



WATER FORWARD

INTEGRATED WATER RESOURCE PLAN

Future Water Supply Needs and Strategies to Meet Them

February 8, 2017



Agenda

- Purpose of Integrated Water Resource Plan
- Existing water supplies
- Water demand forecast
- Preliminary water needs analysis
- Q&A
- Options and portfolios
- Q&A
- Dot exercise

Water Forward

Integrated Water Resource Plan (IWRP)

- Austin Water is leading the development of a 100 year water plan that reflects our community's values
- Goal: Ensure a diversified, sustainable, and resilient water future, with strong emphasis on water conservation
- We are seeking your input on the plan
 - Focus today is on demand management strategies and supply options

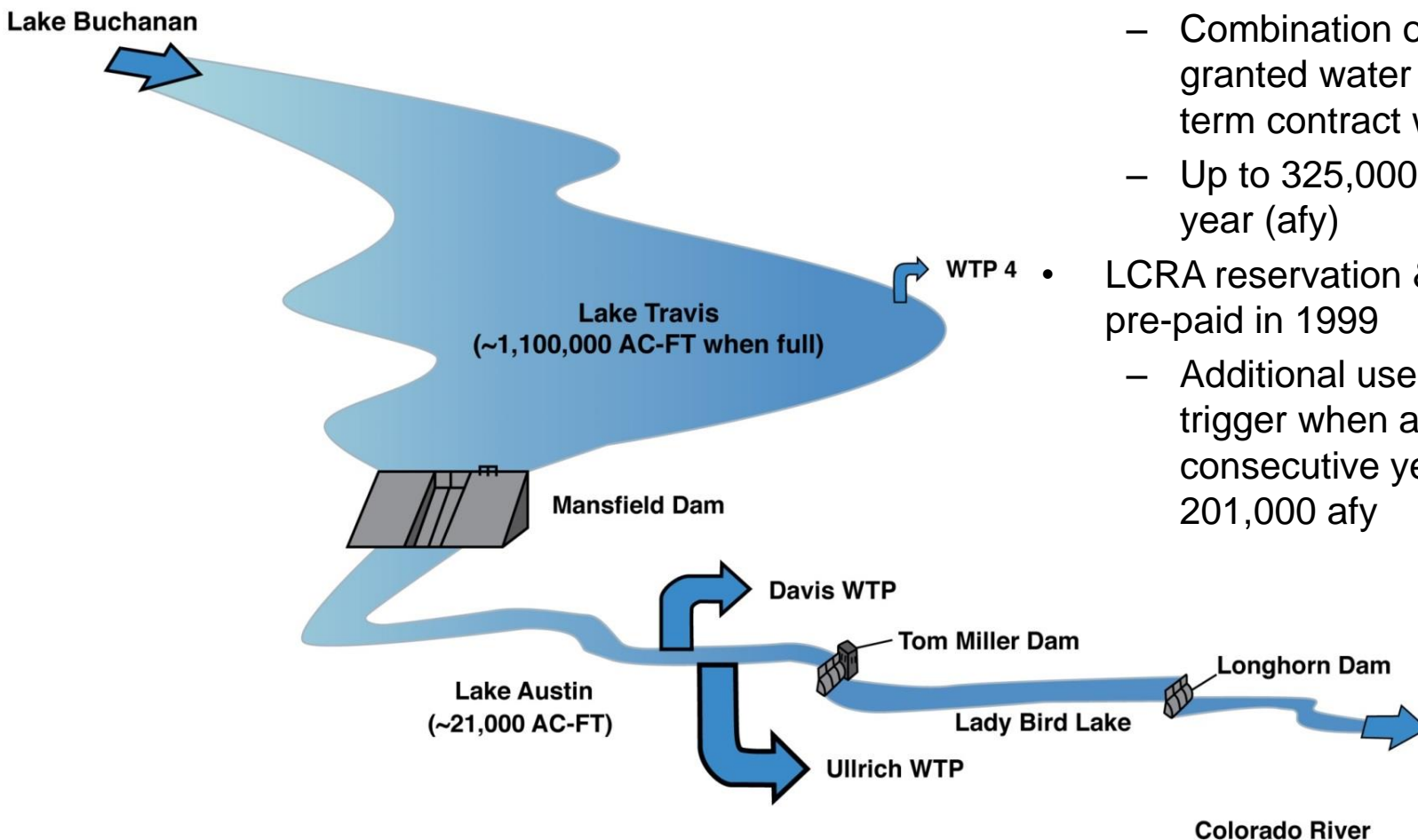
Water Forward

Integrated Water Resource Plan (IWRP)

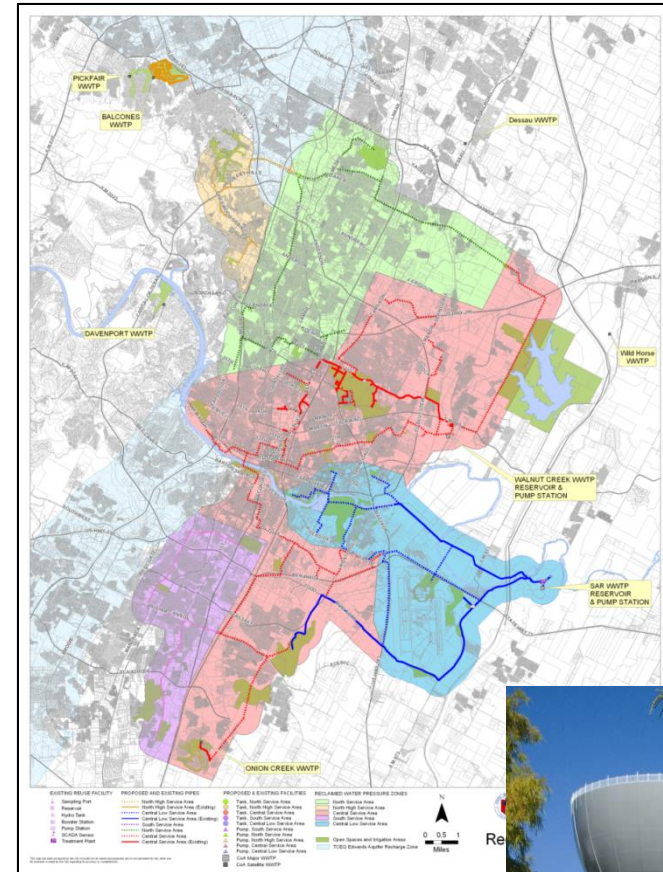
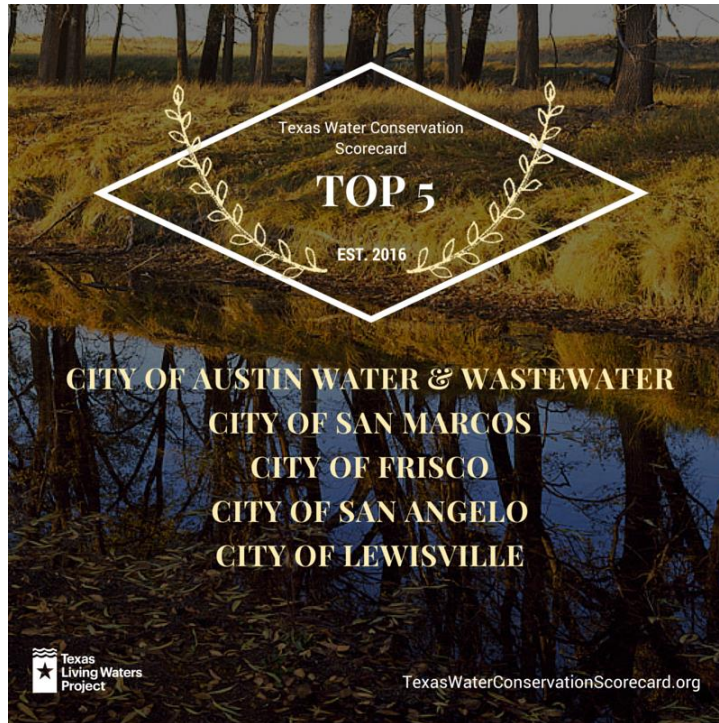
- Incorporates planning for drought and climate change
- Council-appointed Task Force meets monthly
- Interdepartmental coordination and coordination with the community to make sure plan is implementable
- Plan projected to be completed in 2018 with planned updates on a five year cycle

Austin Water Supply

- Colorado River:
 - Combination of State-granted water rights & long-term contract with LCRA
 - Up to 325,000 acre-feet per year (afy)
- LCRA reservation & use fees pre-paid in 1999
 - Additional use payments trigger when average for 2 consecutive years exceeds 201,000 afy



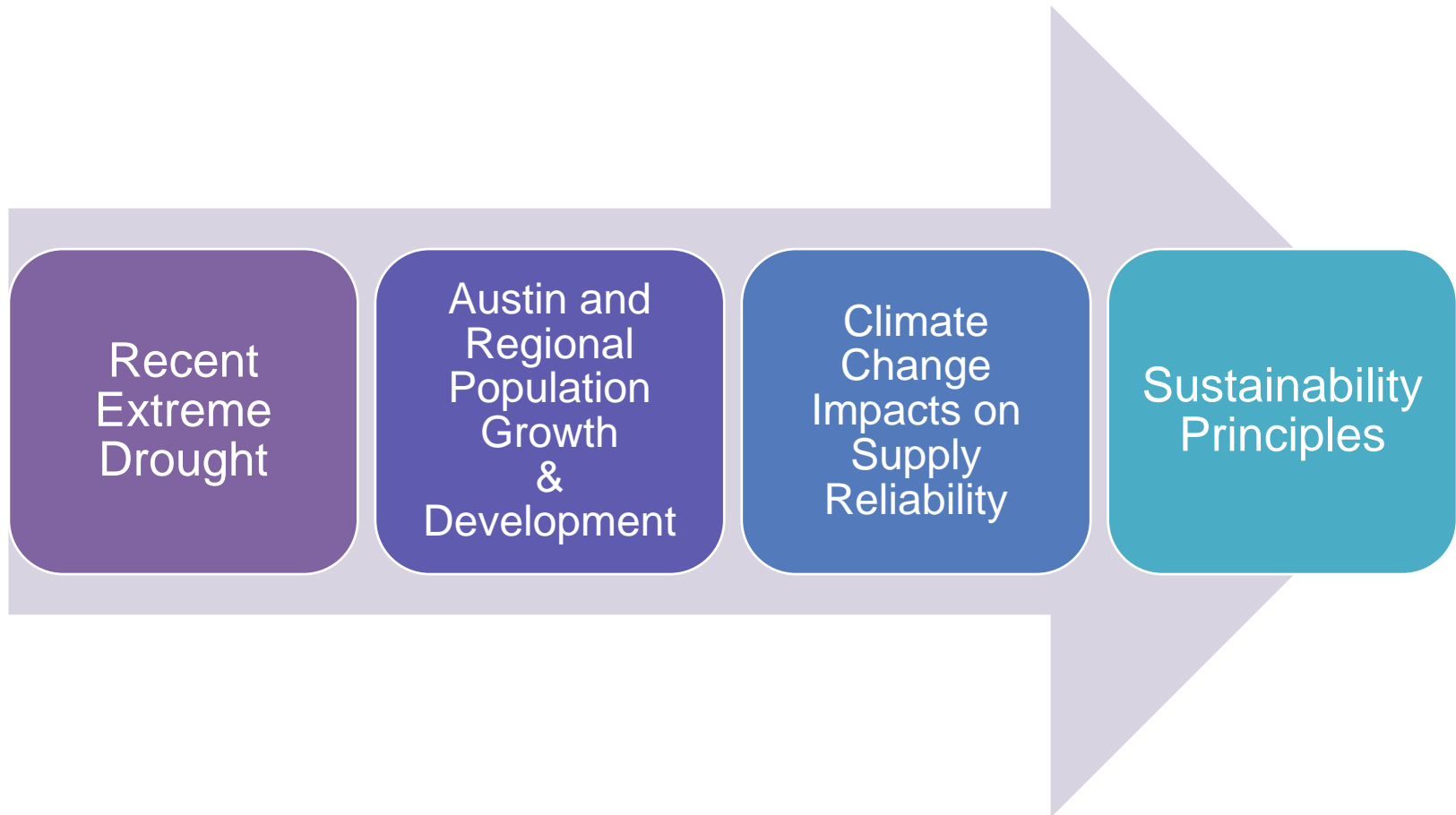
Austin is Texas' Top Water Conservation Scoring Utility



