food
    - Fire suppression, wildfire suppression (wildland/urban interface)
    - Creeks, environmental flows, habitat protection
- Potential drivers
  - Drought contingency plan (DCP) implementation (stages)
  - Climate change impacts
  - Population growth & land use changes
  - Economic drivers (employment forecasts, cost of water/rate impacts)
  - Variable demands due to peaks, summer, winter (and DCP stages), changes in long-term water use patterns/amount (declining)

b. Develop water needs budgeting options and approaches

c. Clearly Explain Water Demand Development

- Different ways of doing-Failures of past demand projections-Climate change influence

Task 3 Work Products

- Intermediate disaggregated demand model out to the 2020 & 2039/2040 planning horizons (AW Staff)
- Disaggregated demand model combining the 2020, 2039/2040, 2070, 2100 (2115)planning horizons (Potentially IWRP Consultant)
- Preliminary water needs identification, quantification, and benchmarking for

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Comment [JW4]: Needs explanation.

water needs budgeting to be used in plan development	

Task 4 Conduct Water Conservation Potential Assessment

a. Identify demand management options for matrix evaluation
   - Screen conservation programs, policies, and code requirements to determine which options will be evaluated in the matrix

b. Evaluate current and potential demand management options according to the methodology developed in Task 2. Consider results of Conservation Comparative Analysis (developed outside of this scope) as applicable.
   - Evaluation of individual conservation programs will potentially include, but are not limited to:
     - Rates and price elasticity
     - Rebates and incentives
     - Water meter options
     - Tools for customers (e.g. water report software, etc.)
     - Outreach and education
     - Conservation audits
     - Water loss reduction for customers
     - Leak detection and reduction programs for the City
     - Evaluate codes and ordinances and suggest code revisions (e.g. auxiliary water, plumbing fixtures, elimination of in ground irrigation systems, Low water landscape, etc.)
     - Evaluate other demand-side management options
     - Mandated connection to reclaimed water system for certain class of customers
     - Different "connection fees" for new water-conserving homes
   - Conduct cost-benefit analysis, including potential water supply benefits, of individual conservation programs

c. Review current benchmark information and develop benchmarks for water conservation programs to include cost-benefit and other factors

d. Identify potential for demand reductions
   - Evaluate current and potential demand management programs as they relate to potential demand reductions

e. Develop cost and yield data
   - Consider developing cost curves as appropriate

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Comment [JW5]: Switch out Task 4 and 5.

Comment [JW6]: Austin Energy should be bolded as well.

Comment [JW7]: Watershed Protect should be bolded here.

f. Identify opportunities for coordination and leadership with LCRA, BSEACD, wholesale water customers, neighboring utilities and communities

g. Identify opportunities for cooperative conservation improvements with intra-basin users

h. Capture AW Conservation progress and accomplishments to date

- Review 2012 statistical analysis report that was basis for City of Austin pro rata curtailment plan
- List implemented programs and estimated water savings and other metrics

Task 4 Work Products

- Conservation Potential Assessment including benchmarks and cost benefit analysis results
- Integration of the Conservation Potential Assessment into IWRP
- Recommendations for coordination with LCRA and others
- Summary of AW Conservation history
- List of implemented conservation programs and estimated savings

Task 5 Evaluate Impacts of Climate Change on Water Supply and Demand

a. Conduct gap analysis of climate change data

- Review previously conducted climate analyses for Austin and other entities including:
  - Temperature and precipitation forecasts developed by ATMOS Research and Consulting
  - Studies conducted for LCRA and other regional entities
- Identify aspects of previous climate analyses that can be used to evaluate climate change impacts on water supply and demand
- Identify gaps including location and other parameters

b. Develop forecasts for climate change impacts on water supply

- Develop climatic information based on gap analysis conducted in Task 5a
  - Range of climatic and carbon emissions scenarios will be utilized
- Translate climatic projections to forecasts for water supply and hydrologic parameters that can be used in water availability models including, but not limited to, streamflow and net evaporation
- Climatic and hydrologic projections will be developed for locations within

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Comment [JW8]: Move to Task 4

Comment [JW9]: AE and Watershed Protection should be bolded here.

