



Where will Austin's water come from in 100 years?

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The Meadows Center for **Water** & the Environment
Texas State University



presented to


Save Barton Creek Association
Austin, Texas; September 10, 2018

WATER FORWARD
INTEGRATED WATER RESOURCE PLAN



presentation available at sosecretoccultandconcealed.com

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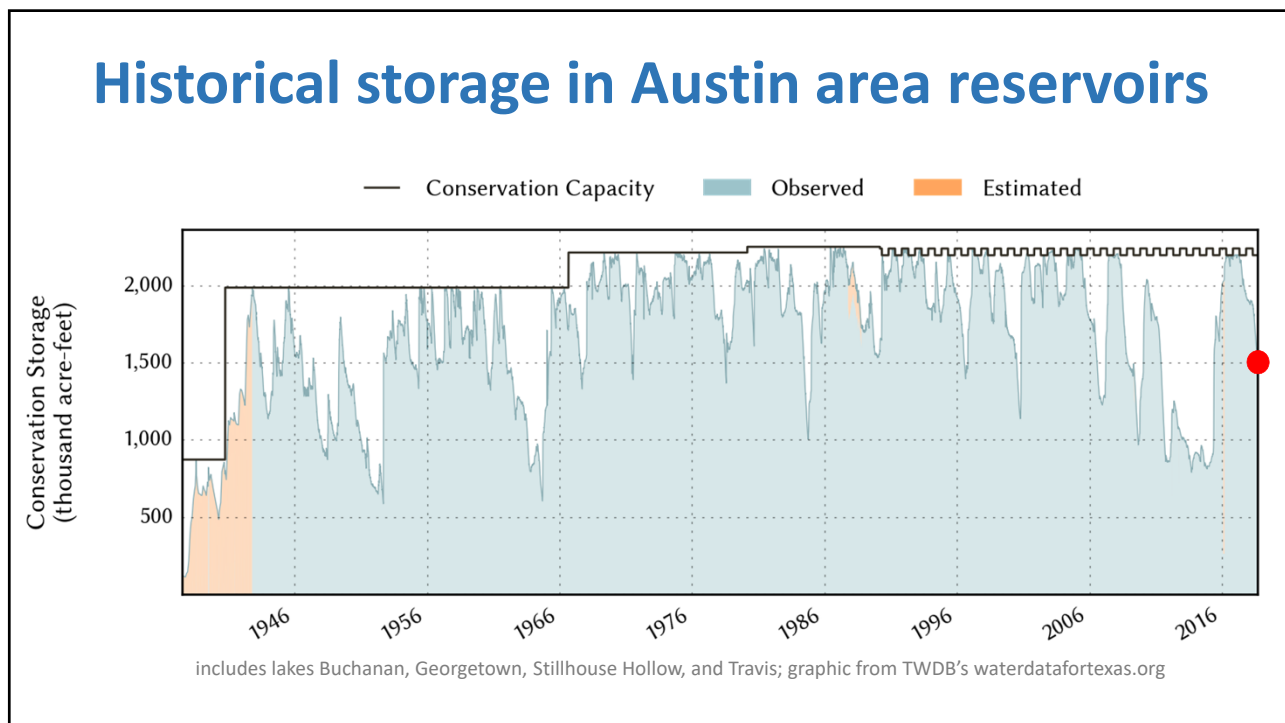
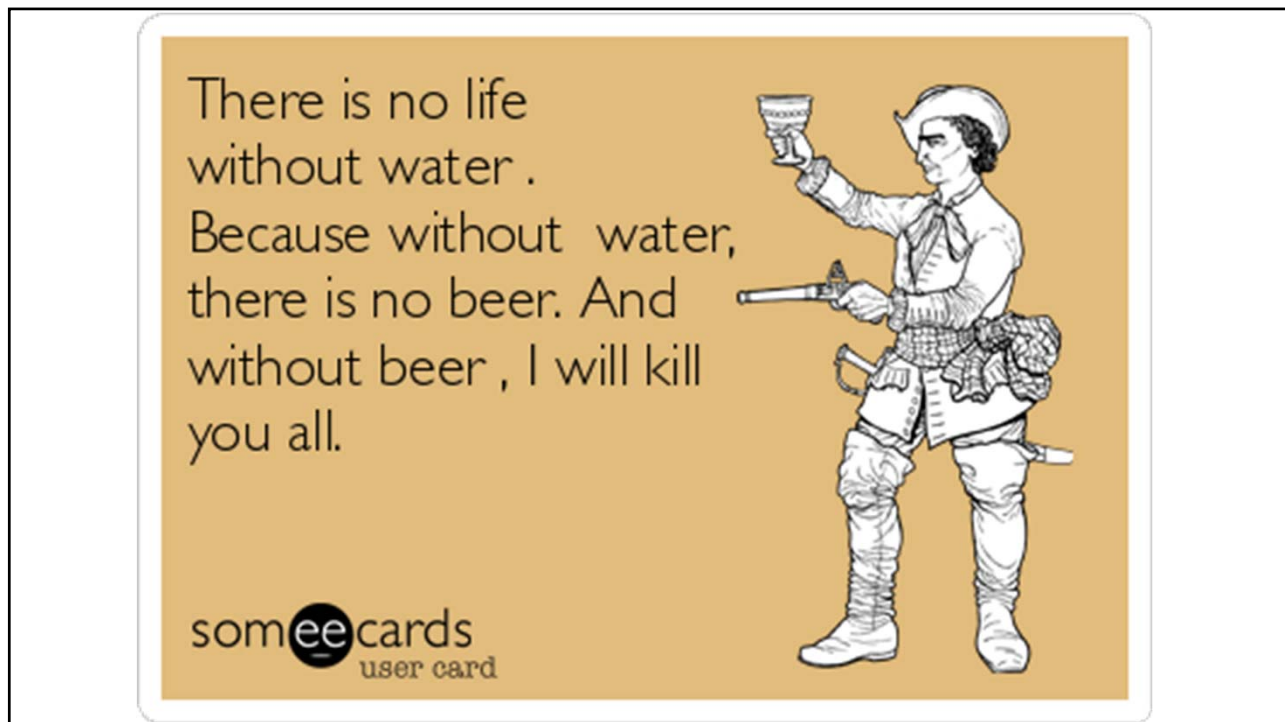


the meadows center for water & the environment

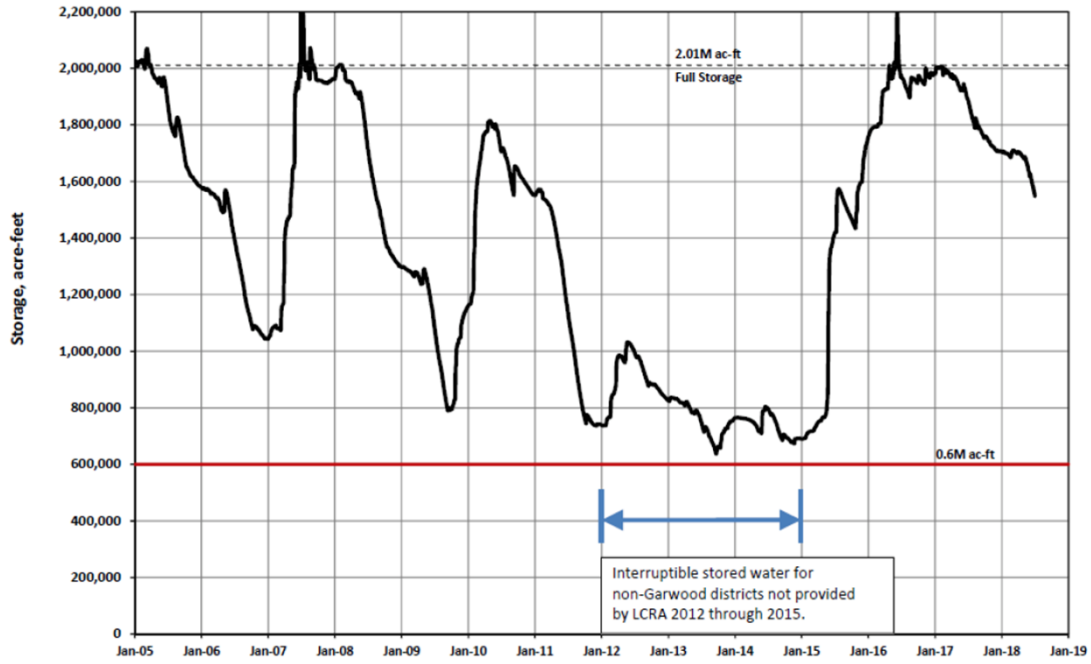
inspiring research and leadership
that ensures clean, abundant water
for the environment and all humanity