Texas Living Waters Project:
Partnership of the Sierra Club Lone Star
Chapter, National Wildlife Federation, and
Galveston Bay Foundation

Reclaimed Water Master Plan

Drivers for Austin's IWRP

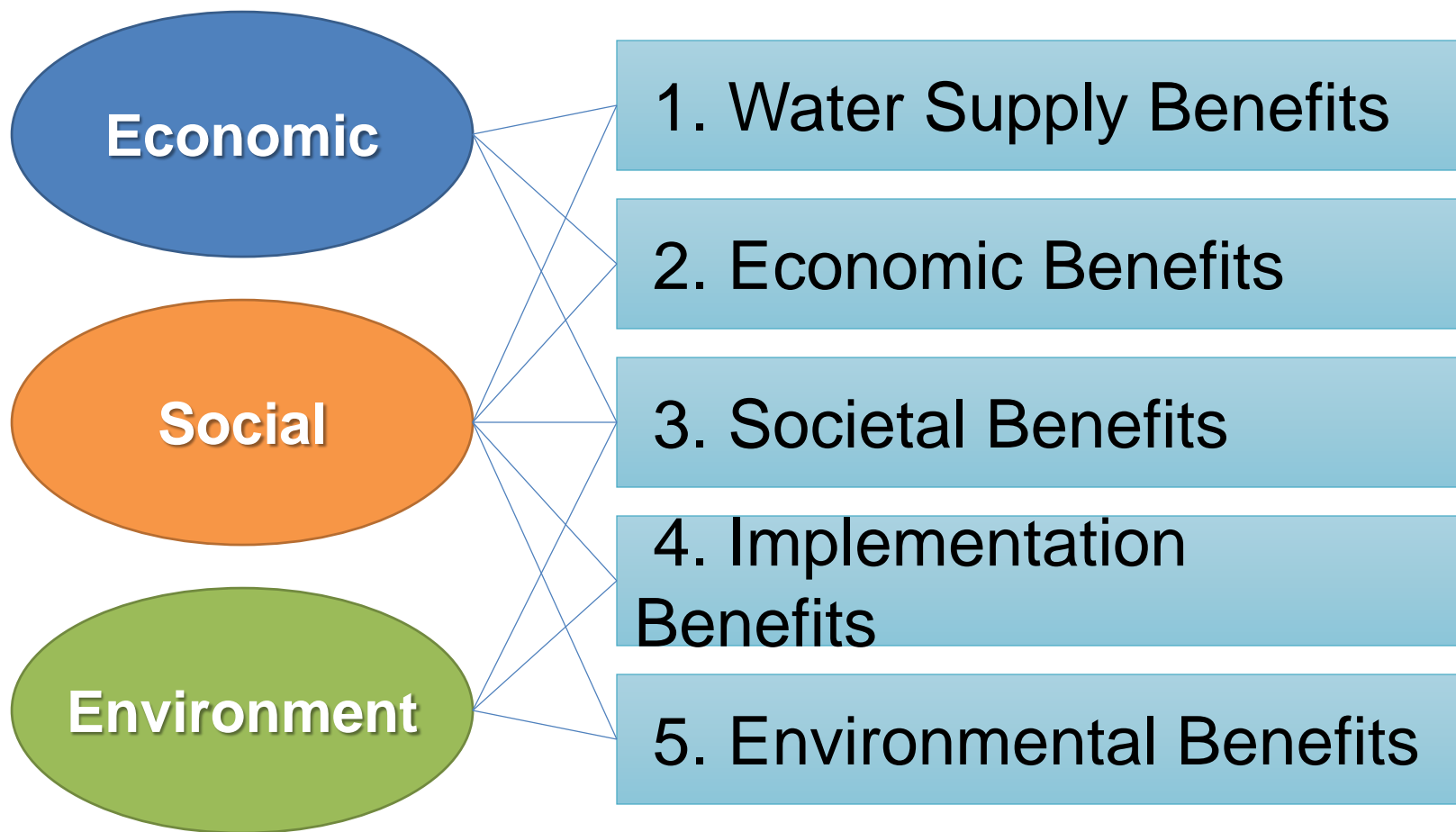


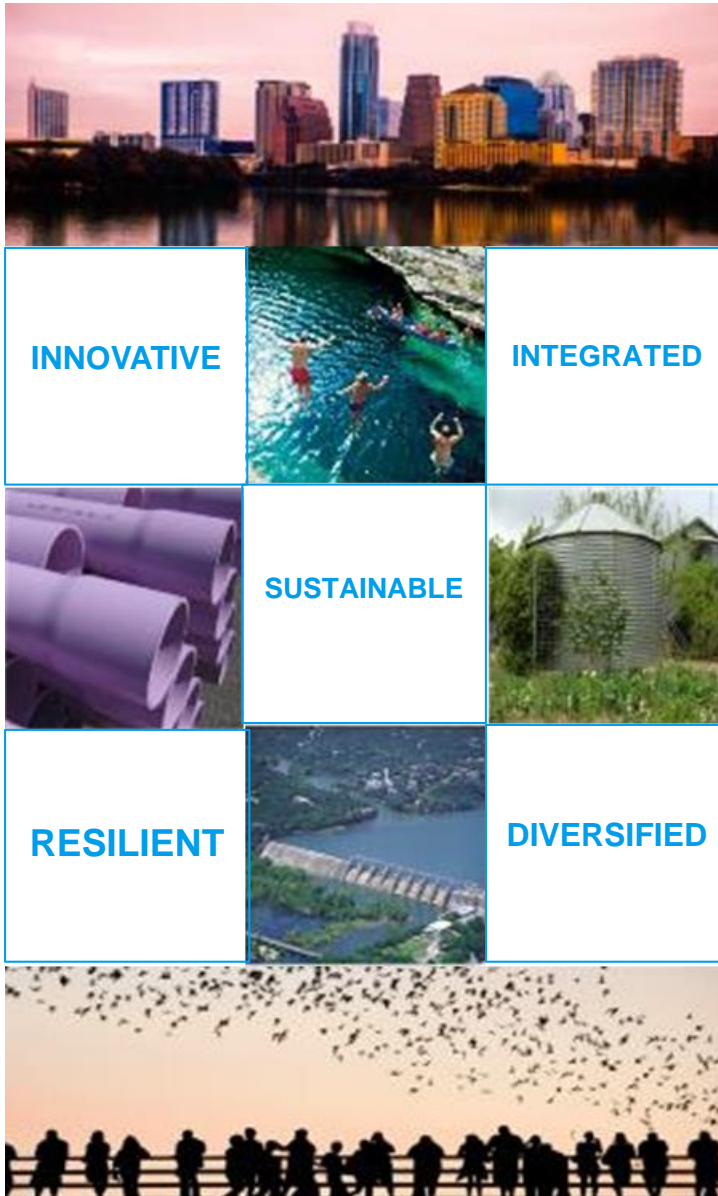
Development of Austin's IWRP was a key recommendation from
2014 City Task Force on Water Resources

Five IWRP Objectives Aligned with the Principles of Sustainability

Sustainability Principles

IWRP Objectives





Public Workshops

- **Workshop #1 – September 6**
 - Overview of IWRP and Objectives
- **Workshop #2 – February 8:**
 - Future Water Supply Needs and Strategies to Meet Them
- **Workshop #3 – Summer 2017:**
 - Portfolio Themes
- **Workshop #4 – Early 2018:**
 - Draft Plan Recommendations

Workshop 1: What we heard

We're
moving in
the right
direction

Want to
see return
on
investment

Reliability
is important

Affordability
and equity
are
important

Balance
short term
and long
term
planning

Concern
about climate
change

Support for
distributed
and demand
management
options

Targeted stakeholder outreach meetings

- Series of three stakeholder meetings held in January 2017 to discuss demand management options focusing on:
 - Landscape transformation and irrigation efficiencies
 - Alternative water ordinances and incentives
 - Development and plumbing ordinances and incentives
- Brought in landscaping, irrigation, and plumbing industry experts, large volume water users, environmental groups, development community representatives