Austin and for locations critical to water supply in Austin such as the Highland Lakes

c. Develop forecasts for climate change impacts on water demands
   - Identify parameters that will need to be incorporated into disaggregated demand modeling and forecasting (Main consultant will need to have knowledge in this area)

Task 5 Work Products

- Summary report on potential climate change impacts on local climate, hydrology, water supply, and water demand
- Climatic and hydrologic forecast dataset to be used in water supply and demand management options evaluations

Task 6 Evaluate Water Supply and Diversification Options

a. Identify water supply options for matrix evaluation
   - Screen options to determine which options will be evaluated in the matrix

b. Evaluate water supply options according to the methodology developed in Task 2. Use water availability modeling as appropriate.
   - Options potentially include, but are not limited to:
     - Lake storage and operations
     - Off-channel reservoir storage and operations
     - Direct reuse (reclaimed water – purple pipe system)
     - Indirect reuse (for potable and non-potable)
     - Outflow from Barton Springs/other local springs and creeks into Lady Bird Lake
     - Green infrastructure
     - On-site systems for stormwater, graywater, wastewater, AC condensate, recycled process water, etc. (decentralized concepts)
     - Desalination of brackish groundwater or other saline water sources
     - Groundwater
     - Aquifer Storage and Recovery (ASR)
     - Surface water rights: first in time first in right priority system, Colorado River water rights

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- Water rights transfers
- Other potential regional projects

- In addition to methodology and refined matrix criteria developed in Task 2, key factors should include but are not limited to:
  - LCRA Water Management Plan: revisions, emergency orders, and LCRA environmental flow requirements
  - Austin and LCRA water supply agreements (including but not limited to 1999 and 2007 agreements):
    - Firm contracts: stored water and run-of-river backup
      - 325,000 AF supply with payment trigger
      - Additional supplies for steam-electric demands
  - Surface and groundwater law/permitting
  - City of Austin return flows: Joint Application for Reuse (JAR) pending at TCEQ
  - Potable/non-potable connection standards and public health and safety
  - End use water quality
  - Consider potential policy and financial incentives
  - Climate change impacts
  - Environmental and water quality impacts

c. Consider developing cost curves as appropriate

d. Perform comprehensive reuse analysis

- Develop direct reuse (purple pipe) decision model options
  - System-type options
  - Financial business model considerations
  - Water supply aspects in a region/basin-wide context
  - Evaluate potential need for code changes
- Evaluate decentralized water reuse options, which may include but are not limited to sewer mining, distributed and outlying satellite systems, combined rain/gray/blackwater on-site reuse systems
- Evaluate potential for on-site stormwater management to offset water demand
- Consider geospatial analysis of future supply sources (including auxiliary and decentralized)
  - Reference Sydney Decentralized Water Master Plan

Task 6 Work Products

- Supply options evaluation results in template for each strategy as described in Task 2
- Comprehensive reuse analysis summary

Task 7 Score Demand and Supply Side Options

a. Score water supply and demand side options using methodology developed in Task 2

b. Perform reconciliation of scoring parameters including costs for demand and supply side options as needed to ensure "apples-to-apples" comparison

Task 7 Work Products

- Scored list of demand and supply side options

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Task 8 Develop and evaluate water supply and demand management portfolios

a. Develop process to create, evaluate, and select water supply and demand management portfolios
   - Determine performance objectives for portfolios
     - Define acceptable levels of risk and reliability for customers and stakeholders (include rate impacts for different scenarios)
   - Identify evaluative criteria
     - Consider using the same evaluation criteria included within the methodology developed in Task 2
   - Identify water supply and demand management portfolio themes

b. Populate preliminary portfolios with demand and supply side options identified in Task 7

