



**WATER FORWARD**  
INTEGRATED WATER RESOURCE PLAN

# Future Water Supply Needs and Strategies to Meet Them

April 4, 2017



# Agenda

- Purpose of Integrated Water Resource Plan
- Existing water supplies
- Water demand forecast
- Preliminary water needs analysis
- Q&A
- Water Supply Options
- 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
  - February 8<sup>th</sup> Workshop focused on both demand management and supply options
  - Focus today is to provide additional feedback on supply options

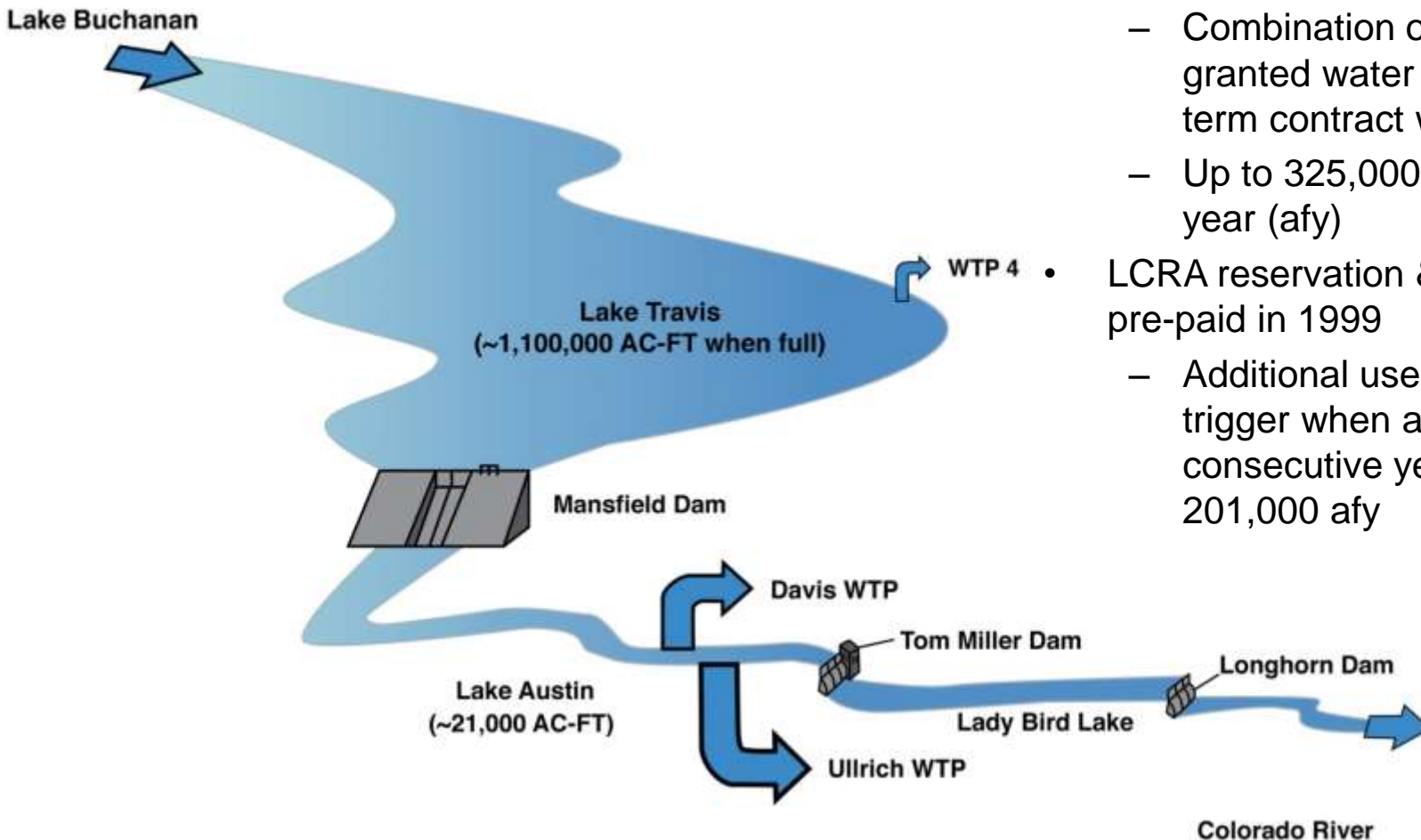
# **Water Forward**

## **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

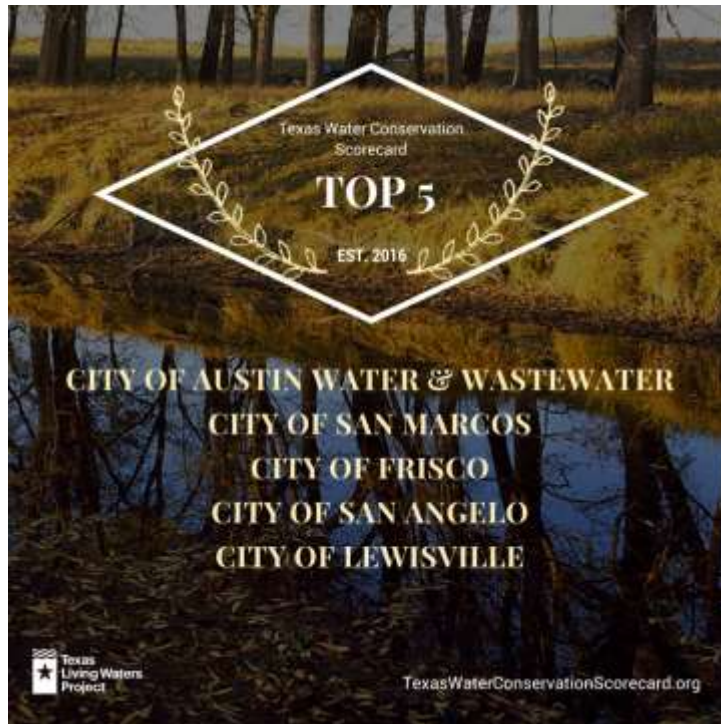