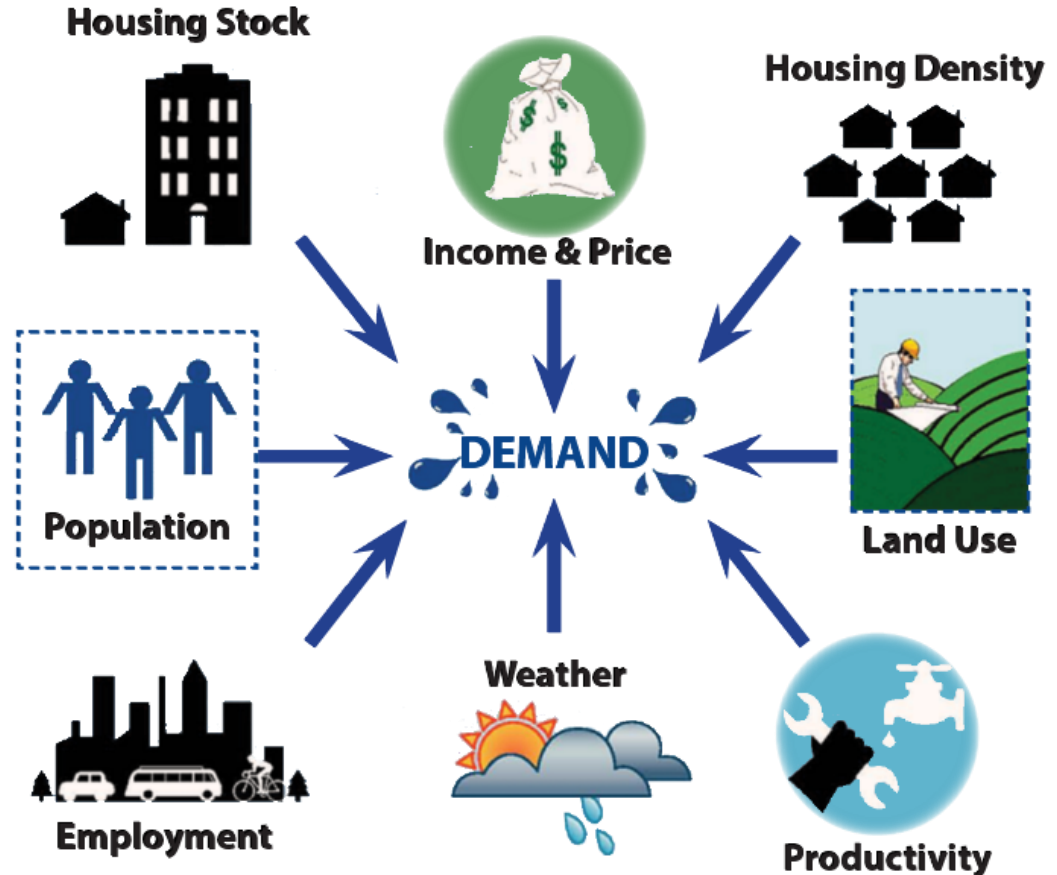
How Public Input will be Incorporated

- Understanding of values and perspectives of what is important
- Feedback on demand-side and supply-side options
- Feedback on plan recommendations and path forward
- Gauge overall understanding of plan for communication/outreach efforts

Water Demand Forecast

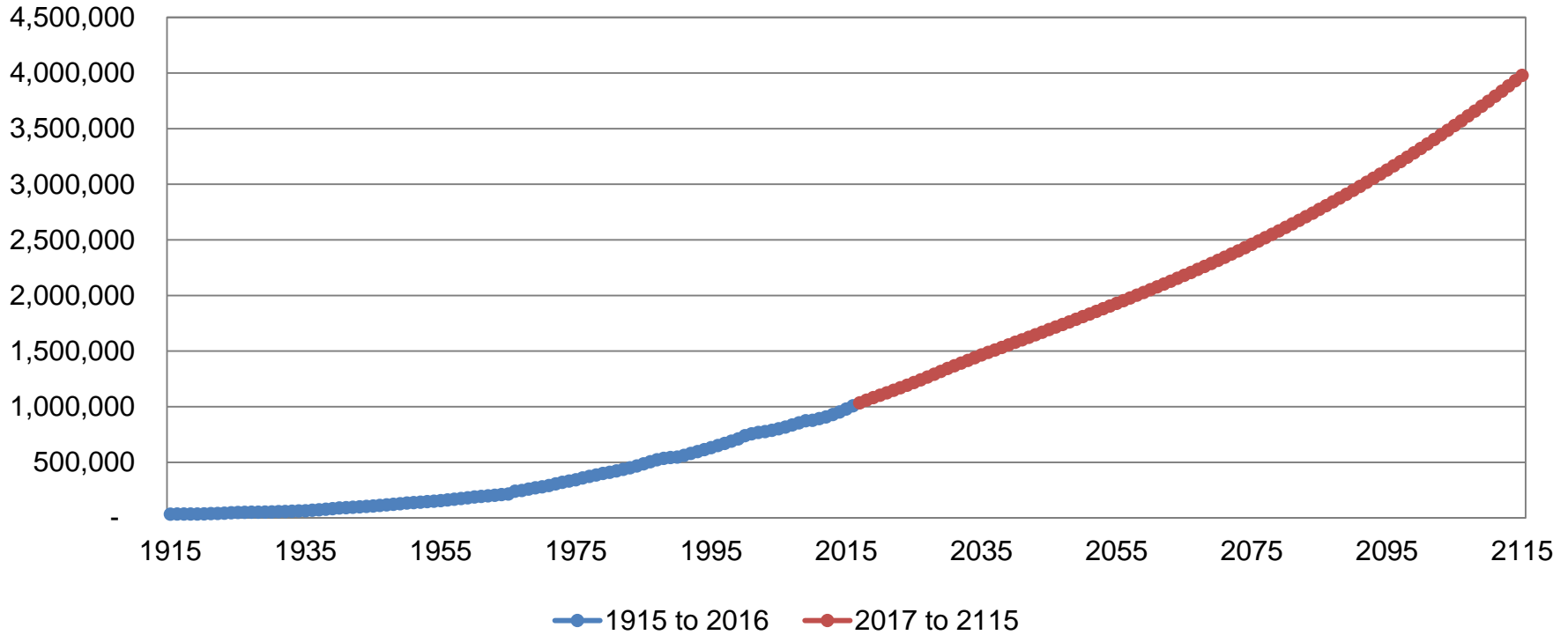
Disaggregated Demand Model

- Demand forecast driven by many different factors
 - How we use water in our homes and businesses
 - Weather
 - Conservation
 - Population growth