TEXAS  STATE
UNIVERSITY

The rising STAR of Texas



Combined storage in lakes Buchanan and Travis



- **2008: drought starts in March**
- **2011: Lake Travis recedes to 35 percent full**
- **2013: Lake Travis bottoms out at 29 percent full**
- **2014: City Council creates the Austin Water Resource Planning Task Force**
 - **Task Force recommends developing an Integrated Water Resources Plan**
 - **Council creates a task force to develop plan**
- **2015: Water Forward Task Force convenes**
- **2016: Drought ends**
- **2018: Draft water plan released**
- **2018: Lake Travis at 61 percent full**
- **2018: Seek Council approval**

timeline



WATER FORWARD
INTEGRATED WATER RESOURCE PLAN

- 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

guiding principles

- the Colorado River is our core supply
- focus on conservation
- strengthen sustainability, reliability, and diversity through local sources
- avoid severe shortages
- use projects that are technically, socially, and economically feasible
- protect the environment
- meet drinking water standards
- coordinate with regional partners
- engage the public

Key Water Forward Drivers

2008 - 2016
Extreme
Drought

Austin and
Regional
Population
Growth
&
Development

Climate
Change
Impacts on
Supply
Reliability

Alignment
with
Community
Values

The Council-appointed Task Force members are shown below:

Sharlene Leurig (Chair) District 4 - Council Member Casar	Lauren Ross District 5 - Council Member Kitchen
Jennifer Walker (Vice-Chair) District 9 - Mayor Pro Tem Tovo	Todd Bartee District 6 - Council Member Flannigan
Bill Moriarty Mayor Adler	Robert Mace District 7 - Council Member Pool
Clint Dawson District 1 - Council Member Houston	Marianne Dwight District 8 - Council Member Troxclair
Sarah Richards District 2 - Council Member Garza	Diane Kennedy District 10 - Council Member Alter
Perry Lorenz District 3 - Council Member Renteria	

The Task Force also included Ex Officio members from several City of Austin departments:

Austin Water Greg Meszaros, Director	Office of Innovation Kerry O'Connor, Chief Innovation Officer
Austin Energy Kathleen Garrett, Director of Environmental Services	Office of Sustainability Lucia Athens, Chief Sustainability Officer
Austin Resource Recovery Sam Angoori, Director	Parks and Recreation Sara Hensley, Interim Assistant City Manager
Neighborhood Housing and Community Development Josh Rudow, Planner Senior	Watershed Protection Chris Herrington, Supervising Engineer

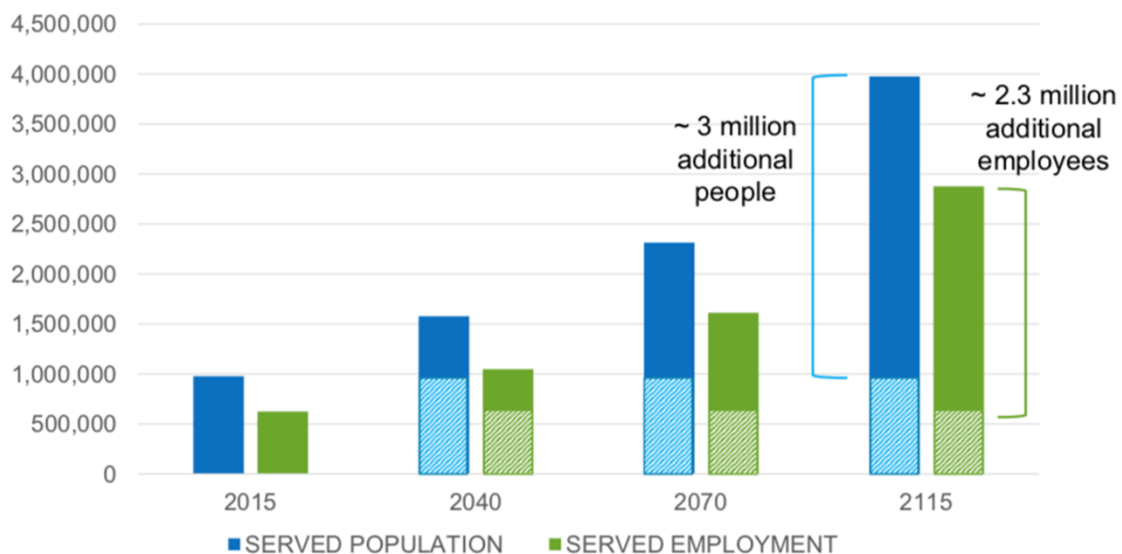
Planning (in a nutshell)

- How much water are we going to need?
- How much do we have now?
- Do we have enough?
- If we don't, what do we need to do to get more?
- How much will it cost?