# Austin Water Supply

- 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

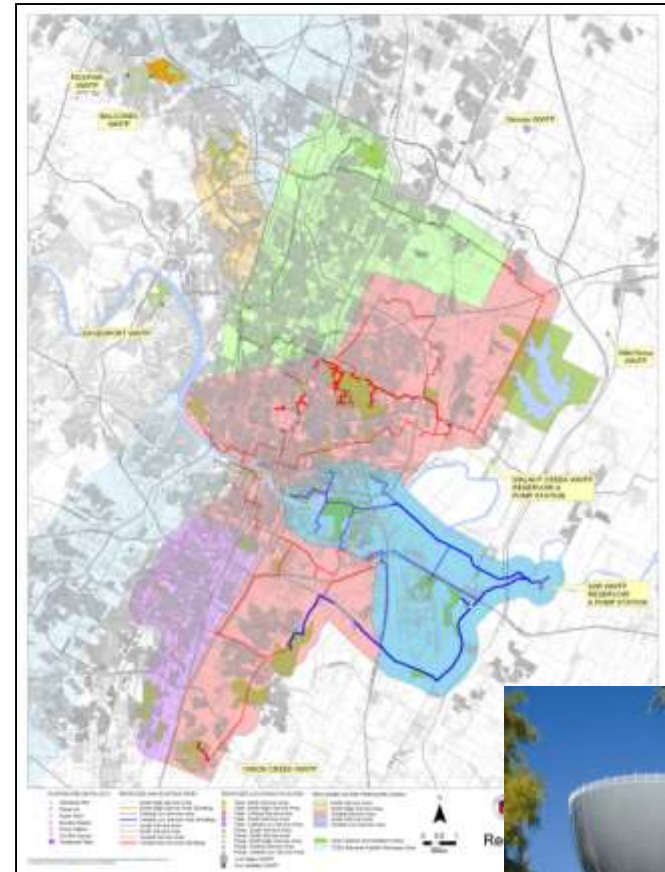




## Austin is Texas' Top Water Conservation Scoring Utility

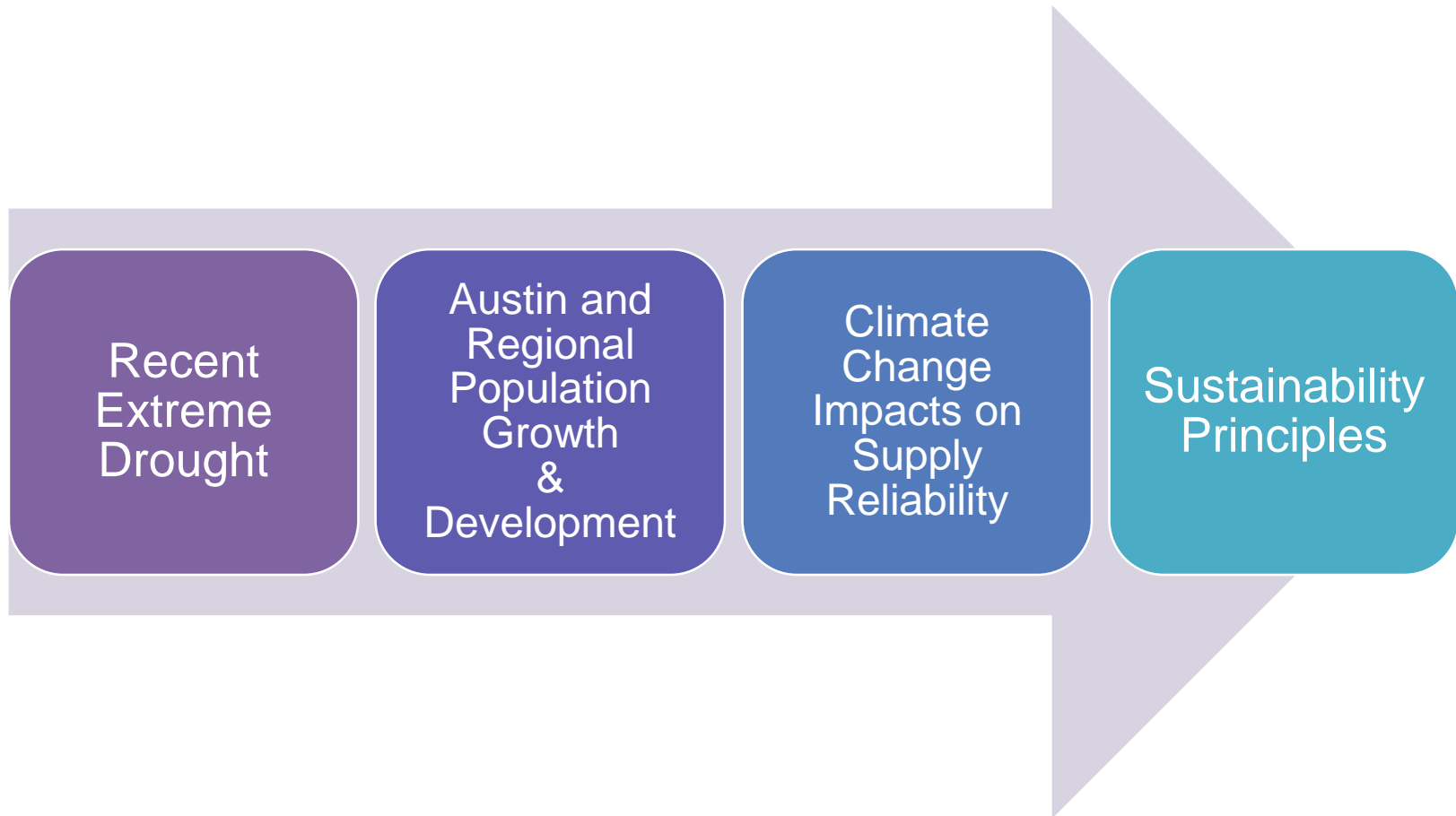


Texas Living Waters Project:  
Partnership of the Sierra Club Lone Star  
Chapter, National Wildlife Federation, and  
Galveston Bay Foundation



Reclaimed Water Master Plan

# Drivers for Austin's IWRP

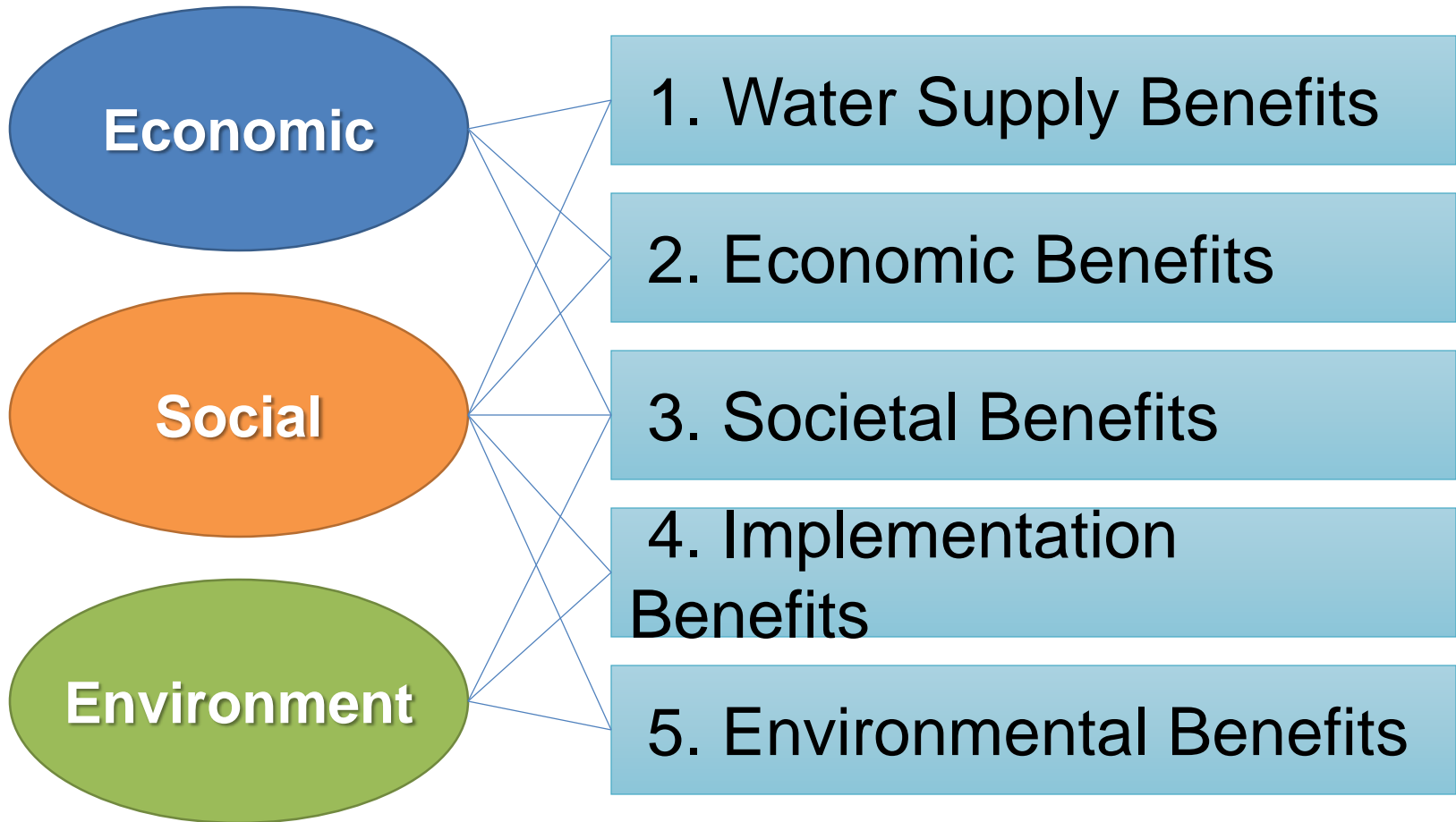


Development of Austin's IWRP was a key recommendation from  
2014 City Task Force on Water Resources

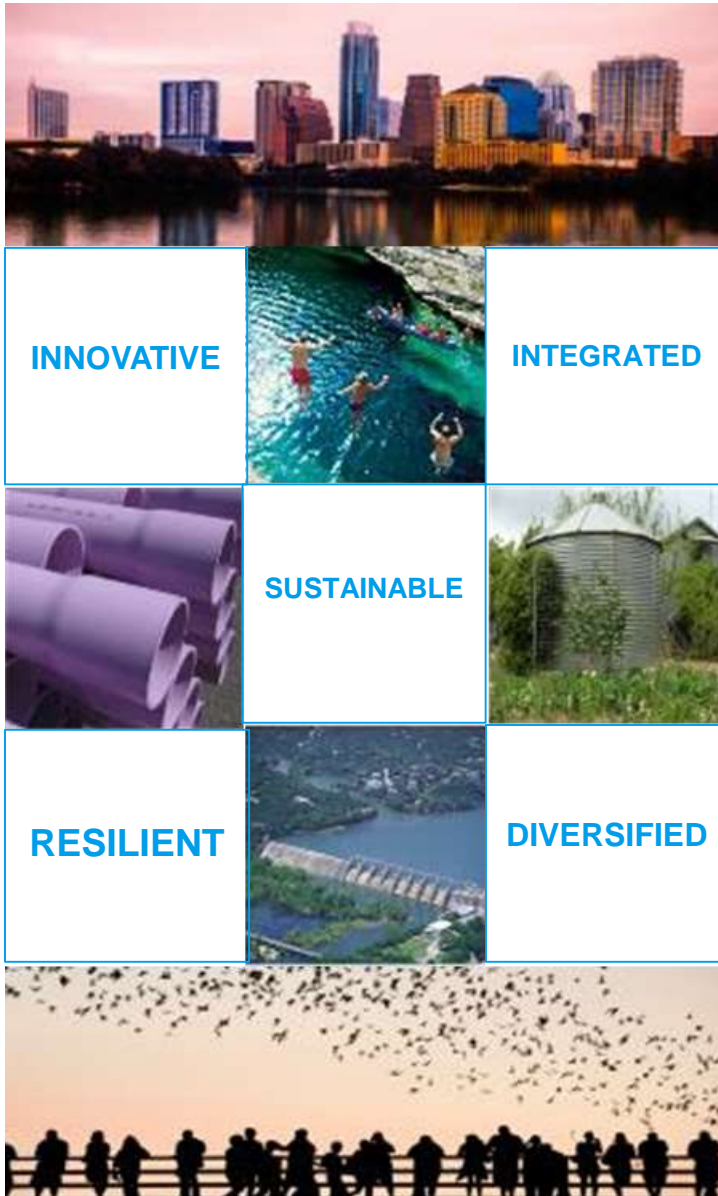
# Five IWRP Objectives Aligned with the Principles of Sustainability