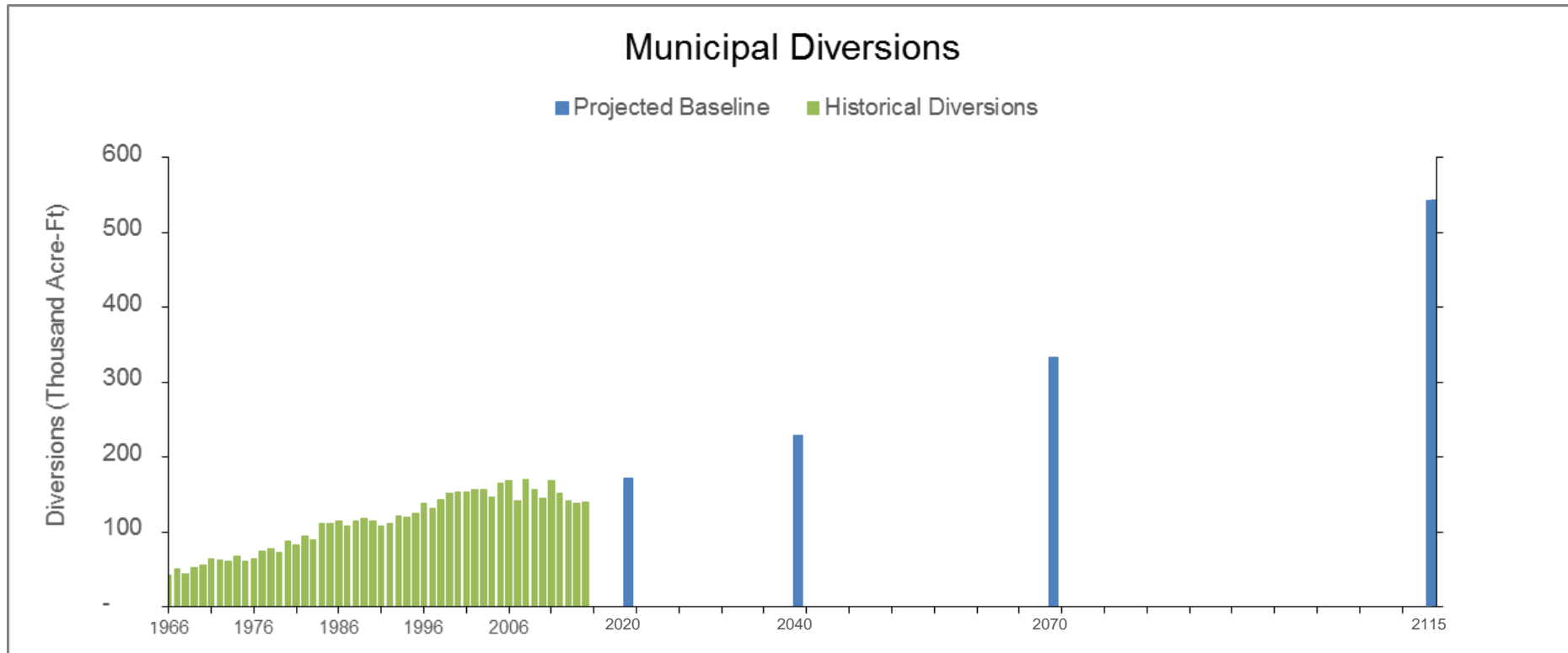


Historical and Future Population Estimates

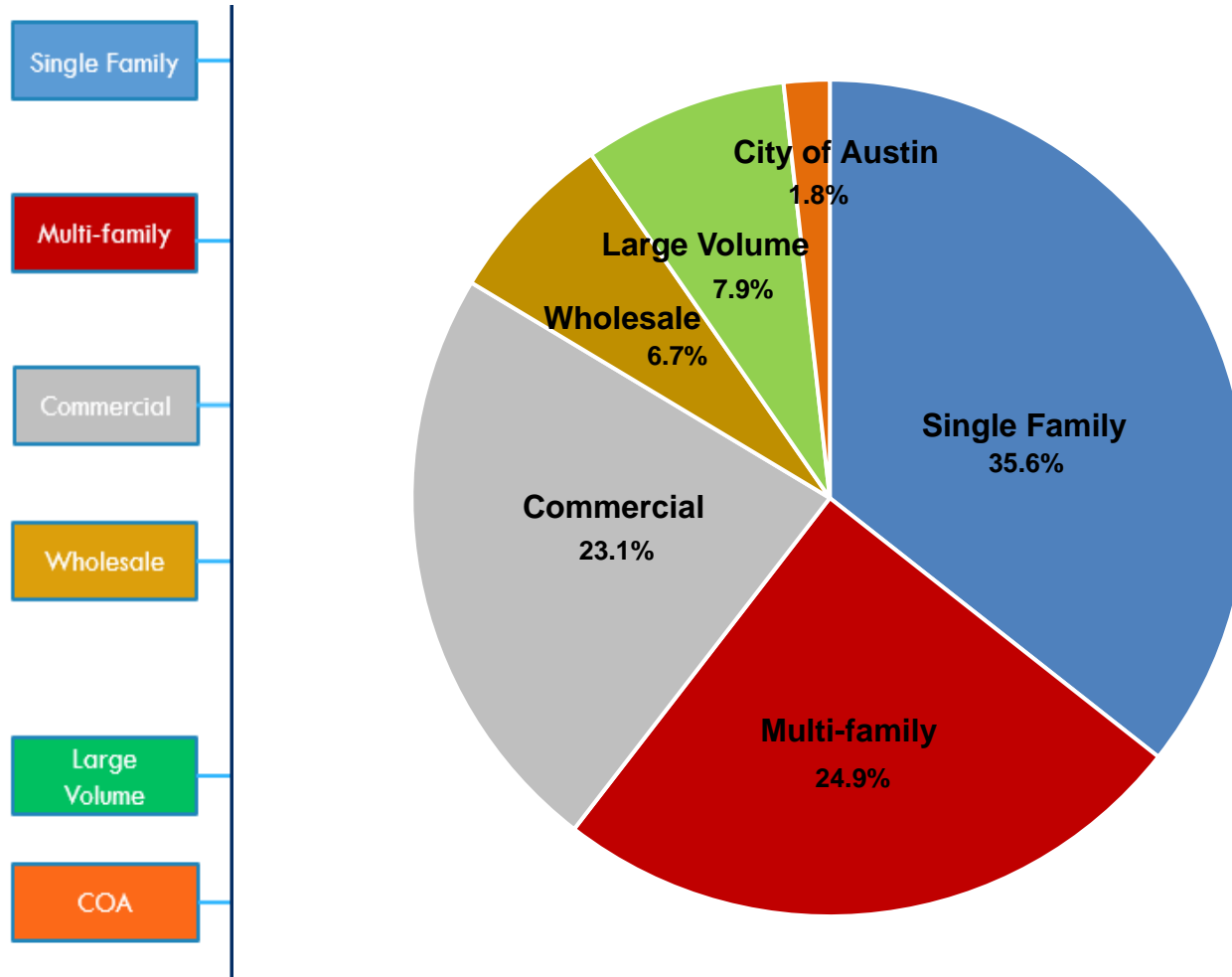
Austin Water Served Population



Baseline Demand Projections – River Diversions

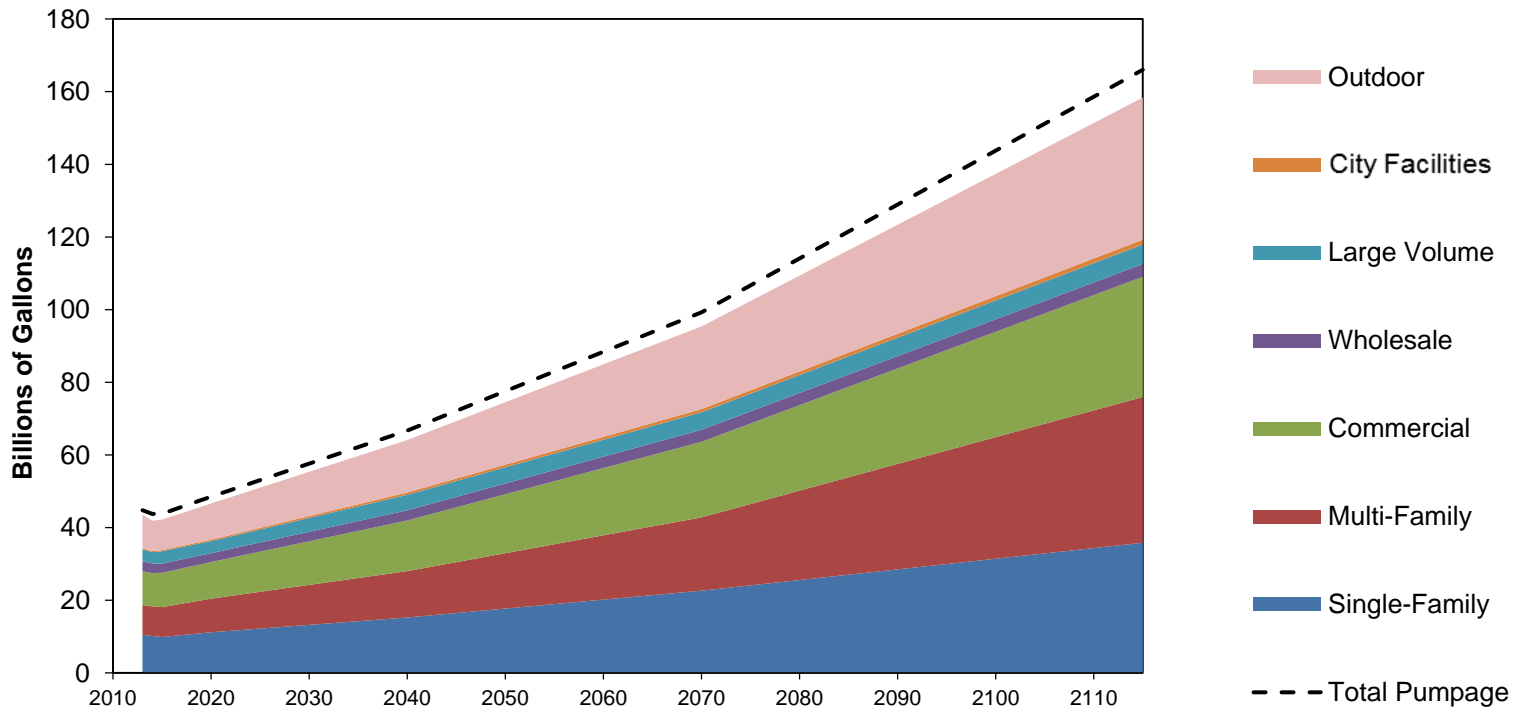


Breakdown of Consumption by Sector

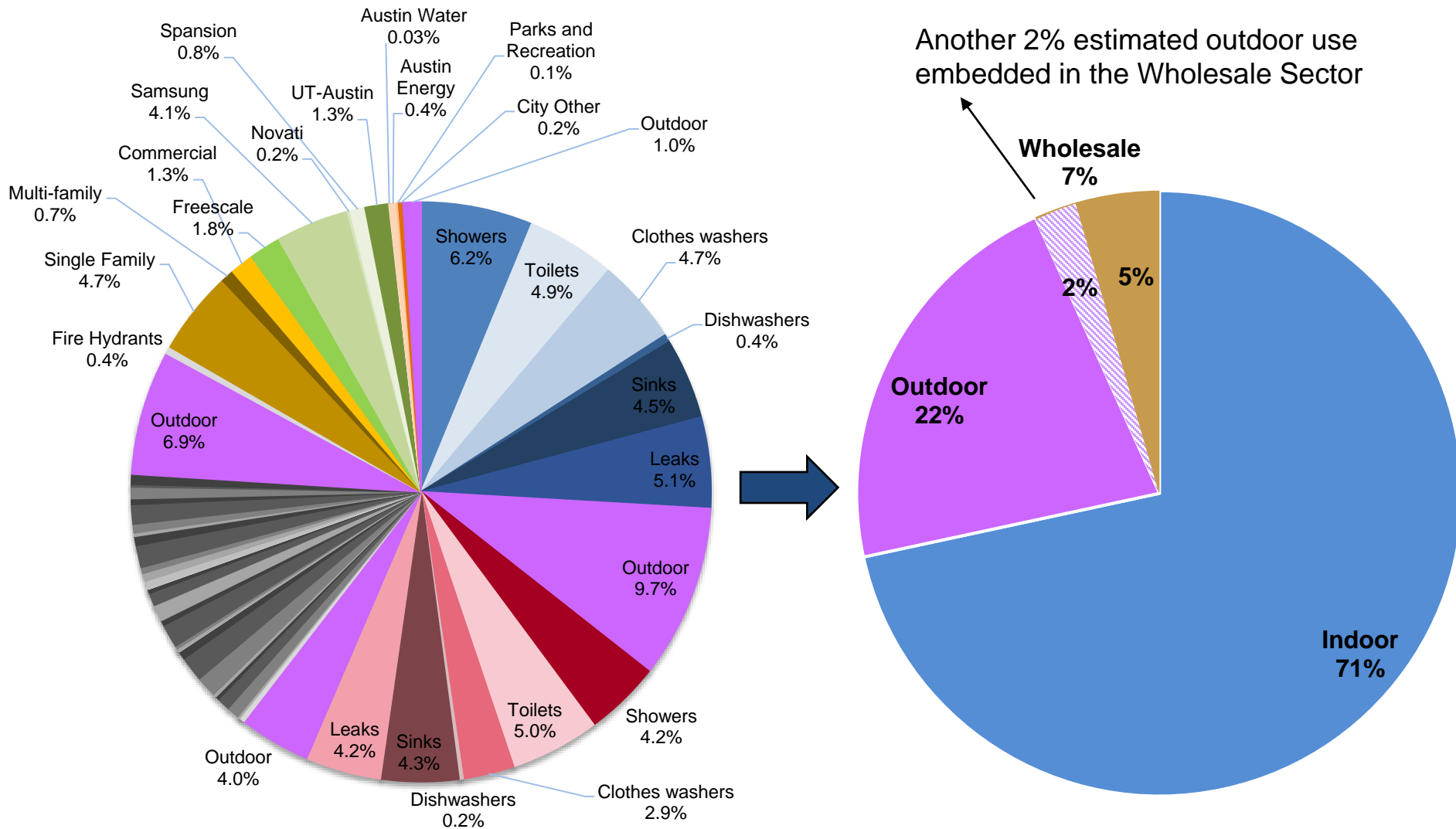


Baseline Demand Projections - Consumption

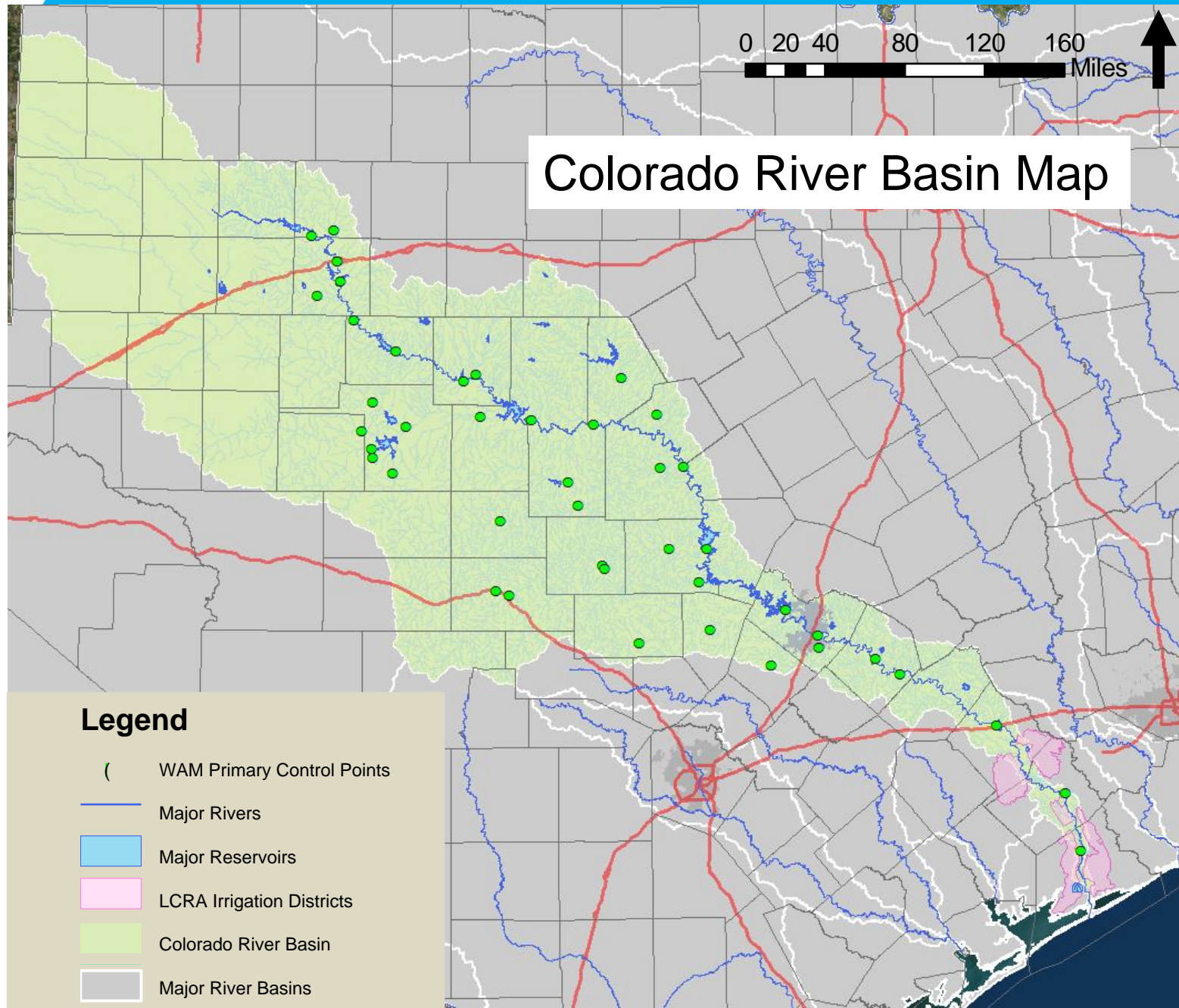
City-Wide Consumption Projections



Indoor vs. Outdoor Consumption



Preliminary Water Needs Analysis

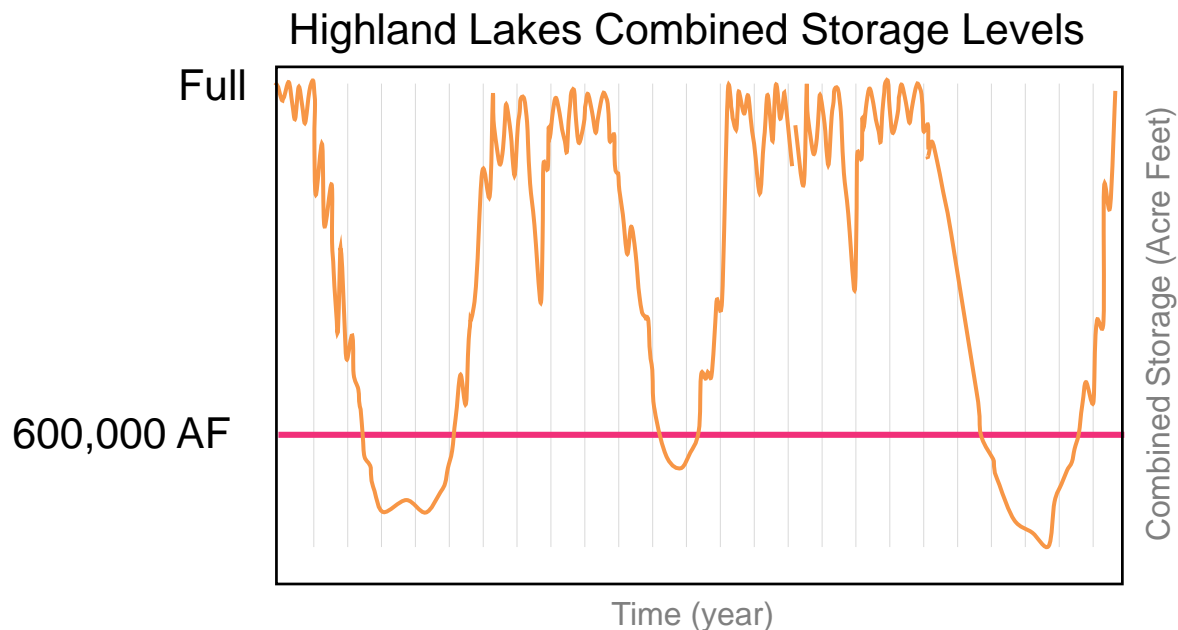


Colorado River Basin Map

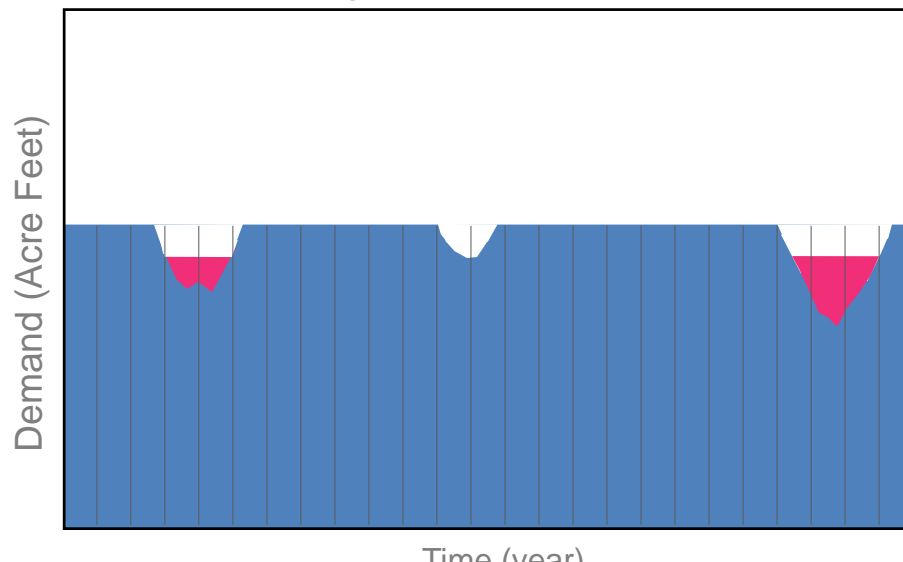