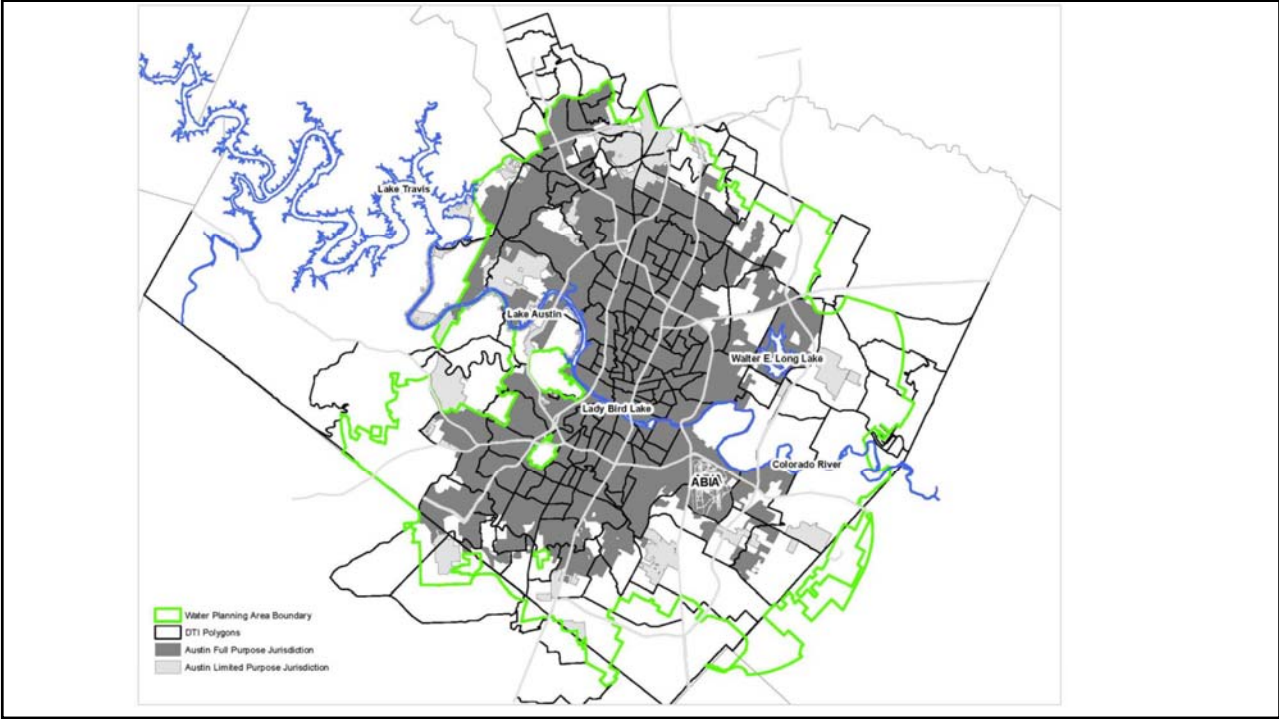
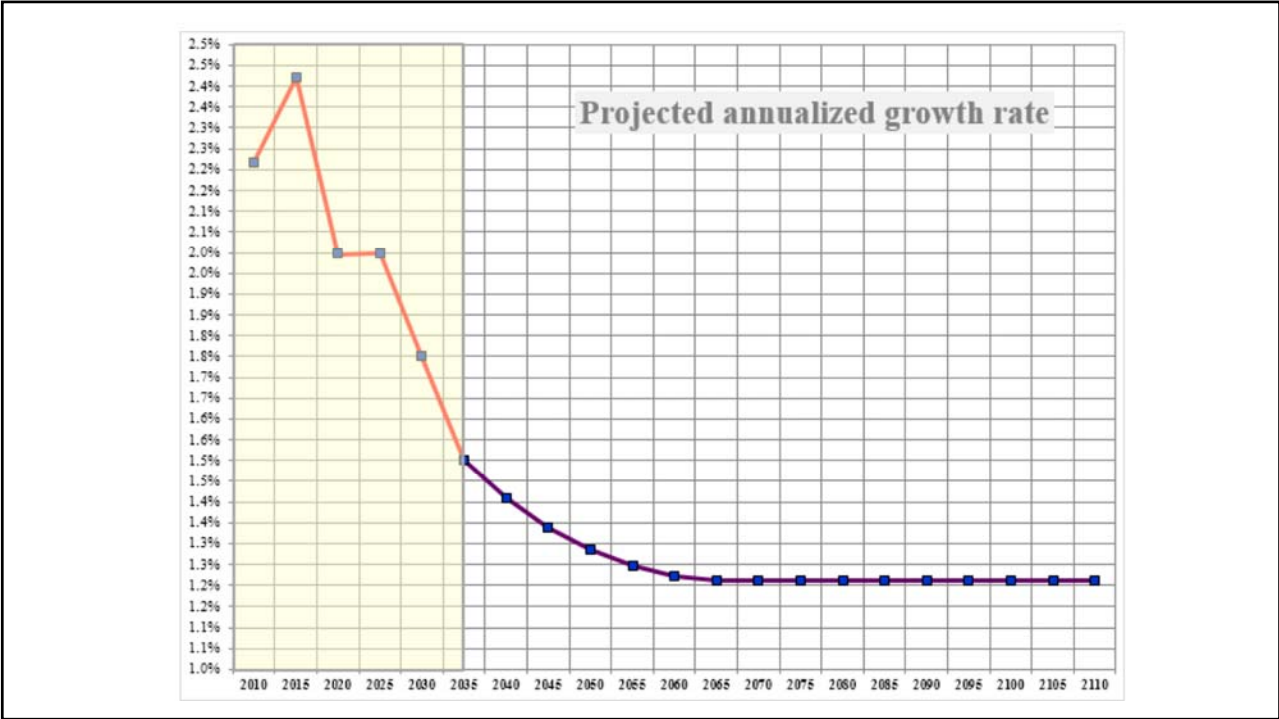
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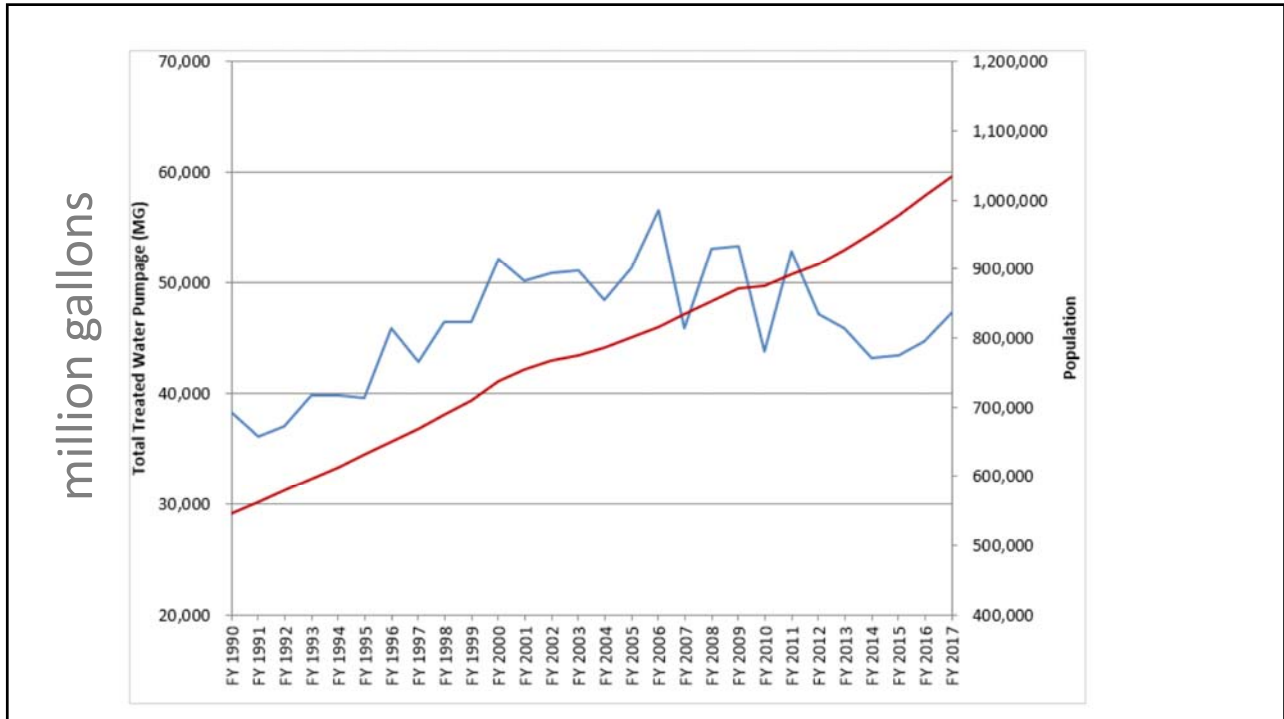