## *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 – April 4:**
  - Water Supply Options
- **Workshop #4 – August 2017:**
  - Portfolio Themes
- **Workshop #5 – Early 2018:**
  - Draft Plan Recommendations

# Workshops 1 and 2: What we heard

We're  
moving in  
the right  
direction

Need for  
Regional  
Coordination

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

Input on  
Demand and  
Supply  
Options

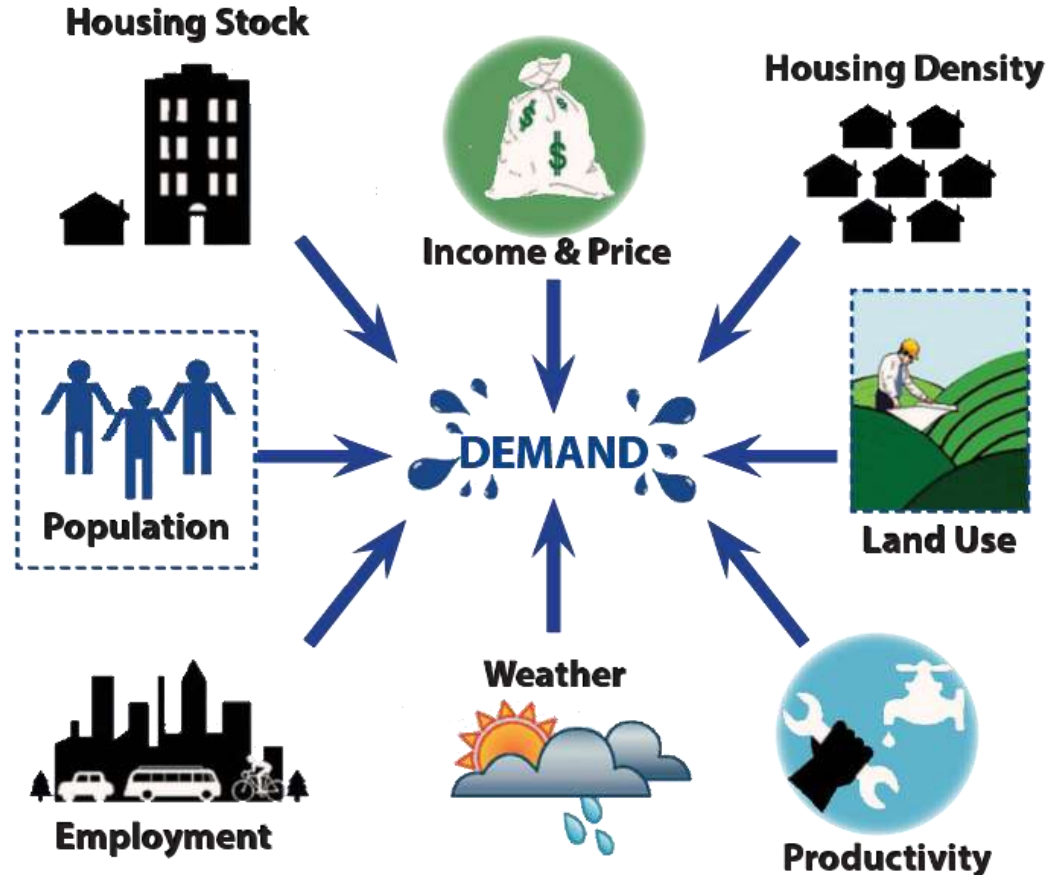
# **How Public Input will be Incorporated**

- Today's feedback will be incorporated into the screening of supply-side options
- Understanding of values and perspectives of what is important will be incorporated into:
  - the development and evaluation of portfolios
  - plan recommendations and the path forward
- Gauge overall understanding of plan to improve communication/outreach efforts