Legend

- () WAM Primary Control Points
- Major Rivers
- Major Reservoirs
- LCRA Irrigation Districts
- Colorado River Basin
- Major River Basins

- Firm supply – 325,000 AF
- Emergency lake level - 600,000 AF triggers cutbacks on use from the river
- Part of the plan is to identify options to reduce the impact of these cutbacks

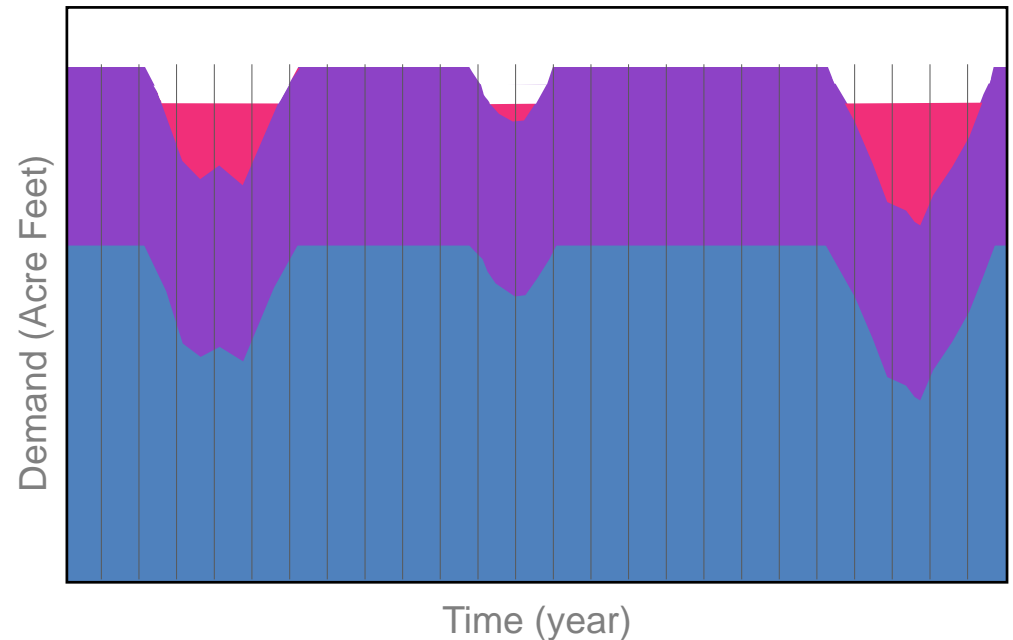


Projected Demands Evaluated Against Period of Record Hydrology



When City of Austin's demands exceed the current 325,000 AF contract with LCRA, additional water supply and/or increased demand management is needed