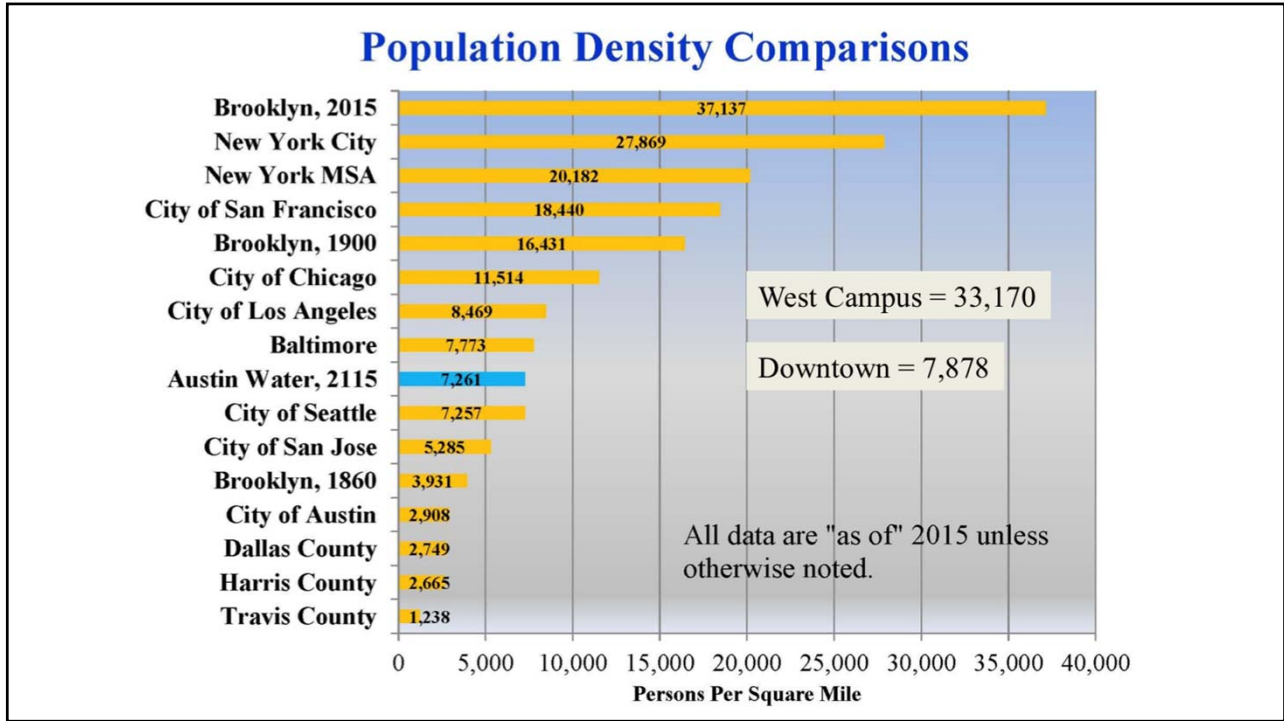
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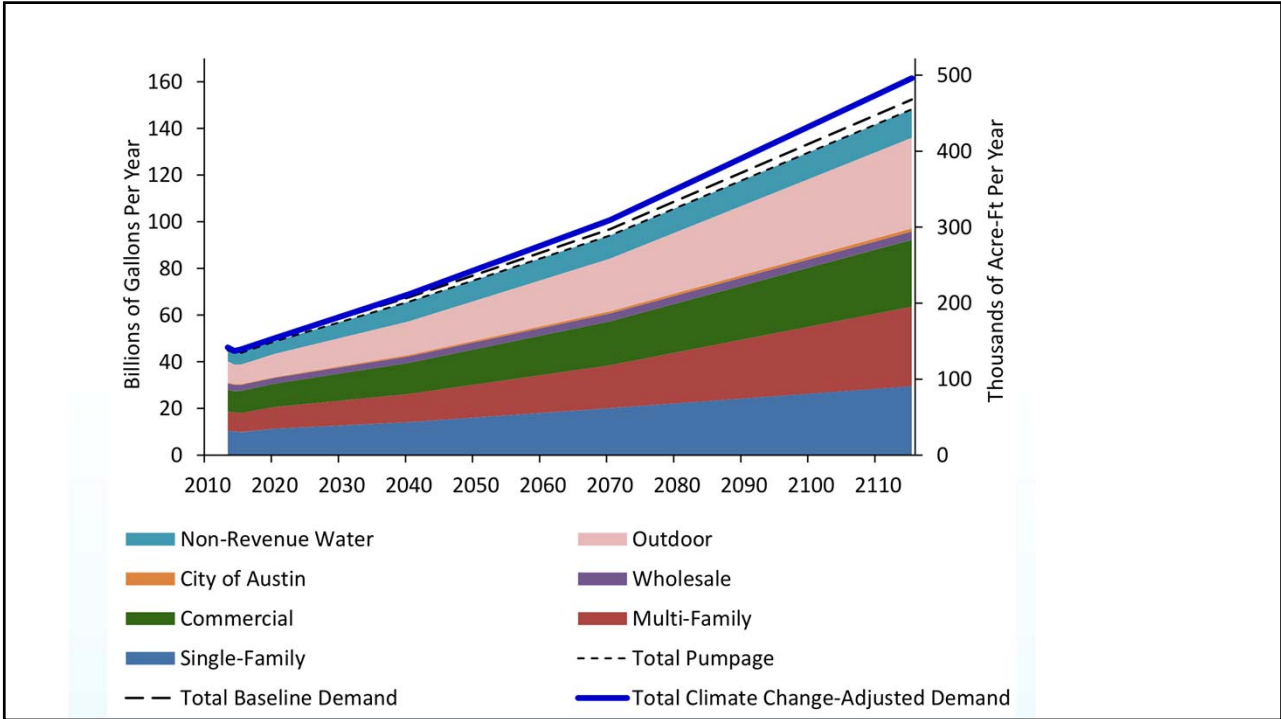
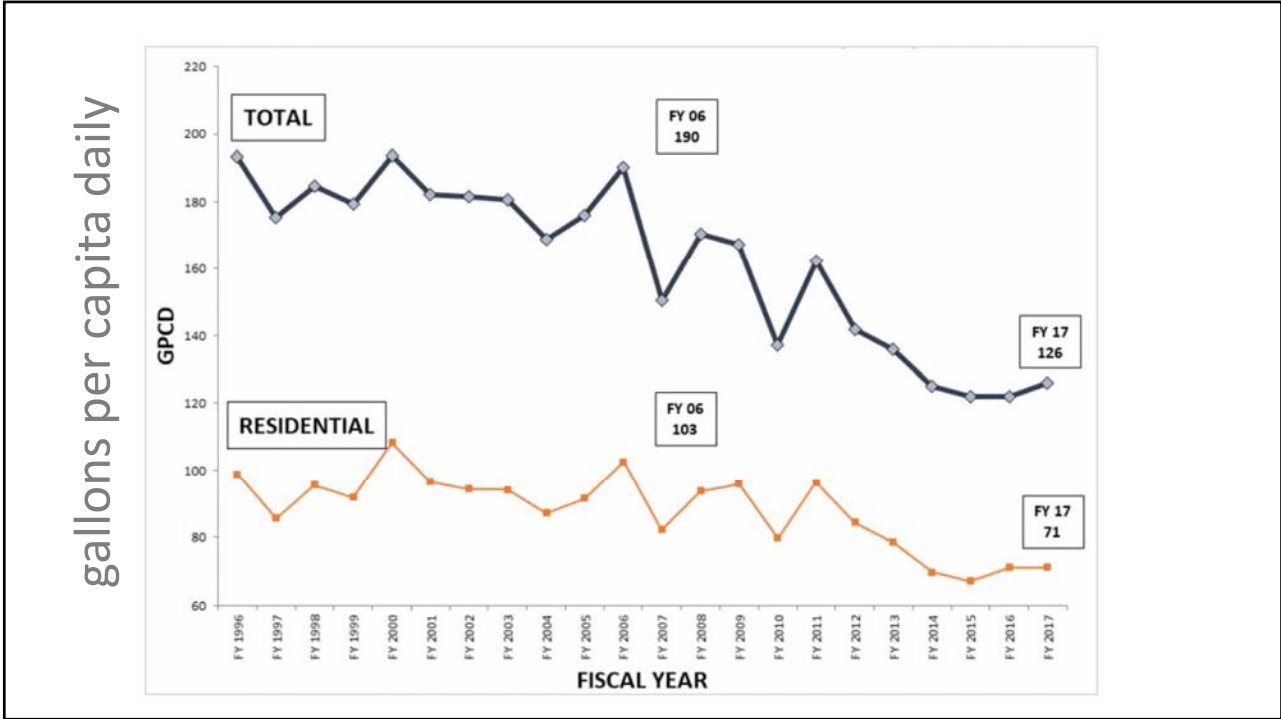
Four million Austinites?