# **Water Demand Forecast**

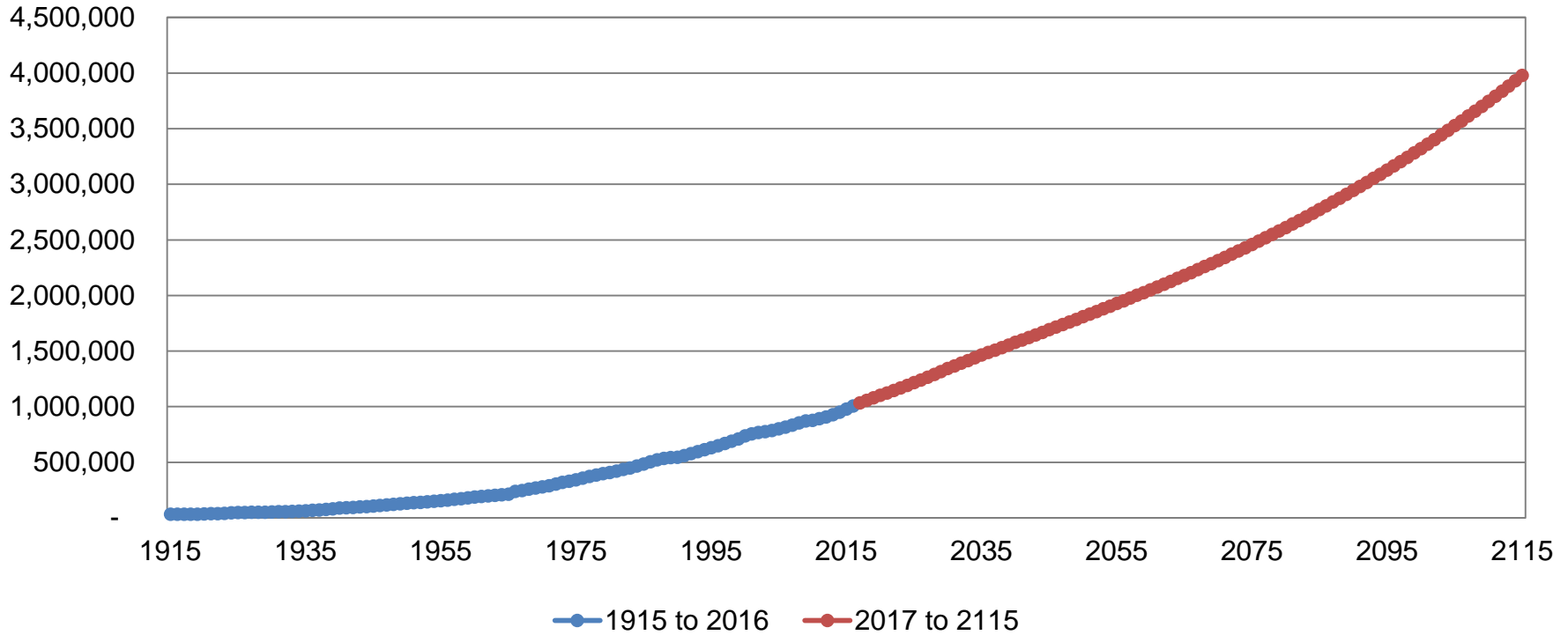
# Disaggregated Demand Model

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



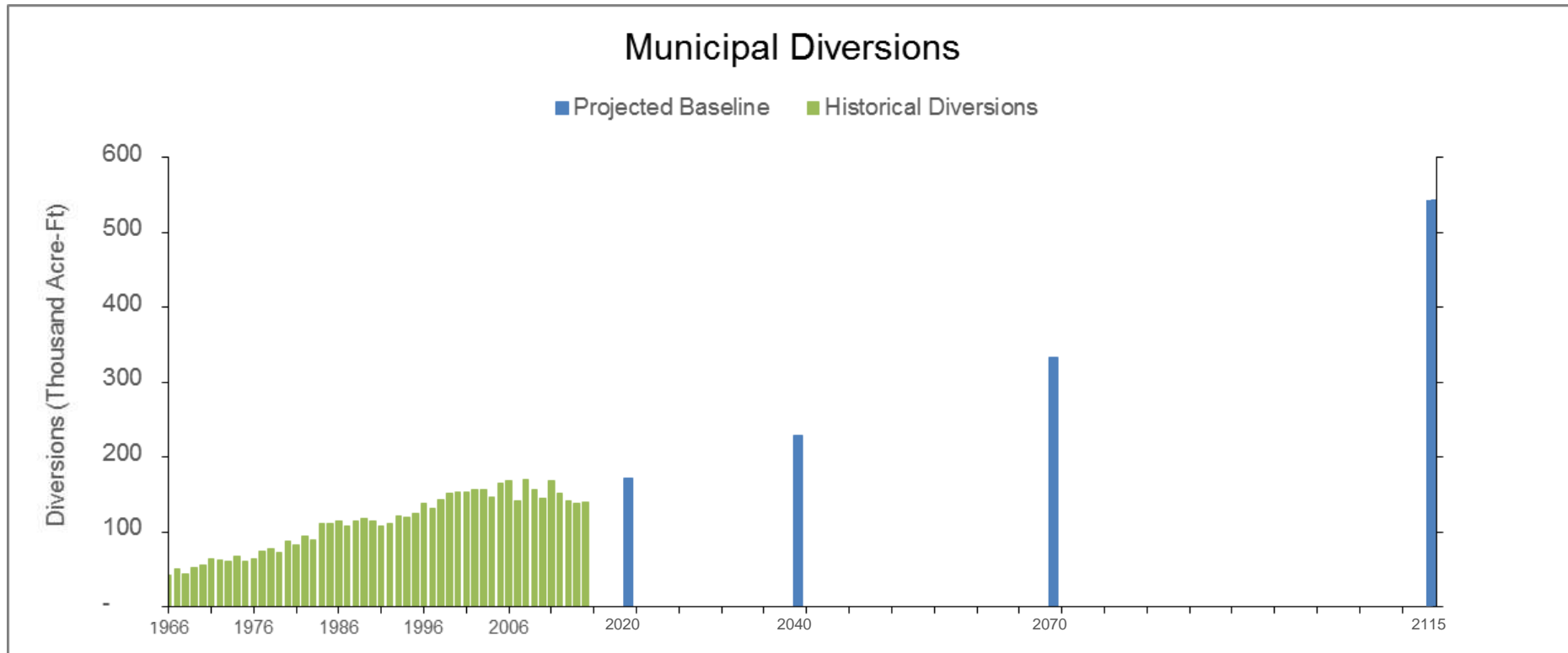
# Historical and Future Population Estimates