2115 Demands Evaluated Against Period of Record Hydrology

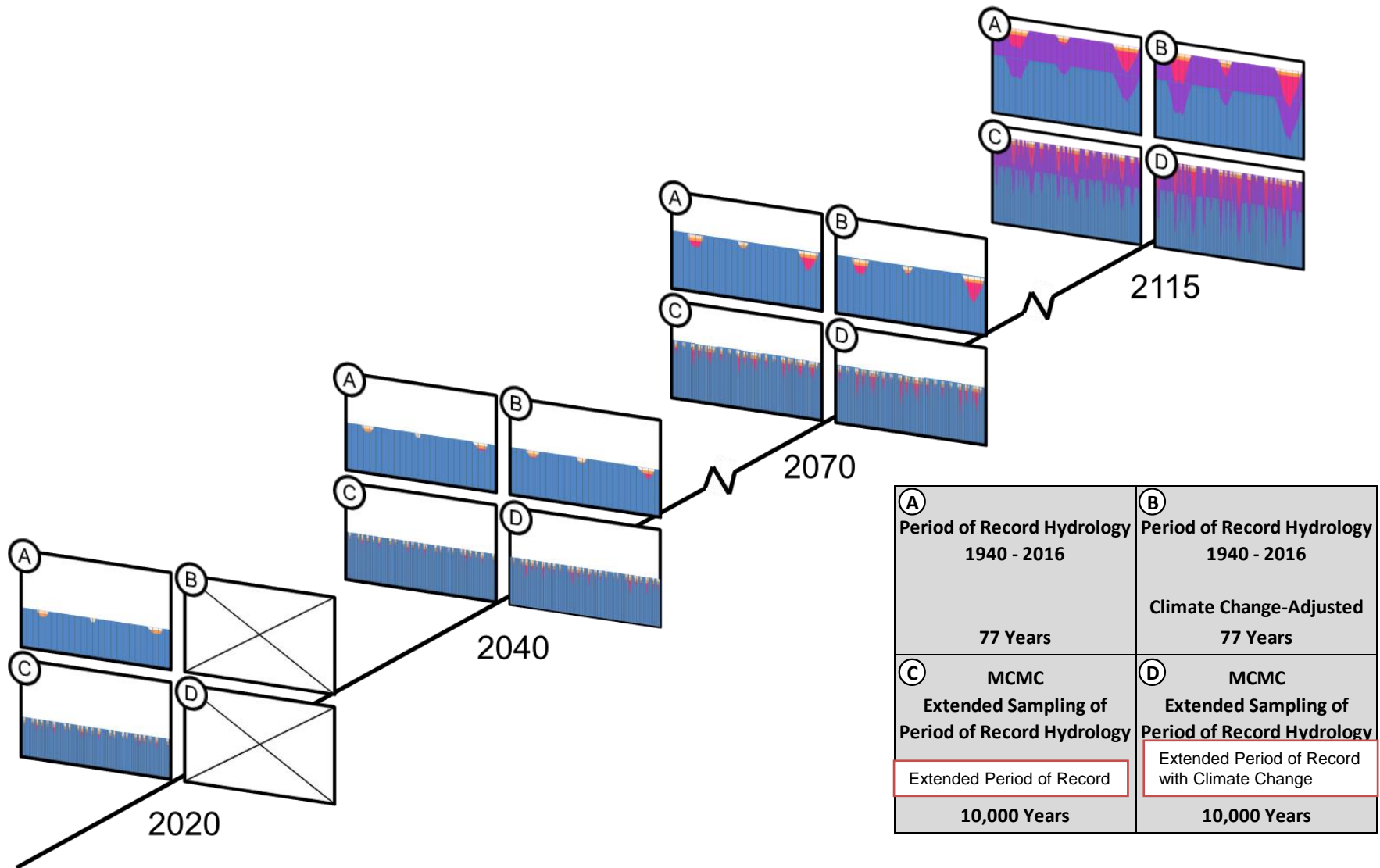


Purple Region = Baseline Demands Above 325,000 AF

<p>(A)</p> <p>Period of Record Hydrology</p> <p>1940 - 2016</p> <p>77 Years</p>	<p>(B)</p> <p>Period of Record Hydrology</p> <p>1940 - 2016</p> <p>Climate Change-Adjusted</p> <p>77 Years</p>
<p>(C)</p> <p>Extended</p> <p>Period of Record Hydrology</p> <p>10,000 Years</p>	<p>(D)</p> <p>Extended</p> <p>Period of Record Hydrology</p> <p>Climate Change-Adjusted</p> <p>10,000 Years</p>

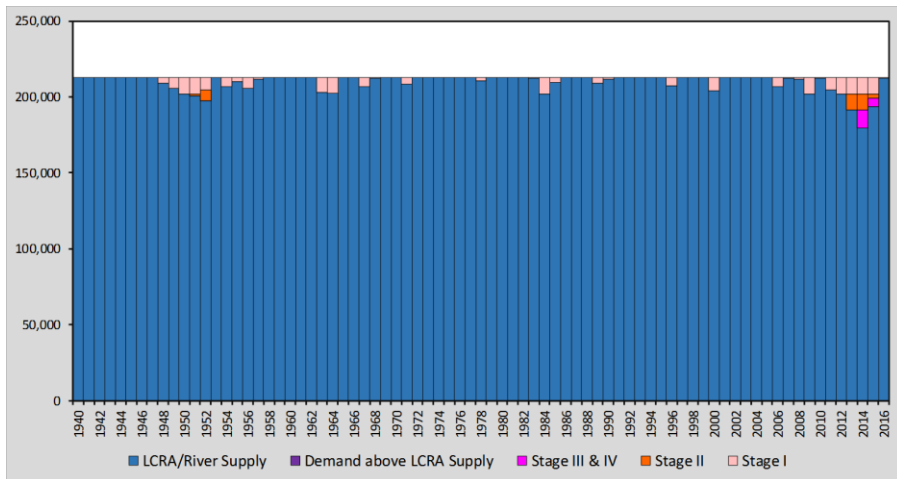
Water Forward

Planning For Change and Uncertainties

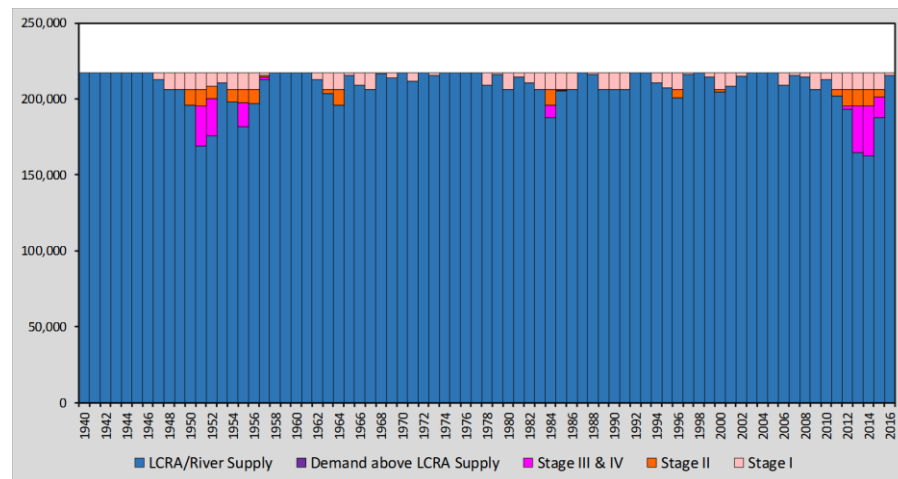


2040 City of Austin Needs Summary

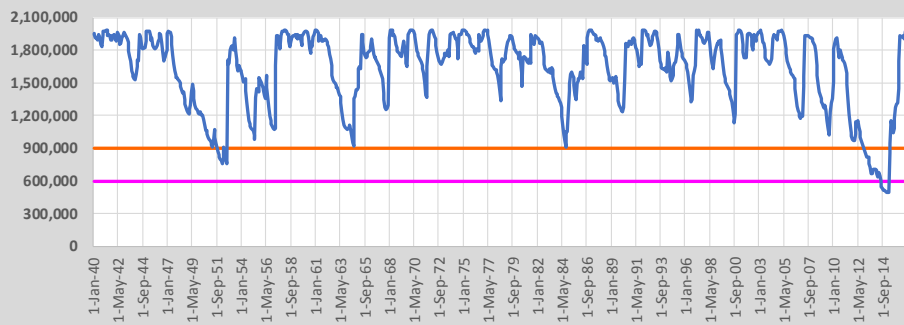
A Period of Record (77 years)



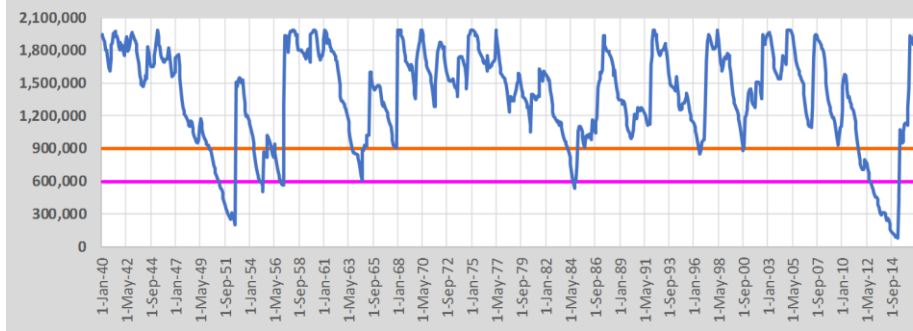
B Period of Record (77 years) Climate-Adjusted



**Combined Storage of Buchanan and Travis
2040 Demands and Stationary Climate**

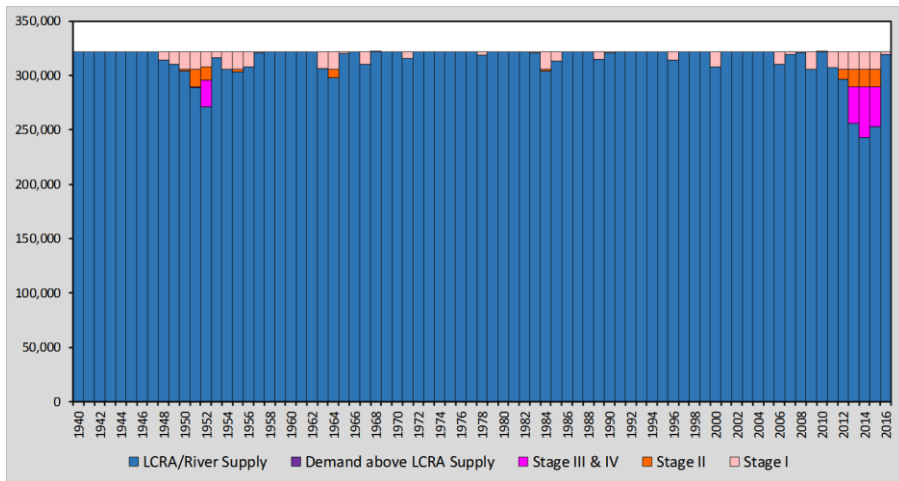


**Combined Storage of Buchanan and Travis
2040 Climate Adjusted Demands and RCP 8.5 Hydrology**

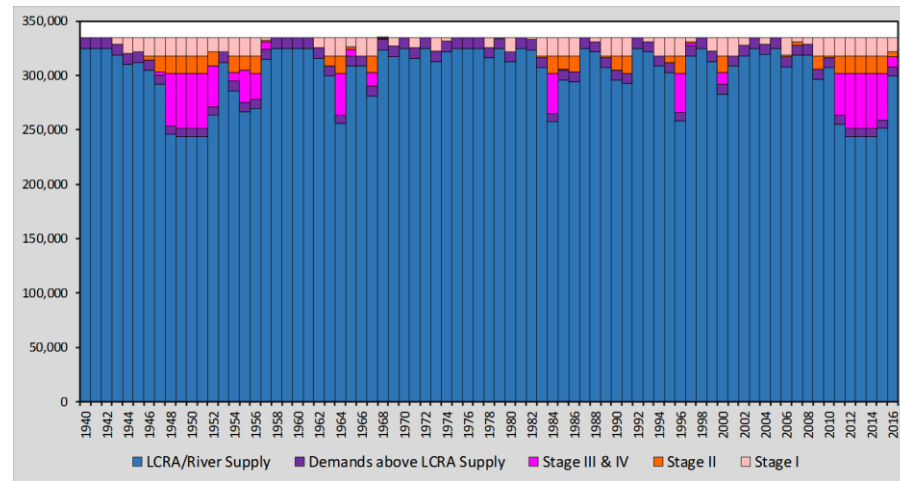


2070 City of Austin Needs Summary

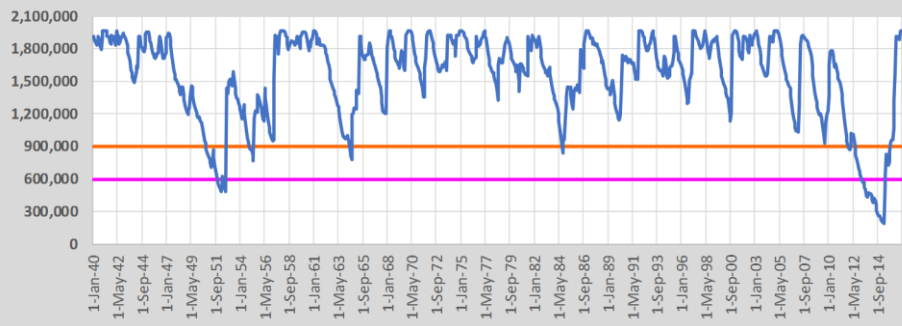
A Period of Record (77 years)