from the City of Austin

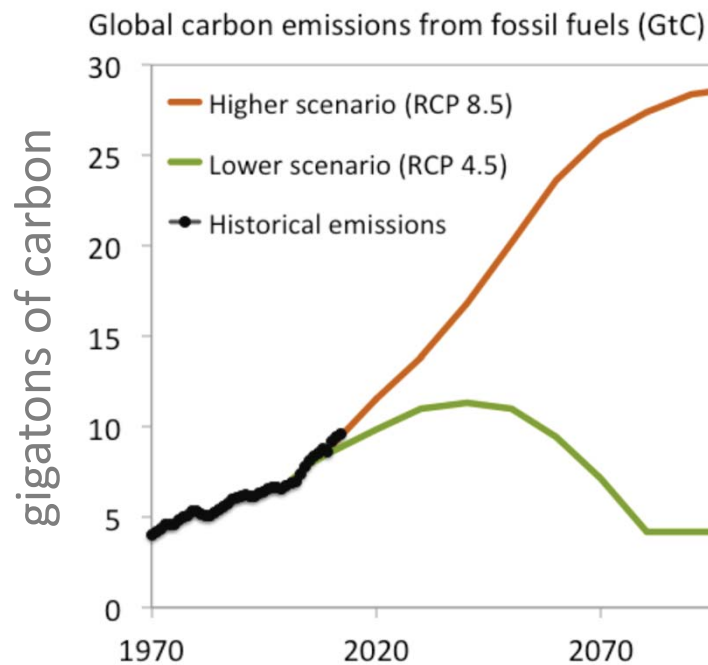


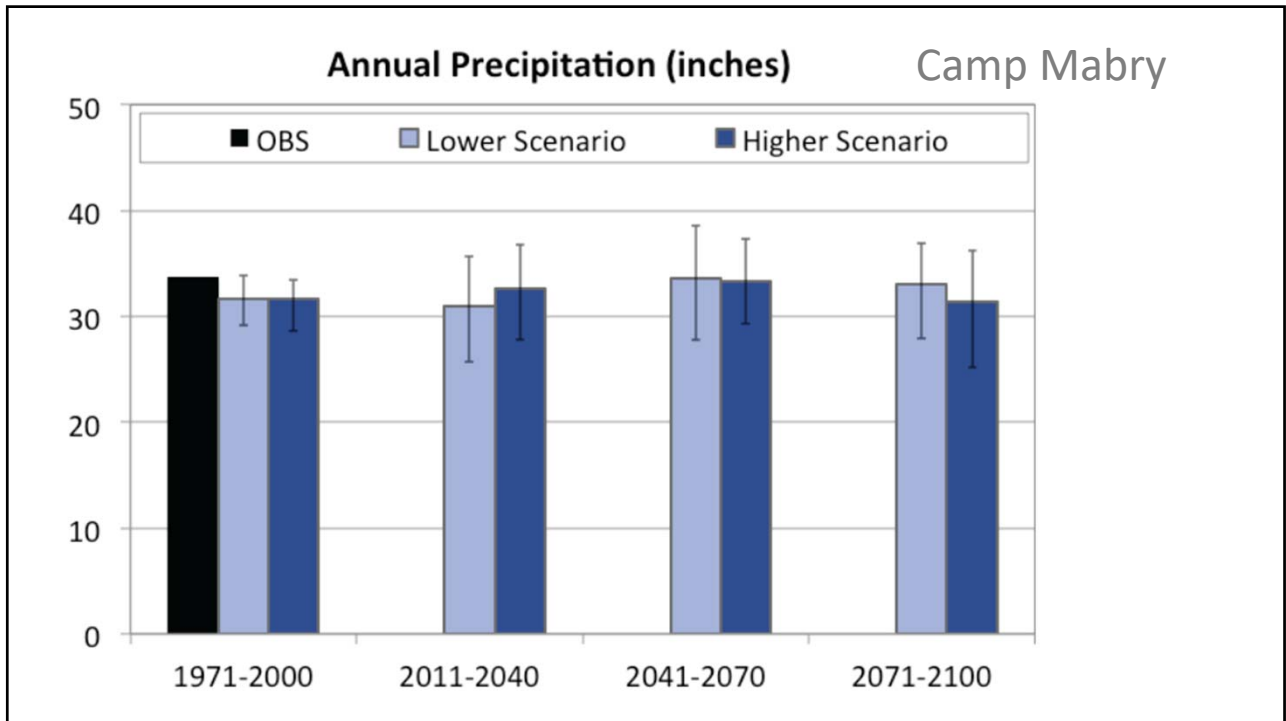
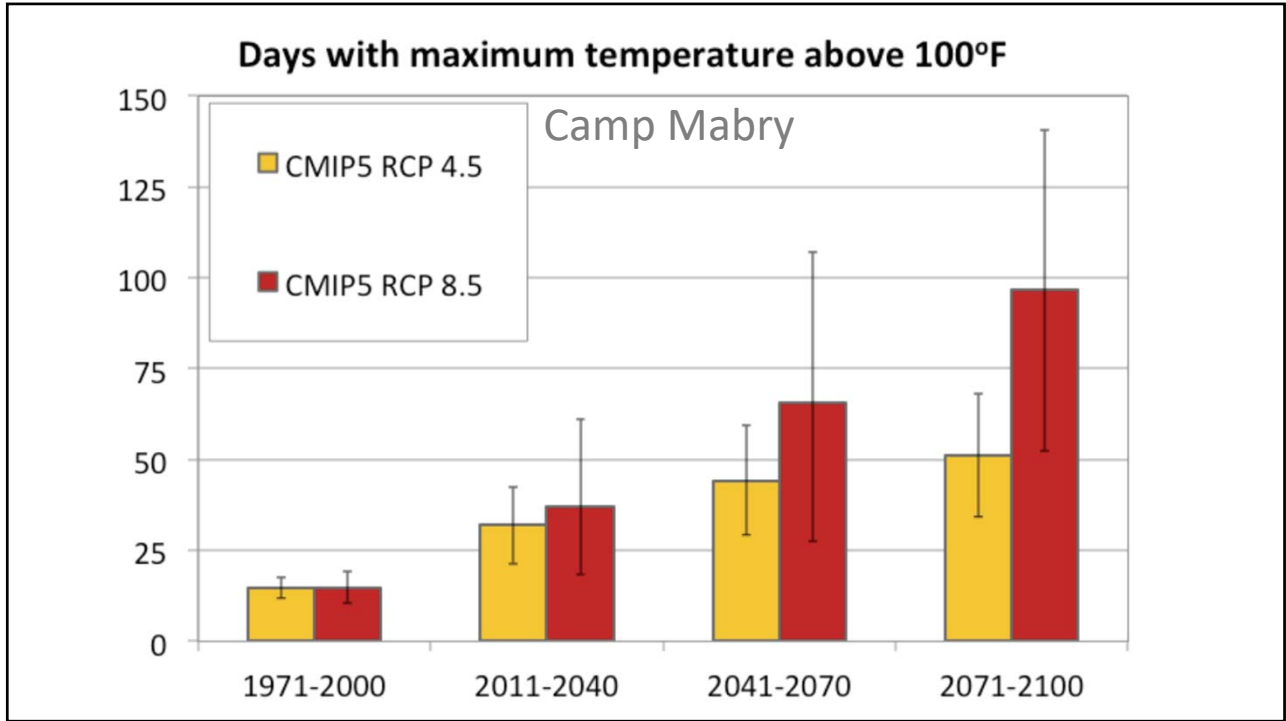


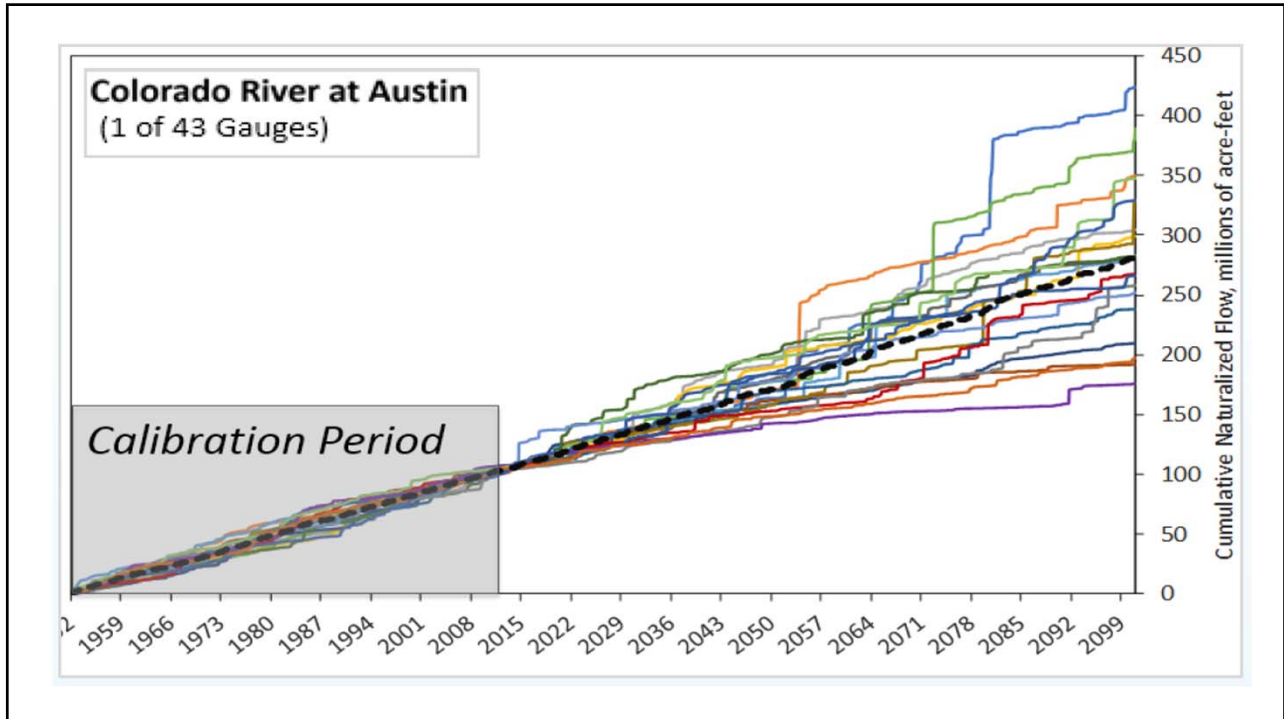
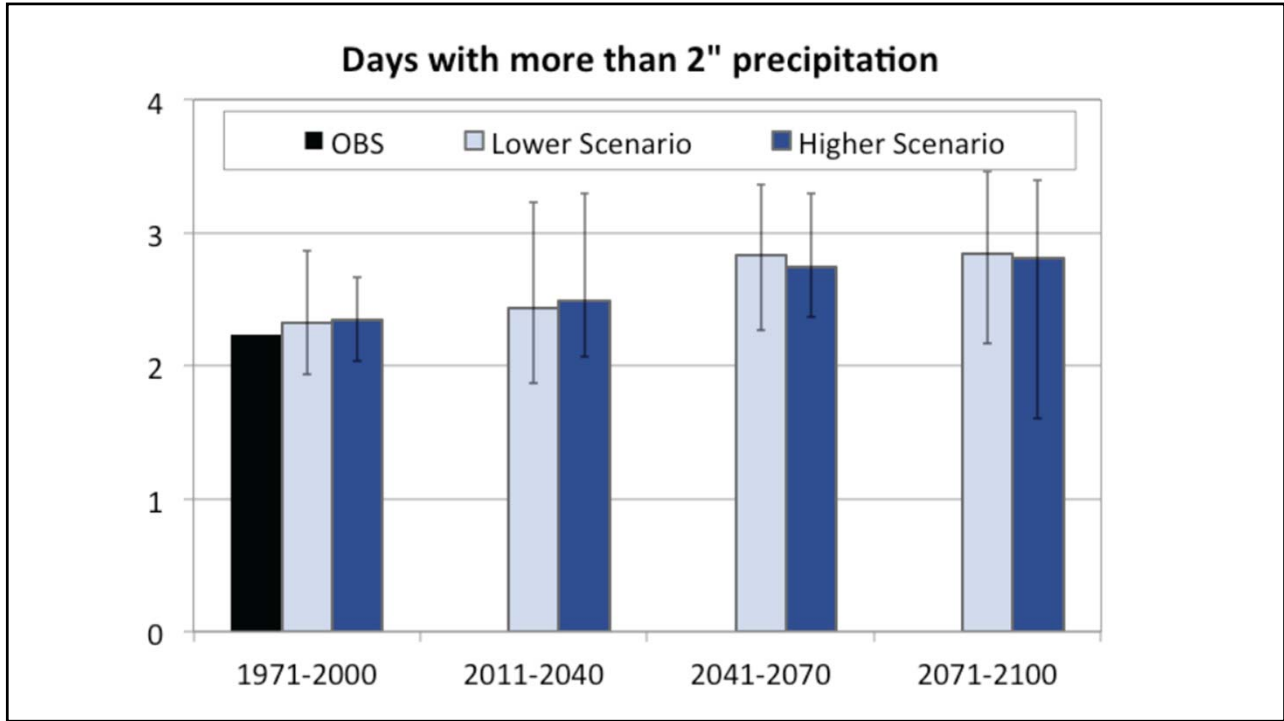