Austin Water Served Population



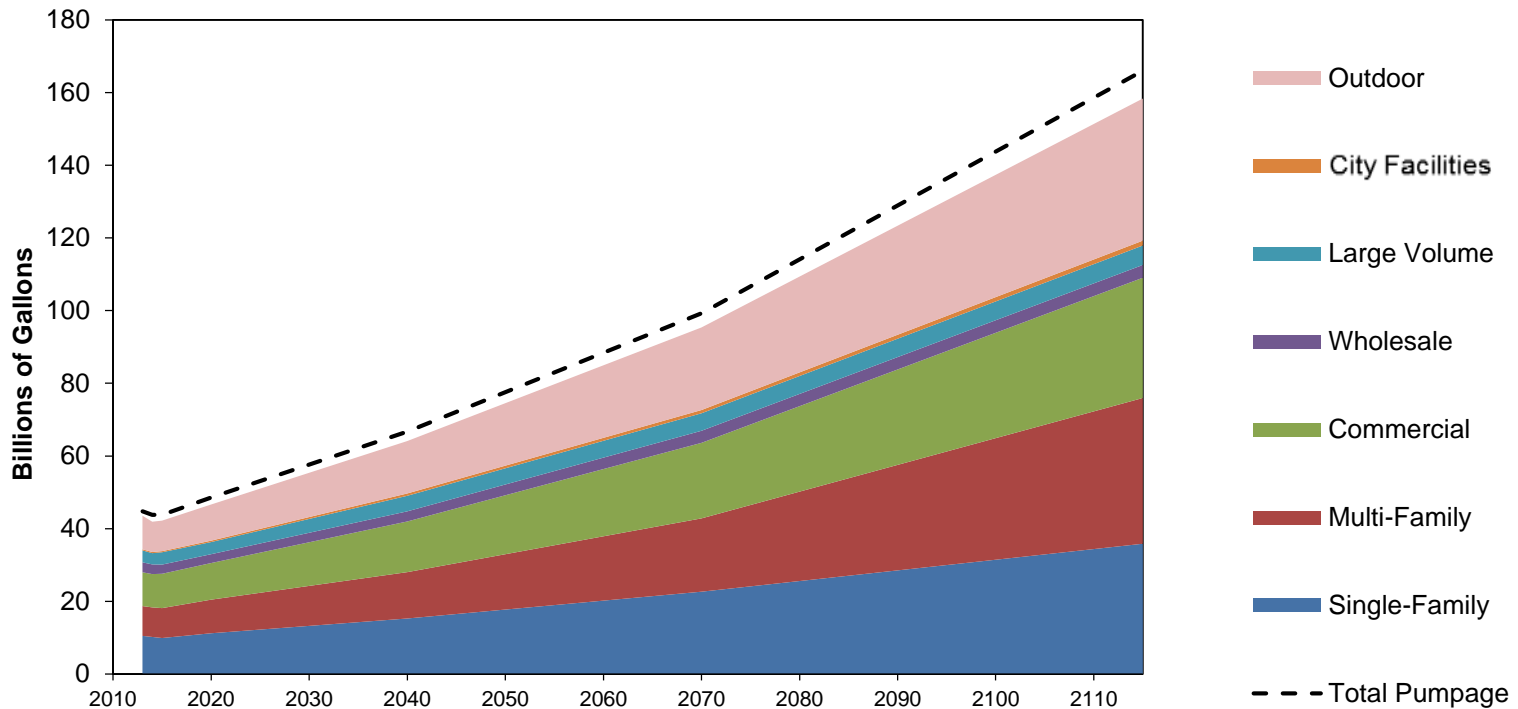


## Baseline Demand Projections

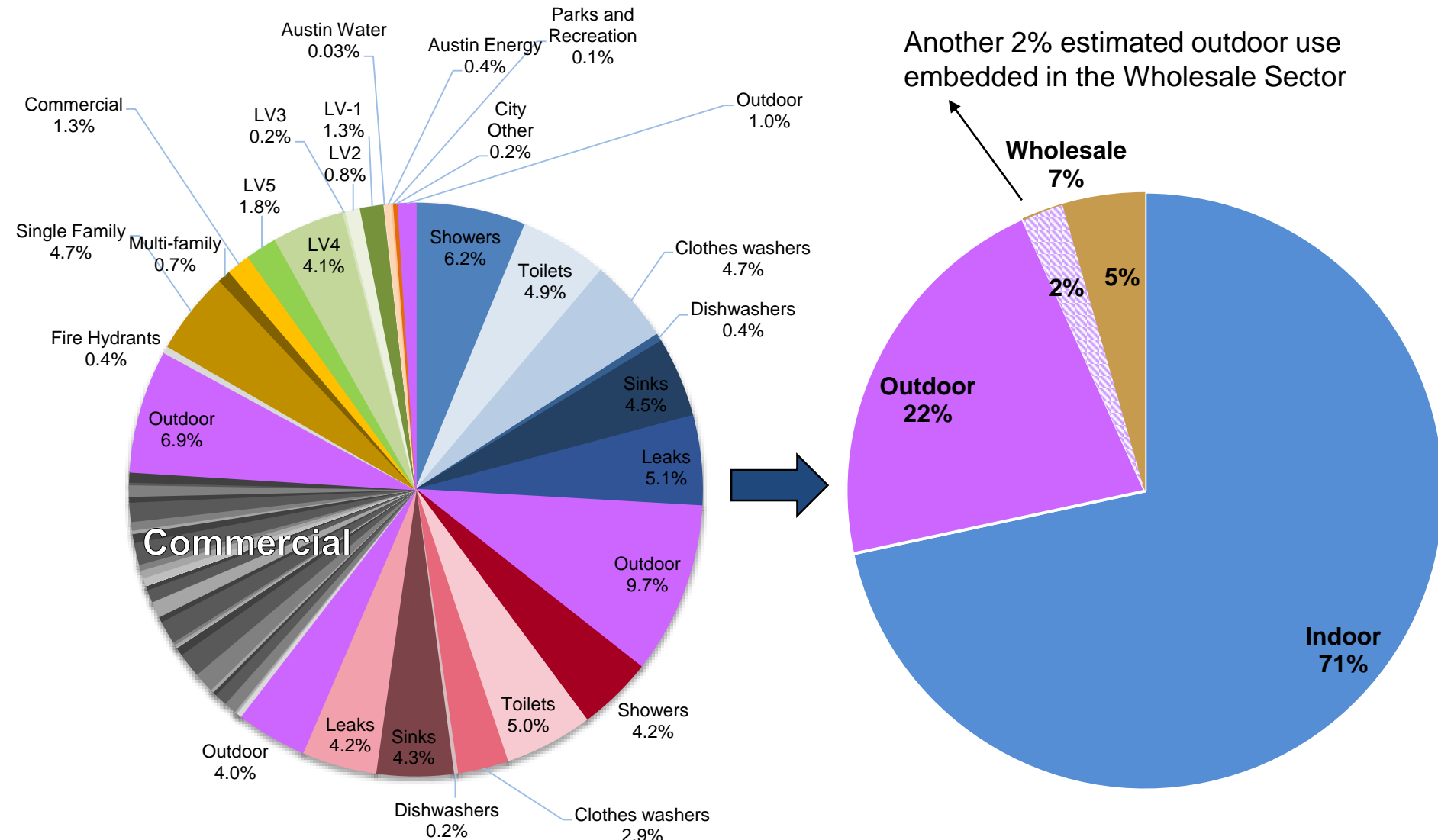


# Baseline Demand Projections - Consumption

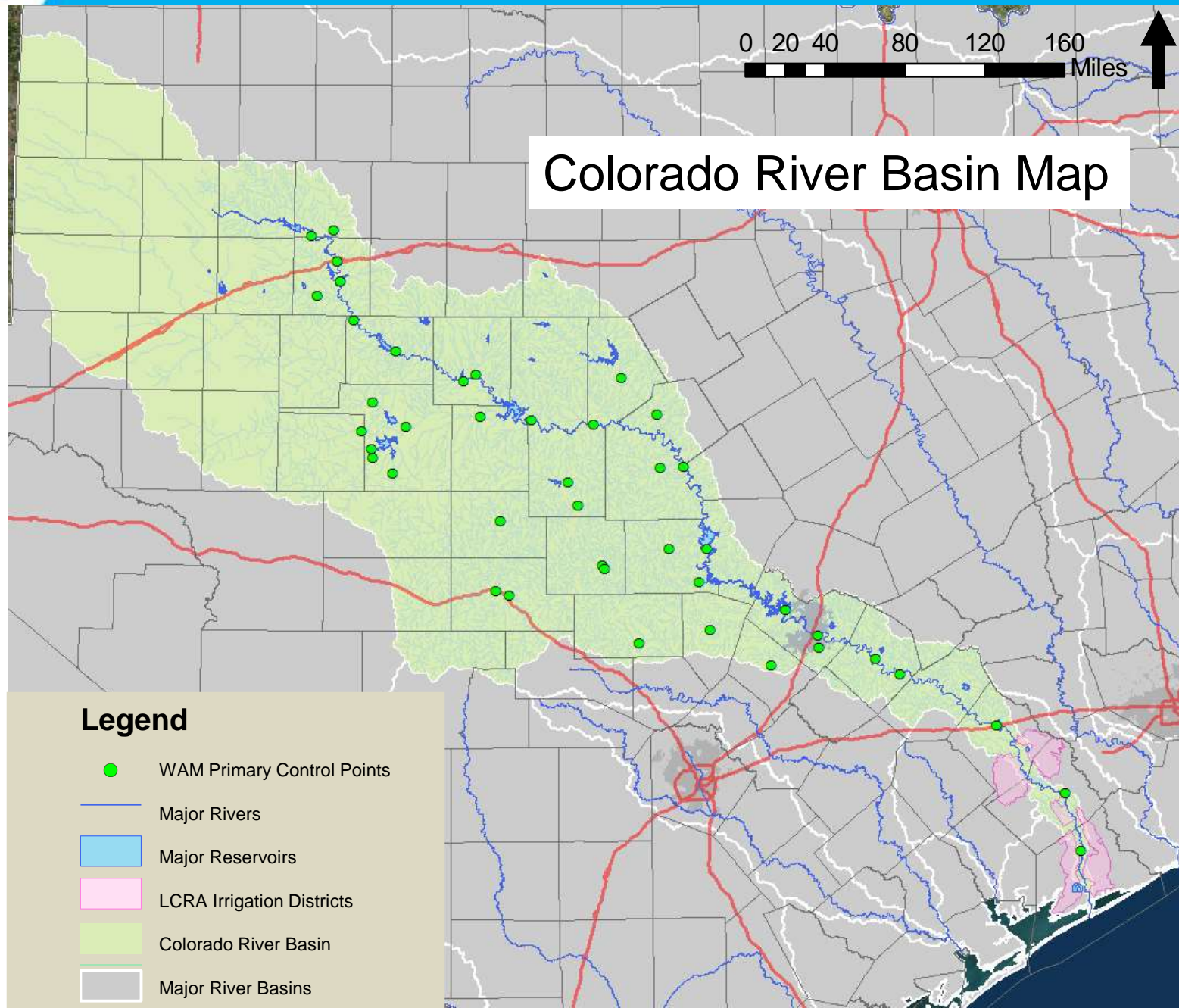
City-Wide Consumption Projections



## Indoor vs. Outdoor Consumption



# Preliminary Water Needs Analysis

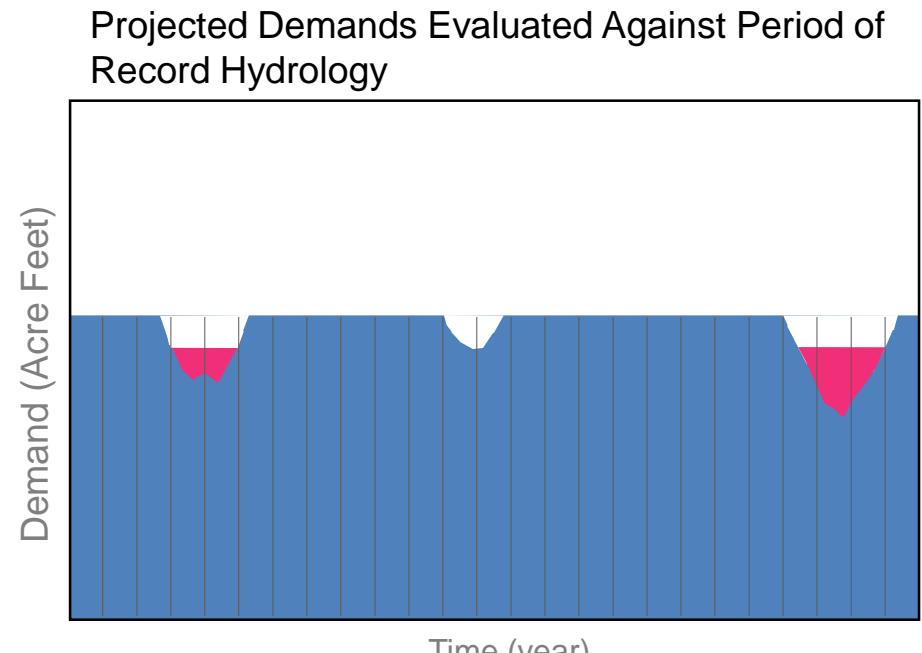
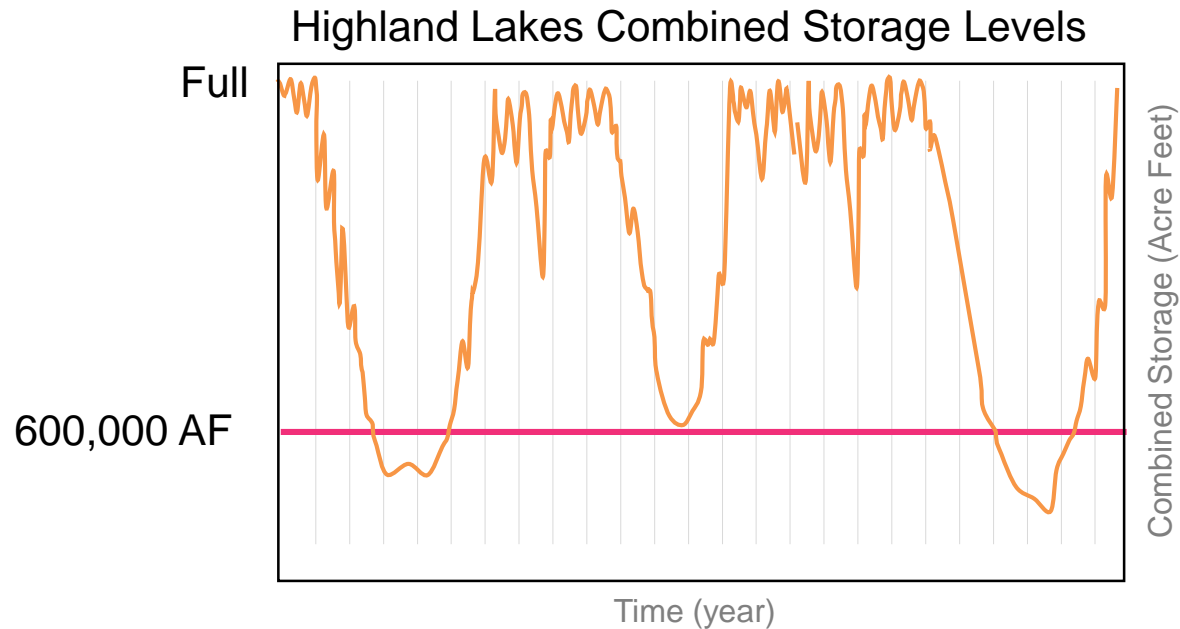