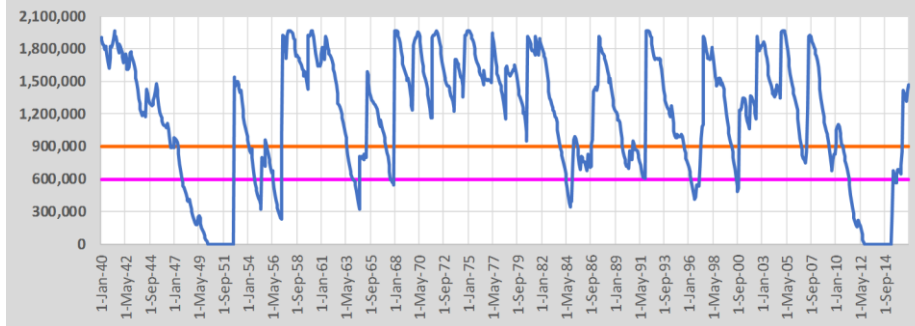
B Period of Record (77 years) Climate-Adjusted



**Combined Storage of Buchanan and Travis
2070 Demands and Stationary Climate**

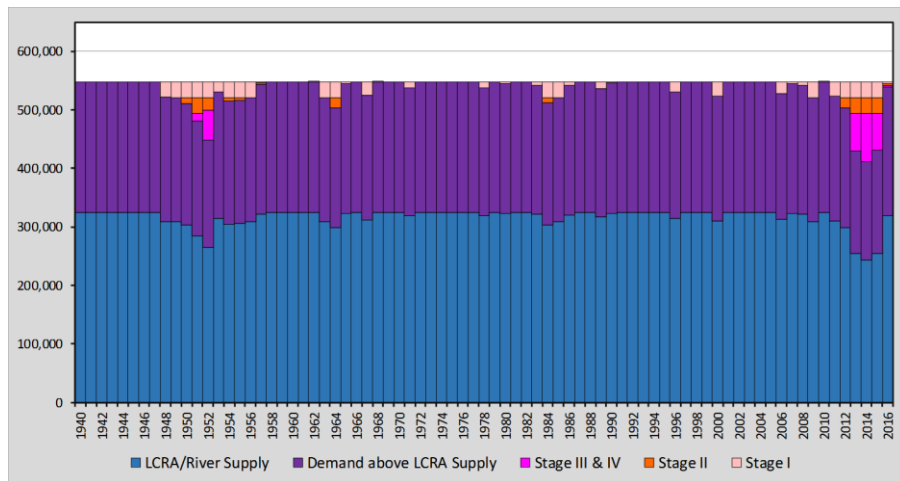


**Combined Storage of Buchanan and Travis
2070 Climate Adjusted Demands and RCP 8.5 Hydrology**

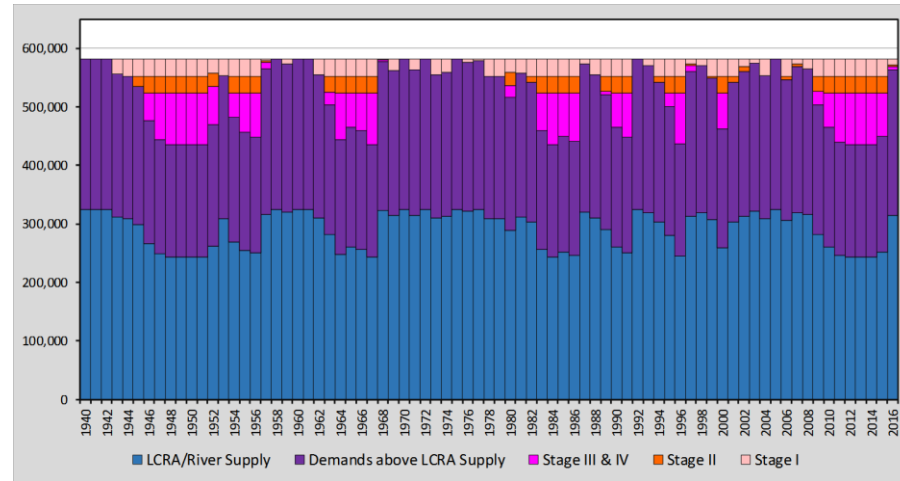


2115 City of Austin Needs Summary

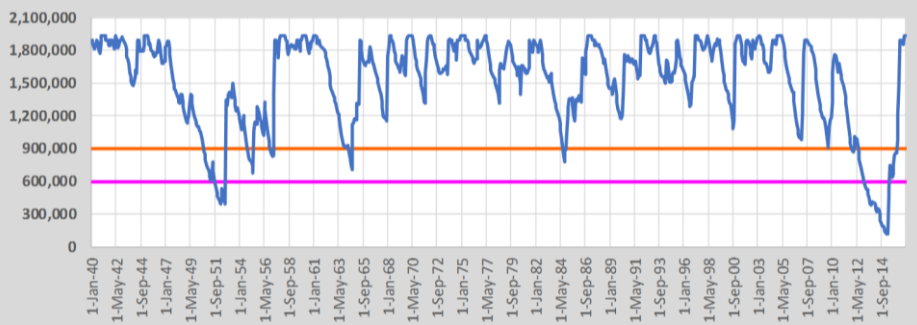
A Period of Record (77 years)



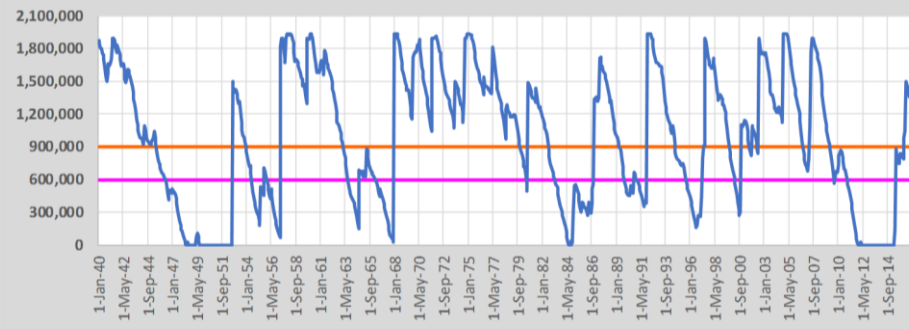
B Period of Record (77 years) Climate-Adjusted



Combined Storage of Buchanan and Travis
2115 Demands and Stationary Climate



Combined Storage of Buchanan and Travis
2115 Climate Adjusted Demands and RCP 8.5 Hydrology

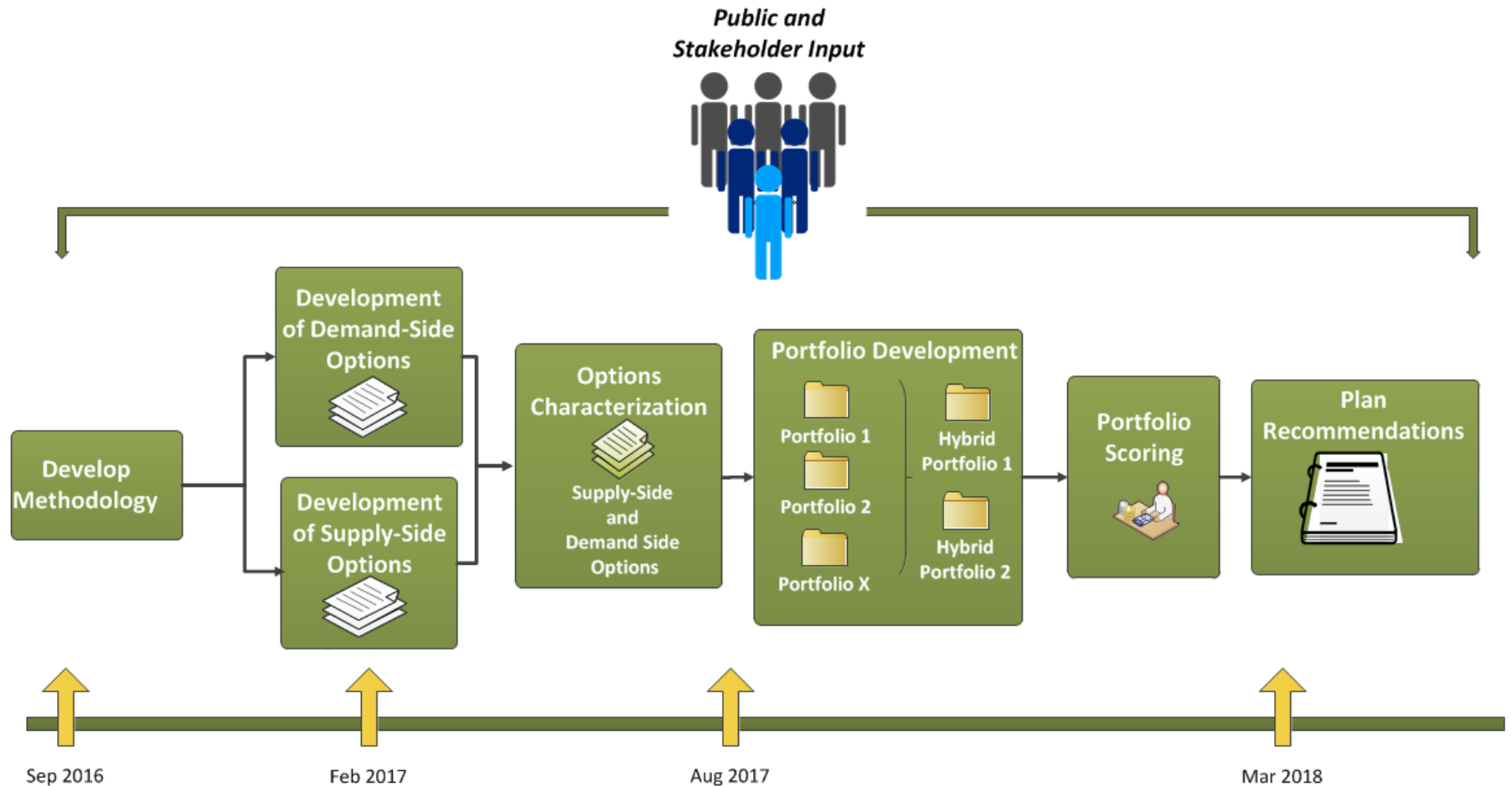


Planning for Droughts Worse than the Recent Drought

- In the past, the worst drought in the region occurred during the 1950s
- The most recent drought from 2007-2016 eclipsed the 1950s drought
 - Inflows in the worst year in the recent drought were 2.5 times lower than what they were in the worst year of the 1950s drought
- Our modeling shows that droughts worse than the 2007-2016 drought are possible