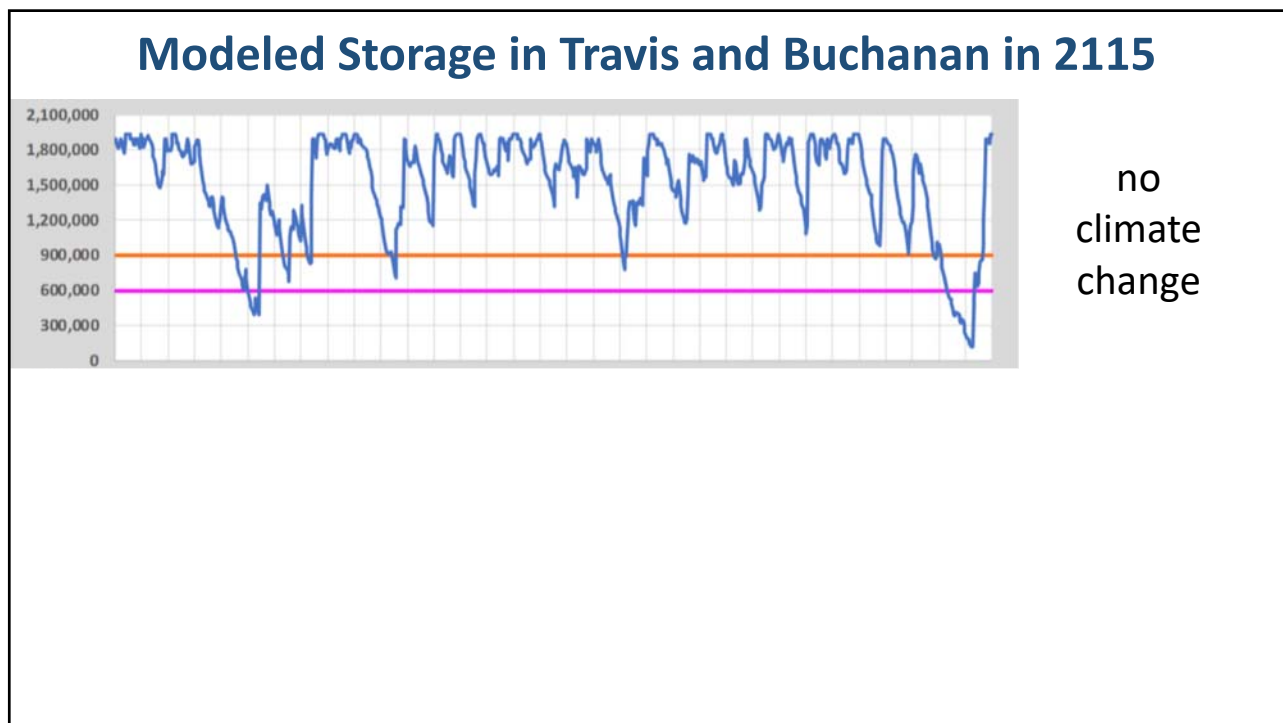
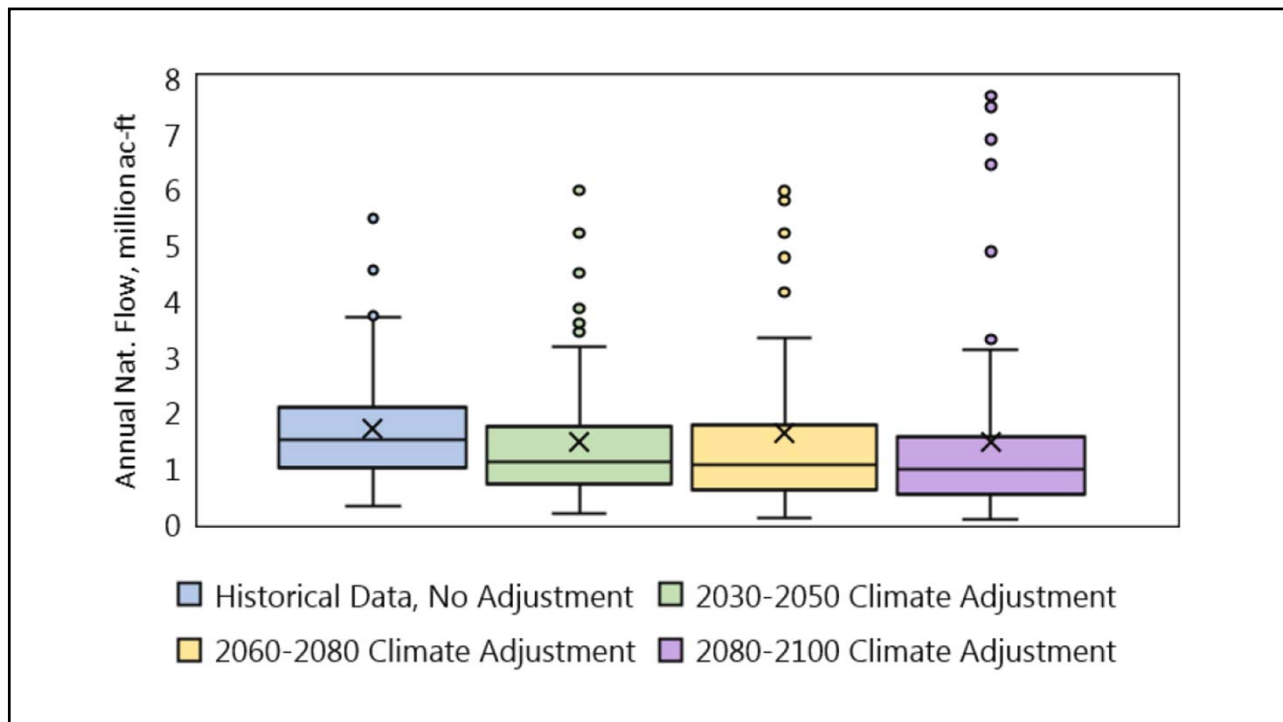
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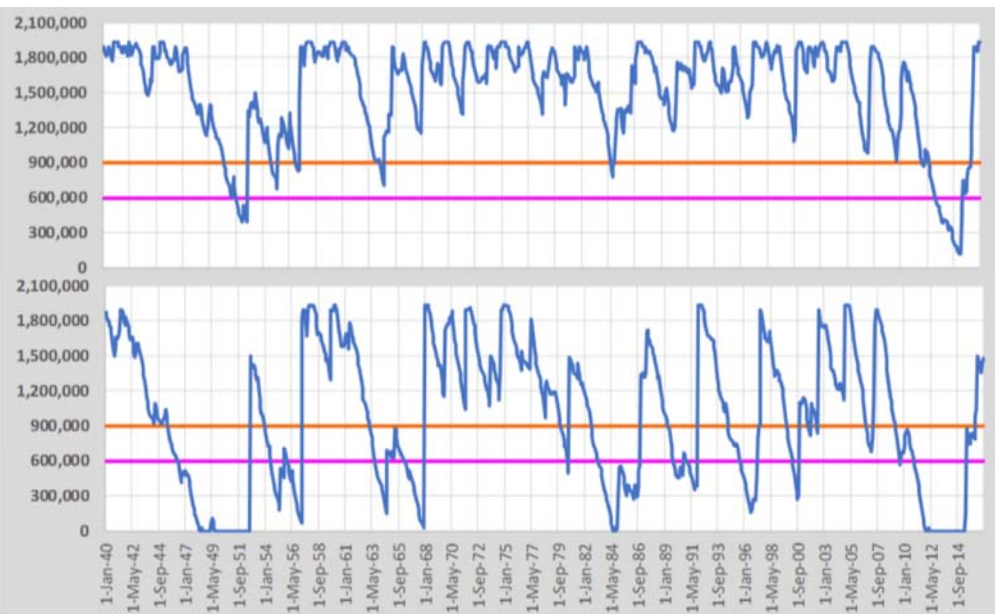