## Colorado River Basin Map

### Legend

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

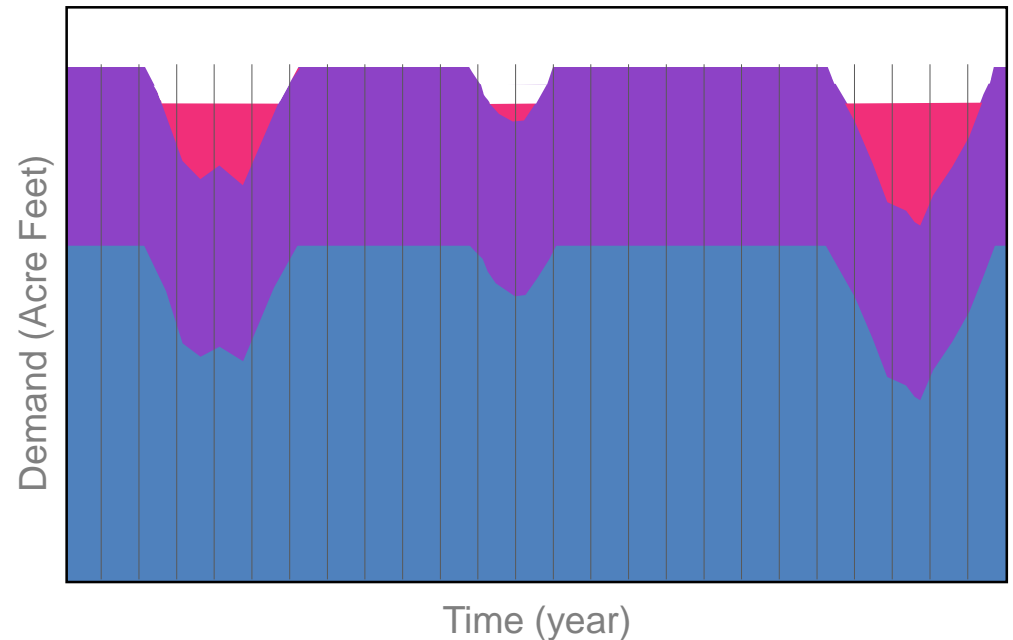
- Firm supply – 325,000 AF
- Emergency lake level - 600,000 AF triggers cutbacks on use from the river
- Part of the plan is to identify options to reduce the impact of these cutbacks and to prepare for potentially longer/deeper droughts





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

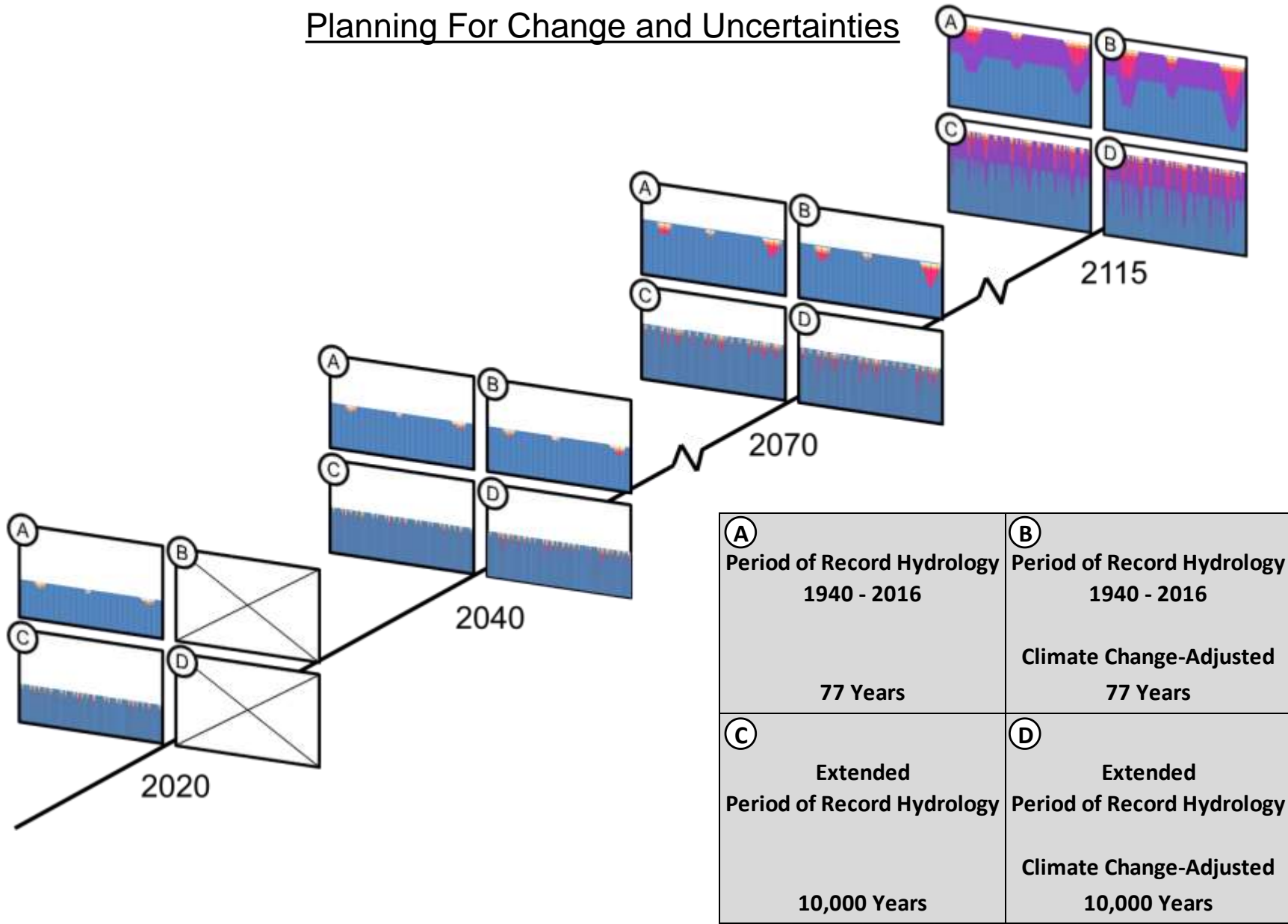
## 2115 Demands Evaluated Against Period of Record Hydrology