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c. Conduct Water Availability Modeling (WAM) analysis of preliminary portfolios under various planning scenarios using WAM conditional reliability modeling (CRM) ○ Planning scenarios may include drought of record, period of record, and other hydrological conditions including scenarios incorporating climate change impacts d. As part of an iterative process, evaluate and refine portfolios in various water supply and climate scenarios based on evaluative criteria and performance objectives e. Select portfolios of tiered supply side and demand management options for further evaluation **Task 8 Work Products** • Prioritized option portfolios with combined storage graphs using conditional reliability modeling • List of selected and prioritized option portfolios for further evaluation (including cost)	Office of Innovation Office of Sustainability Parks and Recreation
Task 9 Conduct Financial Analysis and Evaluation a. Evaluate financial considerations of selected option portfolios from Task 9 • Capture capital and operation and maintenance (O&M) lifecycle costs • Capture other financial considerations as needed b. Develop and evaluate financing options including, but not limited to, alternate project delivery options and consideration of expansion of the use of impact fees to support projects aimed at improving water use efficiency • Identify opportunities for regional partnerships and cooperation, technology cost sharing, and revenue-positive or revenue-neutral capital planning options • Evaluate funding mechanisms and requirements for decentralized, graywater, and rainwater harvesting options • Explore use of private capital options to finance decentralized infrastructure throughout the city, including a potential Service Extension Request (SER) process approach • Evaluate suite of financing programs available from the Texas Water Development Board **Task 9 Work Products** • Summary of findings from financial analysis and evaluation	**LEAD** **Austin Water** **IWRP Consultant** **PARTNERS** **2015 Task Force** Austin Energy Austin Resource Recovery Neighborhood Housing and Community Development Office of Innovation Office of Sustainability Parks and Recreation Watershed Protection

• Summary of findings from financing options evaluation	
Task 10 Score demand and supply side option portfolios a. Score demand and supply side portfolios using methodology developed in Task 8 b. Develop scored list of portfolios **Task 10 Work Products** • Scored list of demand and supply side portfolios	**LEAD** **Austin Water** **IWRP Consultant** **PARTNERS** **2015 Task Force** Austin Energy Austin Resource Recovery Neighborhood Housing and Community Development Office of Innovation Office of Sustainability Parks and Recreation Watershed Protection
Task 11 Develop Plan Recommendations a. Develop supply and demand management plan recommendations that reflect the community's values, quality of life, affordability, supply diversity, sustainability, drought resilience, and environmental protection b. Update short-term tiered drought management plan with implementation stages and multiple strategies (based on drought response planning work from 2014 and 2015) c. Develop medium and long term plan recommendations, potentially triggered based on conditions, with time horizons	**LEAD** **Austin Water** **IWRP Consultant** **Hydrologist/WAM Consultant** **PARTNERS** **2015 Task Force** **Austin Energy** **Watershed Protection** Austin Resource Recovery

d. Identify case studies for demand and supply side options for inclusion in report e. Identify emerging issues with supply and demand management options f. Develop iterative planning cycle for revisiting issues and building the framework and institutional capacity for fostering innovation **Task 11 Work Products** • Supply and demand management plan recommendations • Updated short-term tiered drought management plan • Medium and long term plan recommendations • Case studies for demand and supply side options	Neighborhood Housing and Community Development Office of Innovation Office of Sustainability Parks and Recreation
Task 12 Develop Plan Report a. Develop plan report including implementation plan and process options • Develop plan report, including graphics, diagrams, tables and written materials • Develop implementation plan and process options for regular plan updates and time-lines **Task 12 Work Products** • Final plan report, including implementation plan and process options	**LEAD** **Austin Water** **IWRP Consultant** **PARTNERS** **2015 Task Force** Austin Energy Watershed Protection Austin Resource Recovery Neighborhood Housing and Community Development Office of Innovation Office of Sustainability Parks and Recreation

I would suggest the following process for doing this study. I would have the Consultant work on and deliver each section in the form of a Draft Technical Memorandum. After review by AWU, the Draft Technical Memorandum could be circulated to the Task Force for review, questions and possible revisions. After this process, we could consider that piece complete and then we move on to the next piece. Some pieces may be able to be worked on in parallel. This way each piece is kind of vetted before the next piece is started, Keeps us from getting ahead of ourselves and heading going down paths that we do not intend to.