Modeled Storage in Travis and Buchanan in 2115



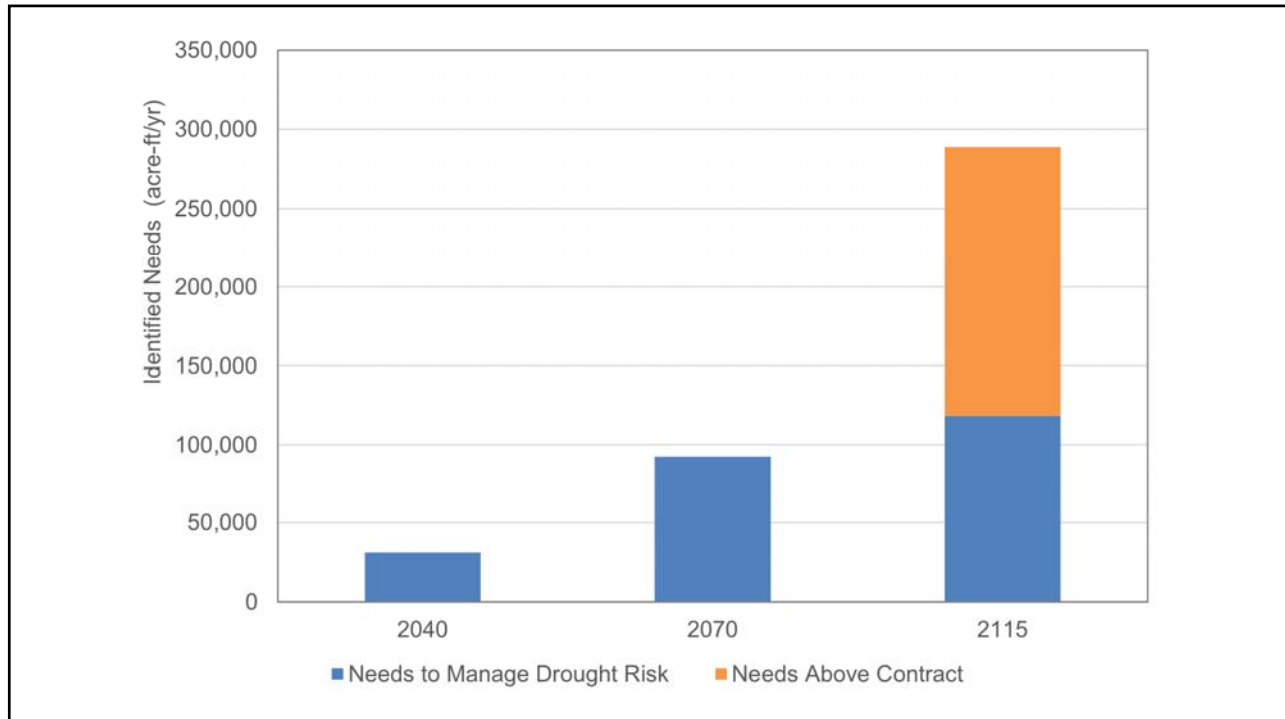
no
climate
change

with
climate
change

*units in acre-feet
from the City of Austin*

Planning (in a nutshell)

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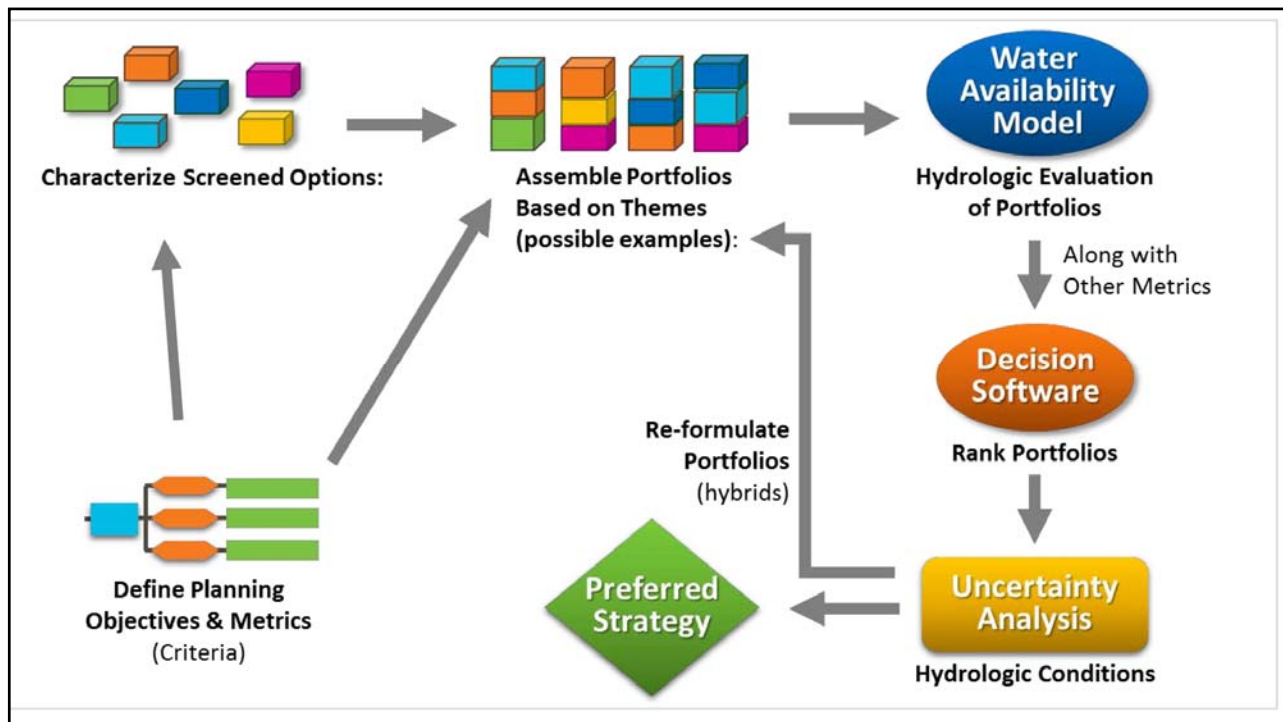


Figure 8-1. Initial Portfolios Centered Around Themes to Push Boundaries and See Trade-Offs