**Purple Region = Baseline Demands Above 325,000 AF**

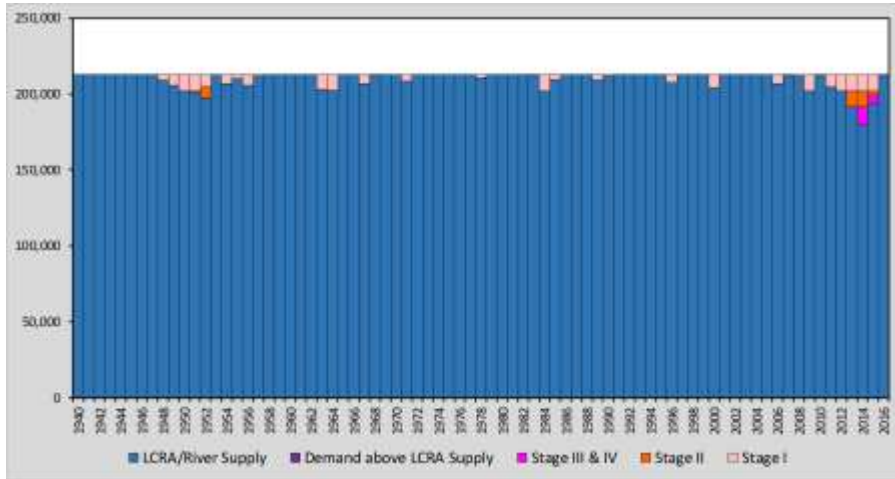
## Water Forward

### Planning For Change and Uncertainties

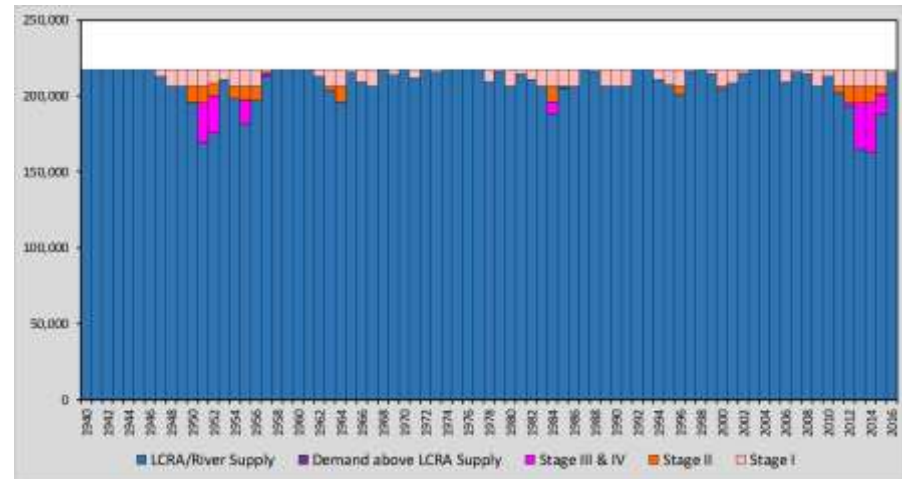


## 2040 City of Austin Needs Summary

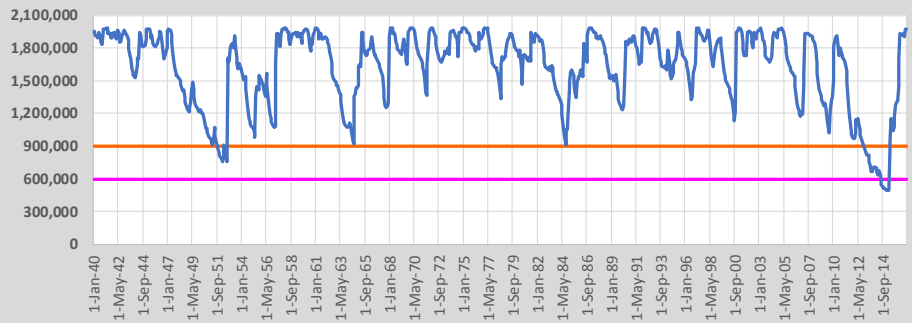
**A** Period of Record (77 years)



**B** Period of Record (77 years) Climate-Adjusted



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

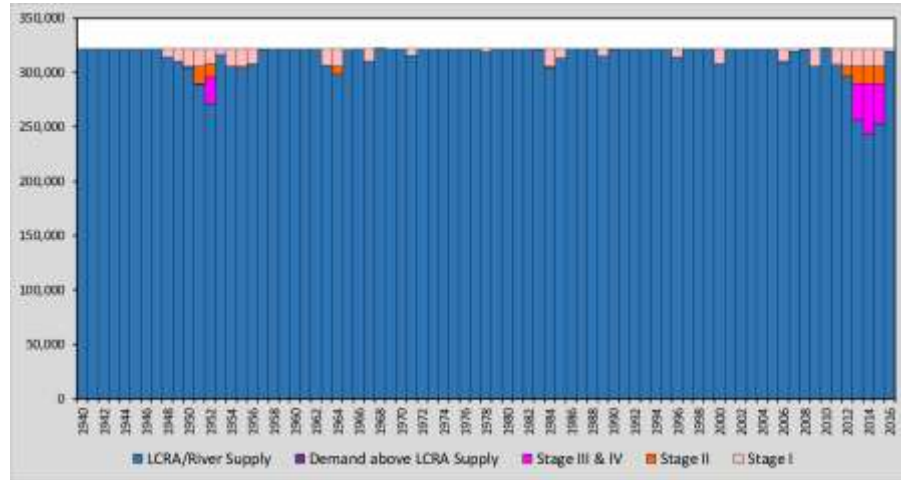


**Combined Storage of Buchanan and Travis  
2040 Climate Adjusted Demands and RCP 8.5 Hydrology**

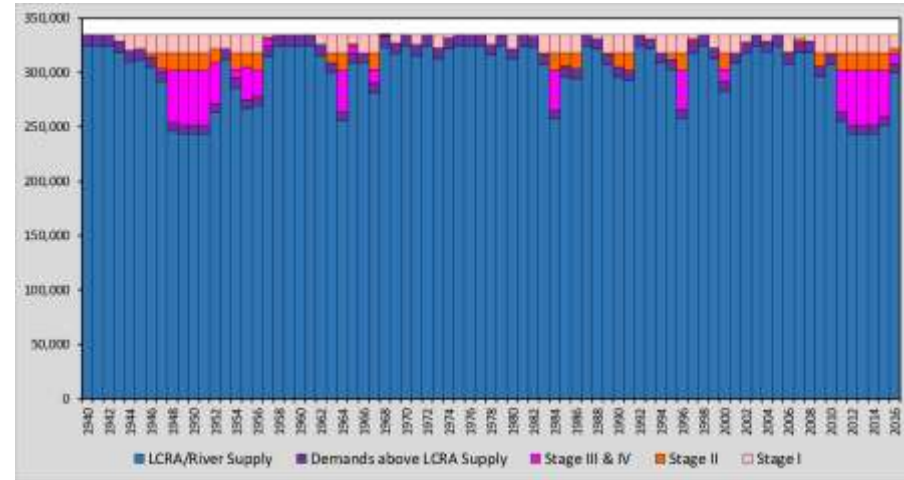


## 2070 City of Austin Needs Summary

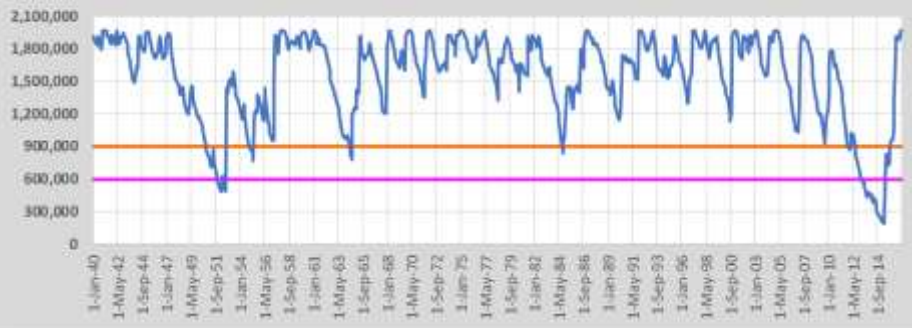
**A** Period of Record (77 years)



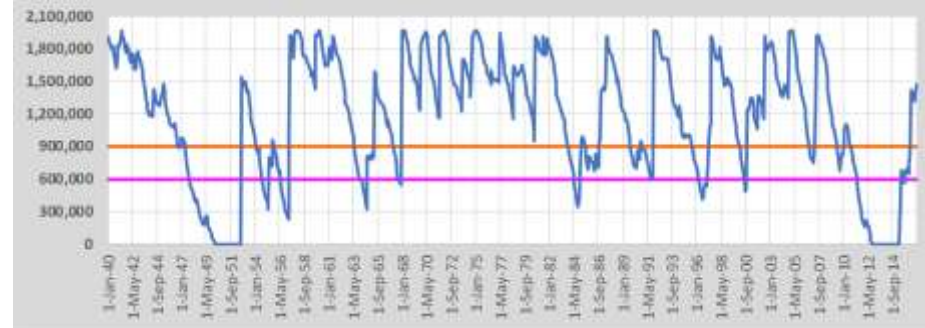
**B** Period of Record (77 years) Climate-Adjusted