Q&A

IWRP Development Process



Preliminary Demand Management Options

- **Water Loss Control** – reducing water losses in AW's water distribution system through strategies like leak detection, reducing main break response time, and performing water main replacements
- **Automated Metering Infrastructure (AMI)** – New meters that provide real time information on customer water use to help encourage efficient water use and identify possible home leaks or other high uses of water that can be corrected by the homeowner

Preliminary Demand Management Options

- **Landscape Transformation** – ordinances and/or incentives to encourage changing turf to more water efficient landscaping or limit the amount of turf on properties.
- **Irrigation Efficiency** – ordinances and/or incentives to encourage the use of water efficient landscape irrigation systems

Preliminary Demand Management Options

- **Commercial/Institutional/Industrial Conservation**
– ordinances and/or incentives to encourage more efficient water use for cooling towers/boiler feeds, AC condensate recovery, swimming pools/decorative fountains, as well as disclosure of inefficient water use fixtures at point of sale
- **Plumbing Fixture Efficiency** – ordinances and/or incentives to encourage use of Energy Star and WaterSense labeled equipment, and for replacement of non-water efficient plumbing fixtures

Preliminary Demand Management Options

- **Onsite Reuse of Water for Non-Potable Uses** – ordinances and/or incentives to encourage onsite rainwater harvesting, greywater systems, and dual plumbing (for new developments) in order to reduce the use of drinking water for landscape irrigation and toilet flushing
- **Water Use Benchmarking** – programs to encourage water efficiency benchmarking for new developments and reporting of water use for large building owners

Preliminary Demand Management Options

- **Customer Education/Outreach** – programs that continue to educate AW water customers on the conservation and value of water
- **Water Rates/Water Fees** – explore how changes in water rates and water fees may further encourage water use efficiency while maintaining affordability and equity

Preliminary Supply Options

- **Expanded Reclaimed Water System** – expansion of AW's "purple-pipe" reclaimed water system for non-potable uses like irrigation, cooling towers, and toilet flushing
- **Decentralized Options for Wastewater Reuse** – use of neighborhood satellite wastewater plants or onsite (building-scale) wastewater treatment for non-potable uses like toilet flushing, cooling towers, and landscape irrigation

Preliminary Supply Options

- **Indirect Potable Reuse** – various strategies to transport highly treated reclaimed water via natural systems like surface water reservoirs or alluvial aquifers for purification to drinking water quality at an existing water treatment plant
- **Direct Potable Reuse** – Purifying highly treated reclaimed water using advanced treatment (similar to desalination treatment) to supplement drinking water supply

Preliminary Supply Options

- **Rainwater and Stormwater Capture** – capture and storage of rainwater and stormwater for various uses like irrigation and toilet flushing (neighborhood-scale)
- **Aquifer Storage and Recovery** – storing excess surface water during wet years in underground aquifers for later use during dry years

Preliminary Supply Options







- **Additional LCRA Supply/Enhanced Lake Operations/Capture of Stormwater Inflows** – additional LCRA supply and various strategies at Lake Austin and Lady Bird Lake to increase ability to draw water from reservoir storage and minimize lake evaporation during dry years
- **Enhanced Off-Channel Storage at Walter E. Long Lake** – if Decker Power Station is taken off line, Decker Lake could be used for additional storage that could provide additional water during dry years

Preliminary Supply Options

- **Groundwater** – includes brackish groundwater desalination (removing salts from brackish groundwater using advanced water treatment for new water supply) and conventional groundwater options
- **Seawater Desalination** – removing salts from ocean water using advanced water treatment for new water supply

Q&A

Dot Exercise

Water Forward	 			
Demand Management Category	Like it 	Don't like it 	Okay with it 	Need more info 
Water Loss Control – Reducing water losses in AW’s water distribution system through strategies like leak detection, reducing main break response time, and performing water main replacements				
Automated Metering Infrastructure (AMI) – New meters that provide real time information on customer water use to help encourage efficient water use and identify possible home leaks or other high uses of water that can be corrected by the homeowner				

Thank You

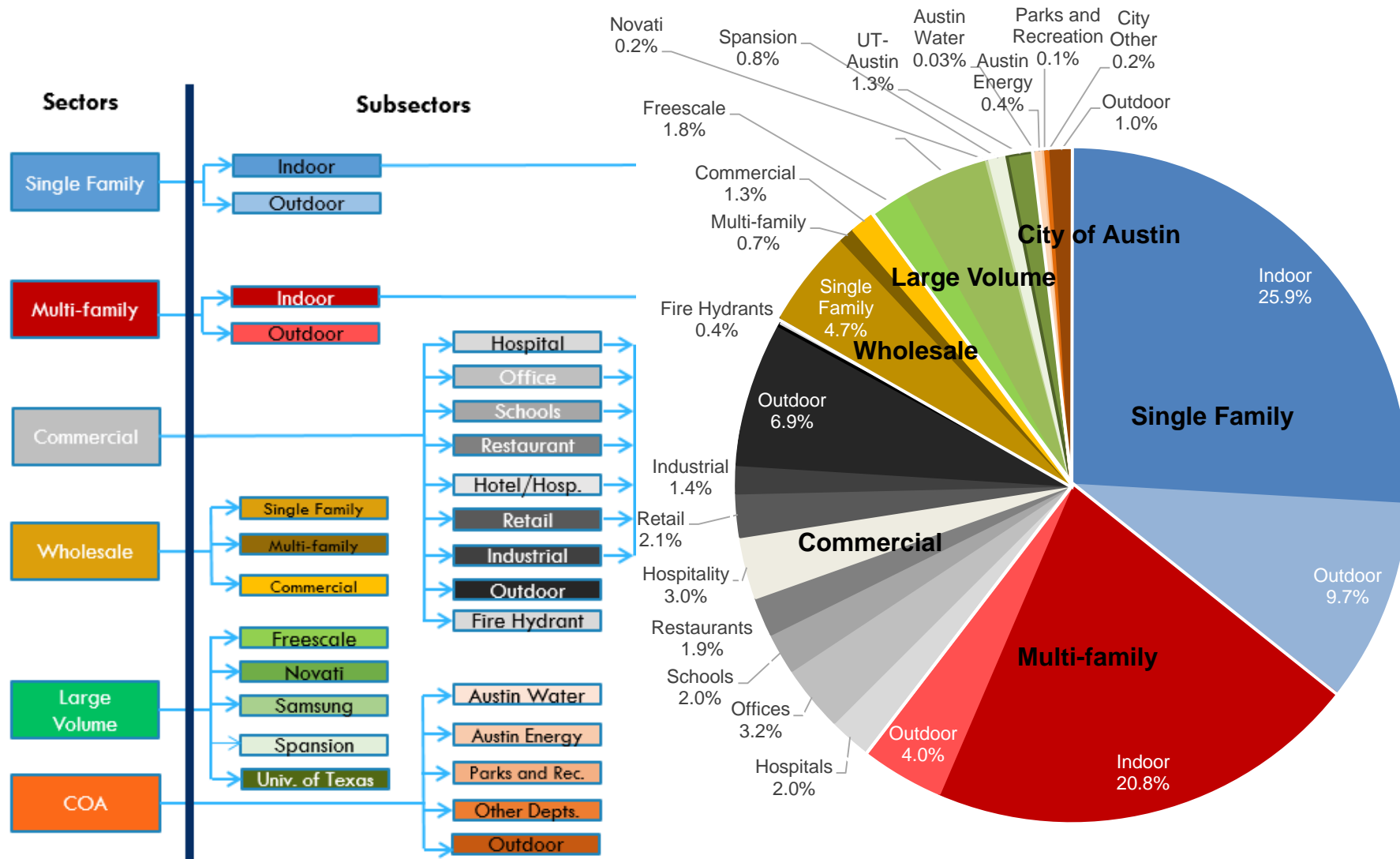
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find more information at:

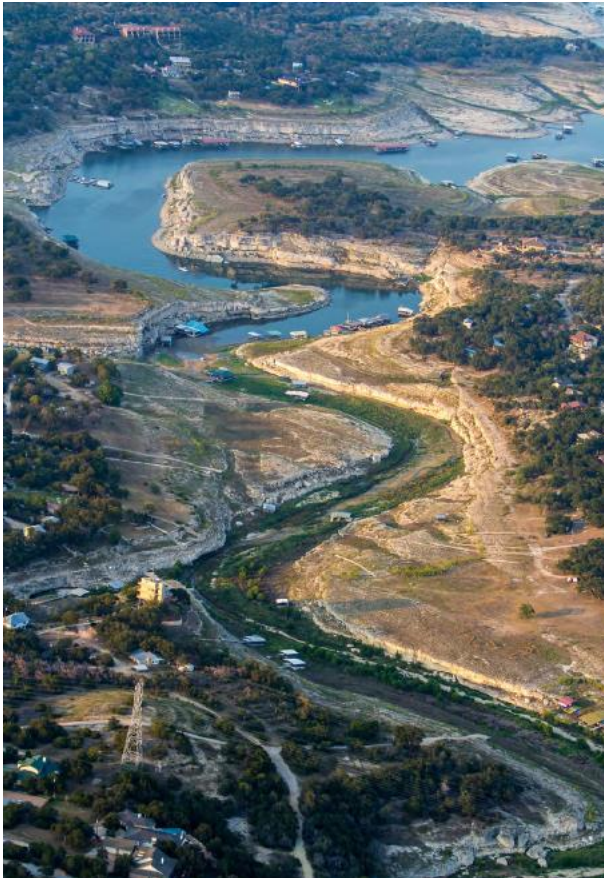
austintexas.gov/waterforward

IWRP Guiding Principles

- Recognizing that Colorado River water is Austin's core supply, continue a strong partnership between the City and LCRA to assure its reliability
- Focus on conservation and water use efficiency
- Strengthen long-term sustainability, reliability, and diversity of Austin's water supply through maximizing local water resources
- Avoid severe water shortages during times of drought
- Focus on projects that are technically, socially, and economically feasible
- Continue to protect Austin's natural environment
- Continue to meet/exceed all federal, state and local public health regulations
- Align with Imagine Austin's "Sustainably Manage Our Water Resources Priority Program"
- Maintain coordination and communication with regional partners
- Engage the public and stakeholders throughout the plan development process

Base Year Consumption Subsectors





Planning for uncertainty and change: Droughts

- 2011 the lowest amount of water flowing into the Highland Lakes since they were built
- In a February 2015 press release LCRA announced that:
 - ...“the Highland Lakes are now in a new ‘critical period’ marking the driest conditions on record, eclipsing the 1947-57 drought that until now was the worst on record for this region.”