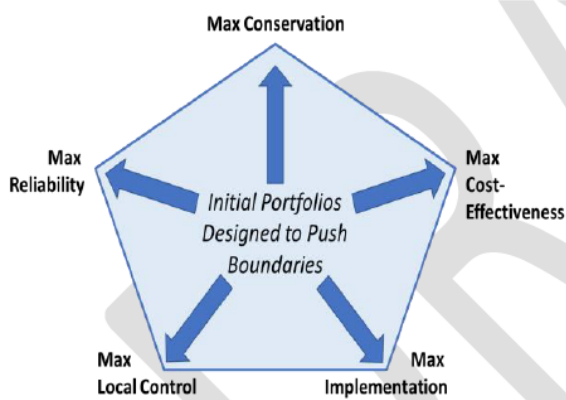
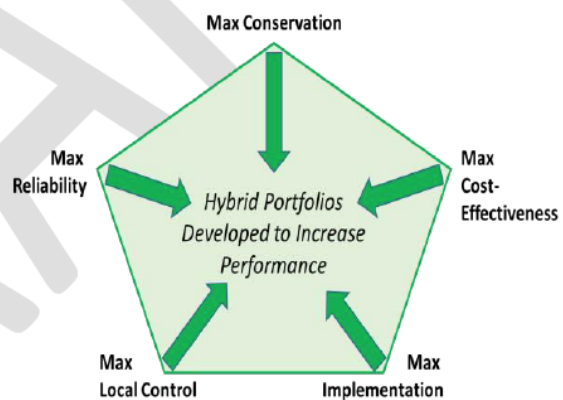


Figure 8-2. Process to Develop Hybrids



Recommended Options	Average/ Drought	Estimated Yield Capacity (Acre Feet per Year) ¹			
		2020	2040	2070	2115
Demand Management Options					
Advanced Metering Infrastructure (AMI)	Both	596	3,882	5,766	9,371
Water Loss Control	Both	3,108	9,326	10,918	13,064
CII Ordinances	Both	1,063	1,063	1,063	1,063
Benchmarking	Both	-	5,953	11,670	25,228
Landscape Ordinance	Both	-	3,038	7,428	15,050
Landscape Transformation Incentive	Both	-	321	633	929
Irrigation Efficiency Incentive	Both	42	205	427	394
Lot Scale Stormwater Harvesting	Both	-	329	869	2,275
Lot Scale Rainwater Harvesting	Both	-	1,550	4,032	9,251
Greywater Harvesting	Both	-	2,126	5,617	12,667
Building Scale Wastewater Reuse	Both	-	1,323	3,672	7,875
AC Condensate Reuse	Both	100	1,084	2,711	5,150
Demand Management Options Sub-Total	-	4,908	30,202	54,806	102,317

AFY = acre-feet per year

Recommended Options	Average/ Drought	Estimated Yield Capacity (Acre Feet per Year) ¹			
		2020	2040	2070	2115
Water Supply Options					
Aquifer Storage and Recovery	Drought	-	60,000	60,000	90,000
Brackish Groundwater Desalination	Both	-	-	5,000	16,000
Direct Non-Potable Reuse	Both	500	12,000	25,000	54,600
Indirect Potable Reuse (IPR) through Lady Bird Lake	Drought	-	11,000	20,000	20,000
Capture Local Inflows to Lady Bird Lake (infrastructure also included as part of IPR, above)	Average	-	3,000	3,000	3,000
Off Channel Reservoir	Both	-	-	25,000	25,000
Distributed Wastewater Reuse	Both	-	3,154	14,467	30,049
Sewer Mining	Both	-	1,000	2,211	5,284
Community Stormwater Harvesting	Both	-	158	236	504
Drought Supply Options	-	-	71,000	80,000	110,000
Average/Both Supply Options	-	500	19,312	74,914	134,437
Water Supply Options Sub-Total	-	500	90,312	154,914	244,437
OVERALL TOTAL	-	5,408	120,512	209,720	346,754

AFY = acre-feet per year

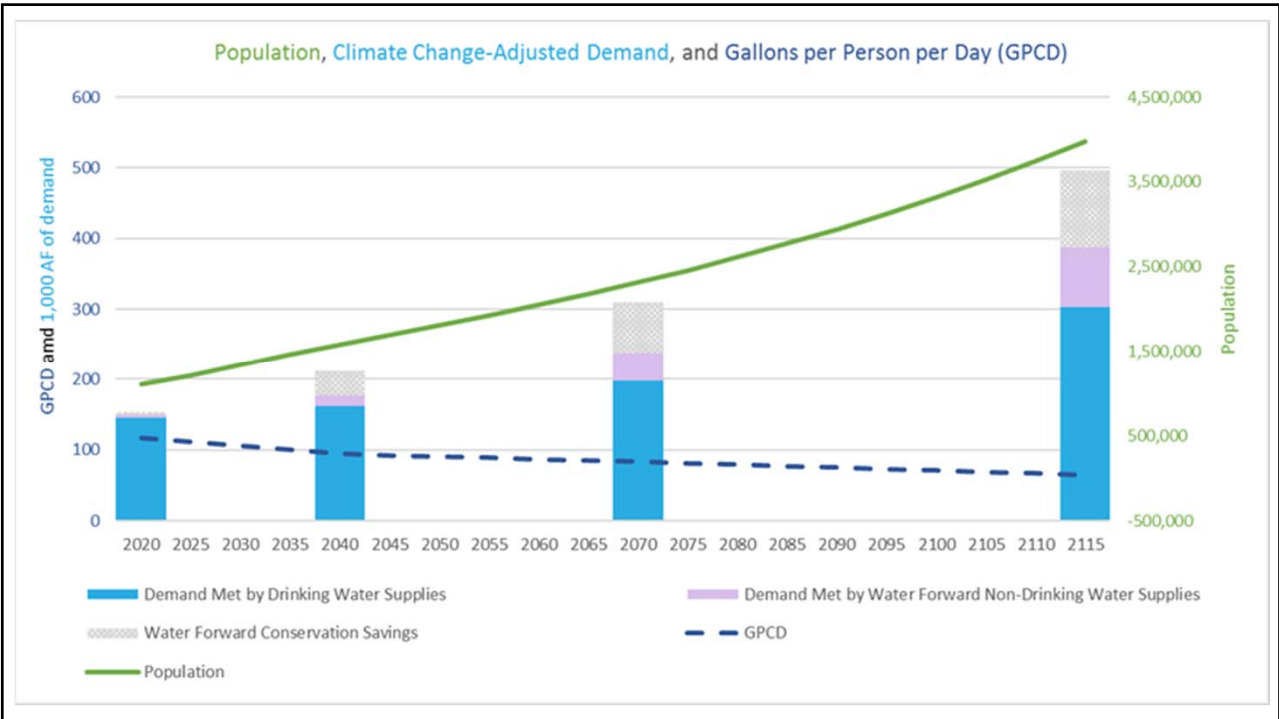
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Options	Total Unit Cost (\$/AF)	Capital Unit Cost (\$/AF)	O&M Unit Cost (\$/AF)
Advanced Metering Infrastructure	\$2,800		
Water Loss Control Utility Side	\$3,690		
CII Ordinances for Cooling Towers and Steam Boilers	\$71		
Water Use Benchmarking and Budgeting	\$21		
Landscape Transformation Ordinance	\$23		
Landscape Transformation Incentives	\$96		
Irrigation Efficiency Incentives	\$202		
Stormwater Harvesting (Lot-Scale)	\$6,470		
Rainwater Harvesting (Lot-Scale)	\$2,864		
Gray water Harvesting (Lot-Scale)	\$9,797		
Building Scale Wastewater Reuse (Lot-Scale)	\$11,726		
AC Condensate Reuse (Lot-Scale)	\$2,702		
Aquifer Storage and Recovery		\$1,174	\$318
Brackish Groundwater Desalination		\$1,883	\$807
Direct Non-Potable Reuse (Centralized Reuse – Purple Pipe)	\$1,229		
Indirect Potable Reuse with Capture Lady Bird Lake Inflows		\$284	\$321
Off-Channel Reservoir w/ Lake Evaporation Suppression		\$499	\$347
Community-Scale Distributed Wastewater Reuse	\$2,906		
Community-Scale Wastewater Scalping (Sewer Mining)	\$4,261		
Community-Scale Stormwater Harvesting	\$11,666		

AF = acre-foot

A couple strategies considered but not used:
 Direct potable reuse: \$2,204
 Seawater desalination: \$3,032



resources

- waterdatafortexas.org
- [2014 Austin Water Resource Planning Task Force](#)
- [Austin Water Forward](#)
- [Austin Water Forward Task Force](#)
- [Climate change analysis](#)