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

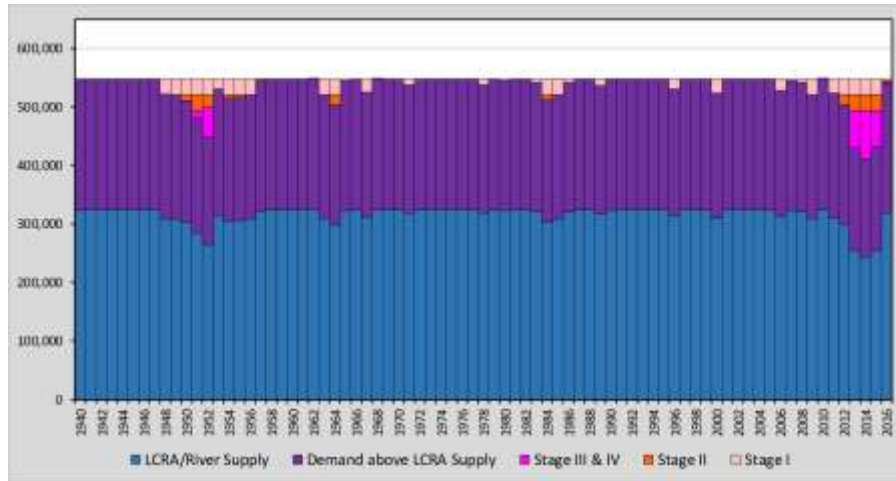


**Combined Storage of Buchanan and Travis  
2070 Climate Adjusted Demands and RCP 8.5 Hydrology**

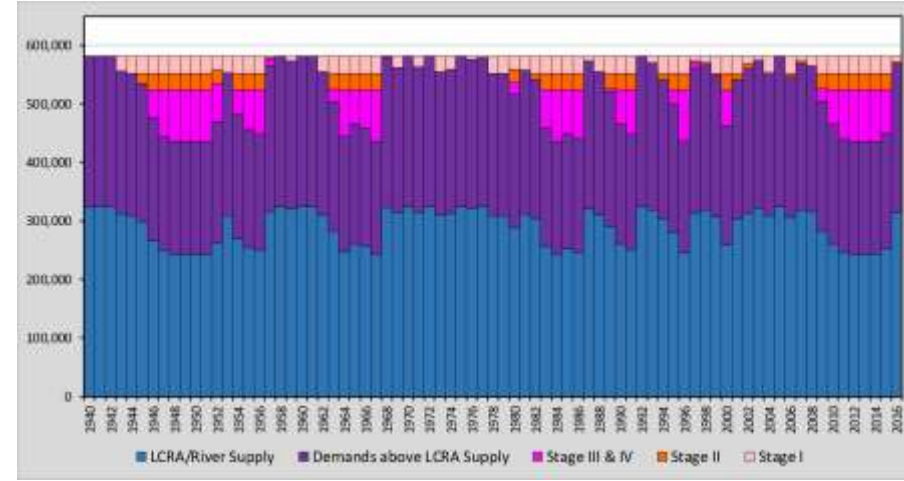


## 2115 City of Austin Needs Summary

**A** Period of Record (77 years)



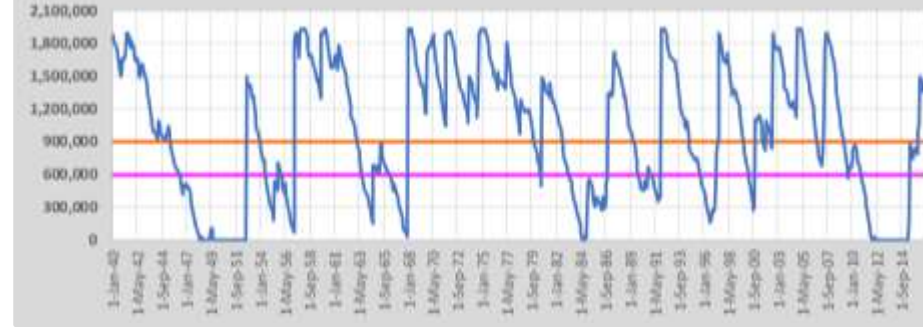
**B** Period of Record (77 years) Climate-Adjusted



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



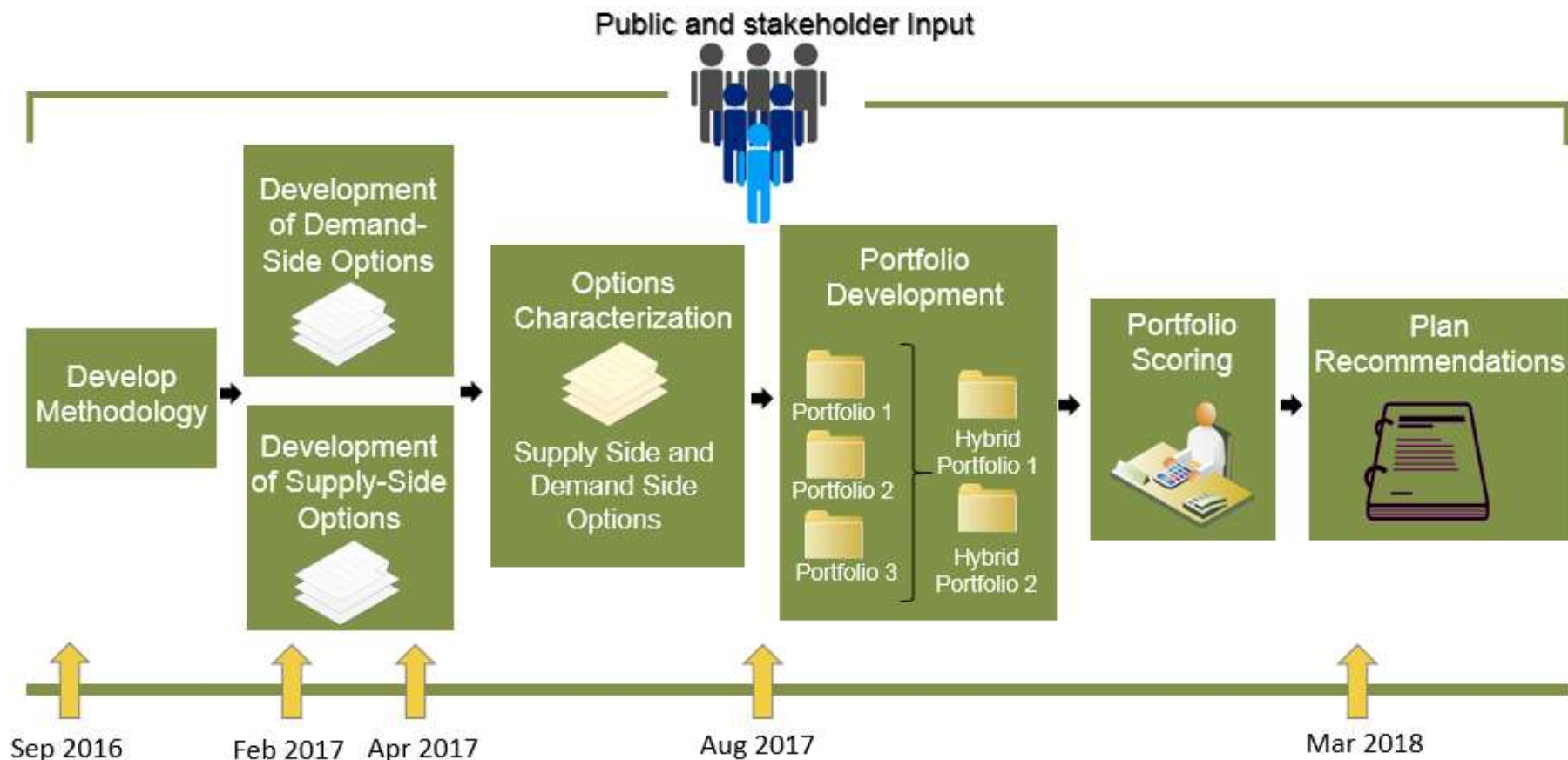
# Planning for Droughts Worse than the Recent Drought

- 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



**Key Public Input Opportunities**

## 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
- **New Off-Channel Storage Reservoir** – Development of a new off channel reservoir within the Austin vicinity that could be used for additional storage to 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

# Preliminary Supply Options

- **Inter-Basin Transfers** – transfer and conveyance of water from available surface water supplies in other river basins
- **Partnership Approaches** – explore partnership approaches with other entities on regional strategies which could include aquifer storage and recovery, purchase of available water supply, or other partnerships

## Q&A

## Dot Exercise

Water Forward		 <b>WATER FORWARD</b> INTEGRATED WATER RESOURCE PLAN			
Supply Category		Like it 	Don't like it 	Okay with it 	Need more info 
<b>Expanded Reclaimed Water System –</b> Expansion of AW's "purple-pipe" reclaimed water system for non-potable uses like irrigation, cooling towers, and toilet flushing					
<b>Decentralized Options for Wastewater Reuse –</b> Use of neighborhood satellite wastewater plants or onsite (building-scale) wastewater treatment for non-potable uses like toilet flushing, cooling towers, and landscape irrigation					

# Thank You

You can give your feedback on all options at:

<https://www.surveymonkey.com/r/IWRPstrategies>

You can follow the process and find more information at:

[austintexas.gov/waterforward](http://austintexas.gov/waterforward)