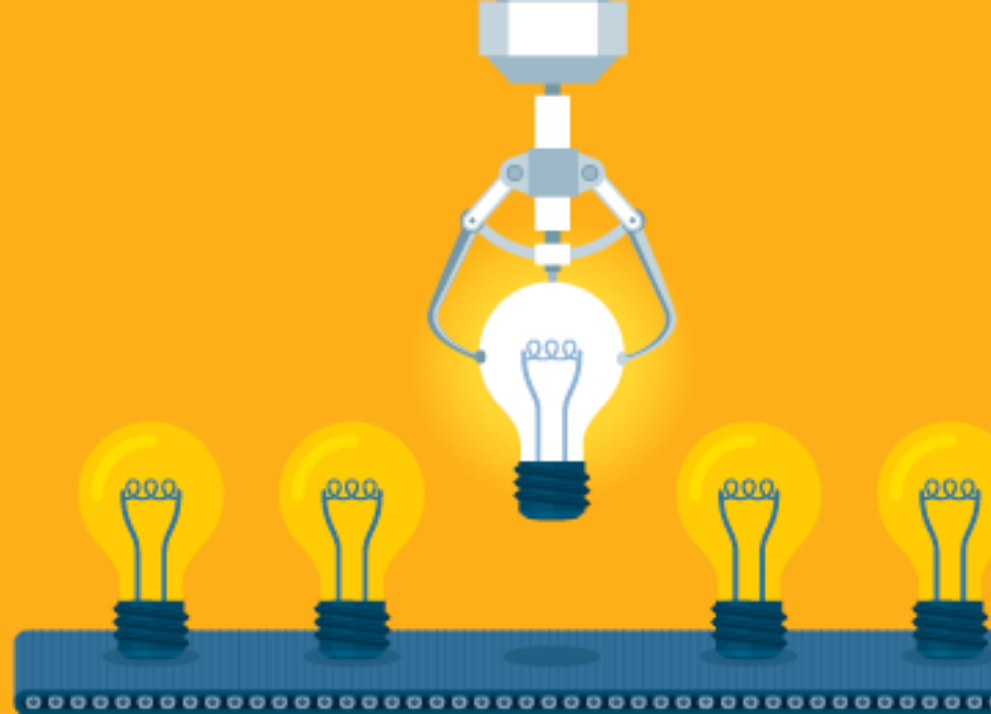




ASSOCIATION OF
METROPOLITAN WATER AGENCIES

INNOVATION SERIES



Welcome

INNOVATION SERIES WEBINAR

(All phone lines are muted for now)

Welcome and Introduction

Erica Brown

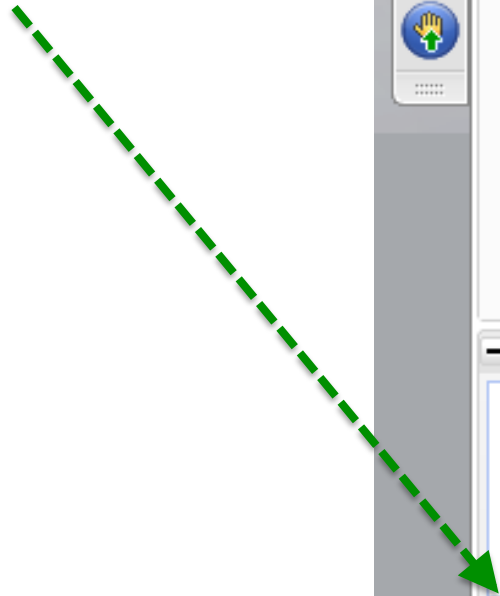
Chief Strategy/Sustainability Officer
Association of Metropolitan Water Agencies

Reminders

- Today's presentation is being recorded.
- Slides and recording will be available at www.amwa.net/amwa-innovation-series.
- We'll take questions after both speakers have presented.
- All lines are muted until discussion period.

How to Ask a Question

Type and send your question.



The screenshot displays the GoToWebinar interface. At the top, there is a menu bar with 'File', 'View', and 'Help'. Below the menu bar, there are three main panels:

- Audio Panel:** Contains a telephone icon, radio buttons for 'Computer audio' and 'Phone call' (selected), and fields for 'Dial: +1 (XXX)-XXX-XXXX', 'Access Code: XXX-XXX-XXX', and 'Audio PIN: X'. It also includes the text 'Already on the call? Press #X# now.' and a link 'Problem dialing?'.
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- Footer:** Displays 'DRY RUN for Insight webinar', 'Webinar ID: 329-228-755', and the 'GoToWebinar' logo.

Agenda

- Kevin Gertig, Executive Director, Fort Collins Utilities
- Marisa Flores Gonzalez, Senior Planner, Austin Water
- Q&A
- Open Discussion

Poll Question #1

Kevin Gertig
Executive Director, Fort Collins Utilities



AMWA: The City of Fort Collins Climate Action Plan

Kevin R. Gertig



BEER



BIKES



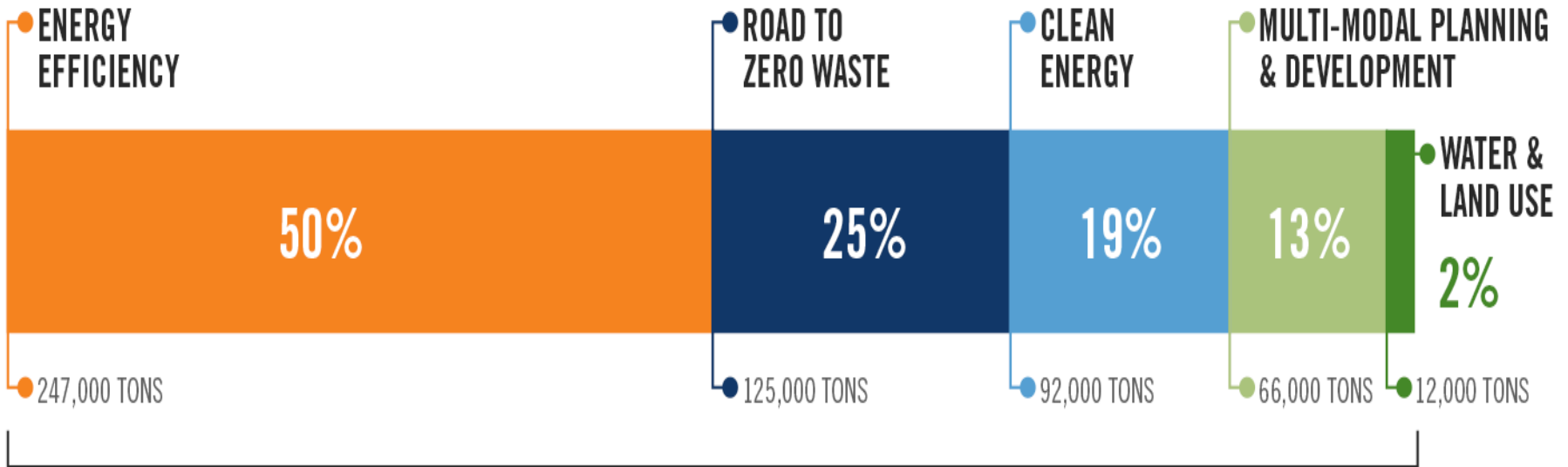
BANDS



BEAUTY

GOAL: REDUCE GREENHOUSE GASES 20% BY 2020

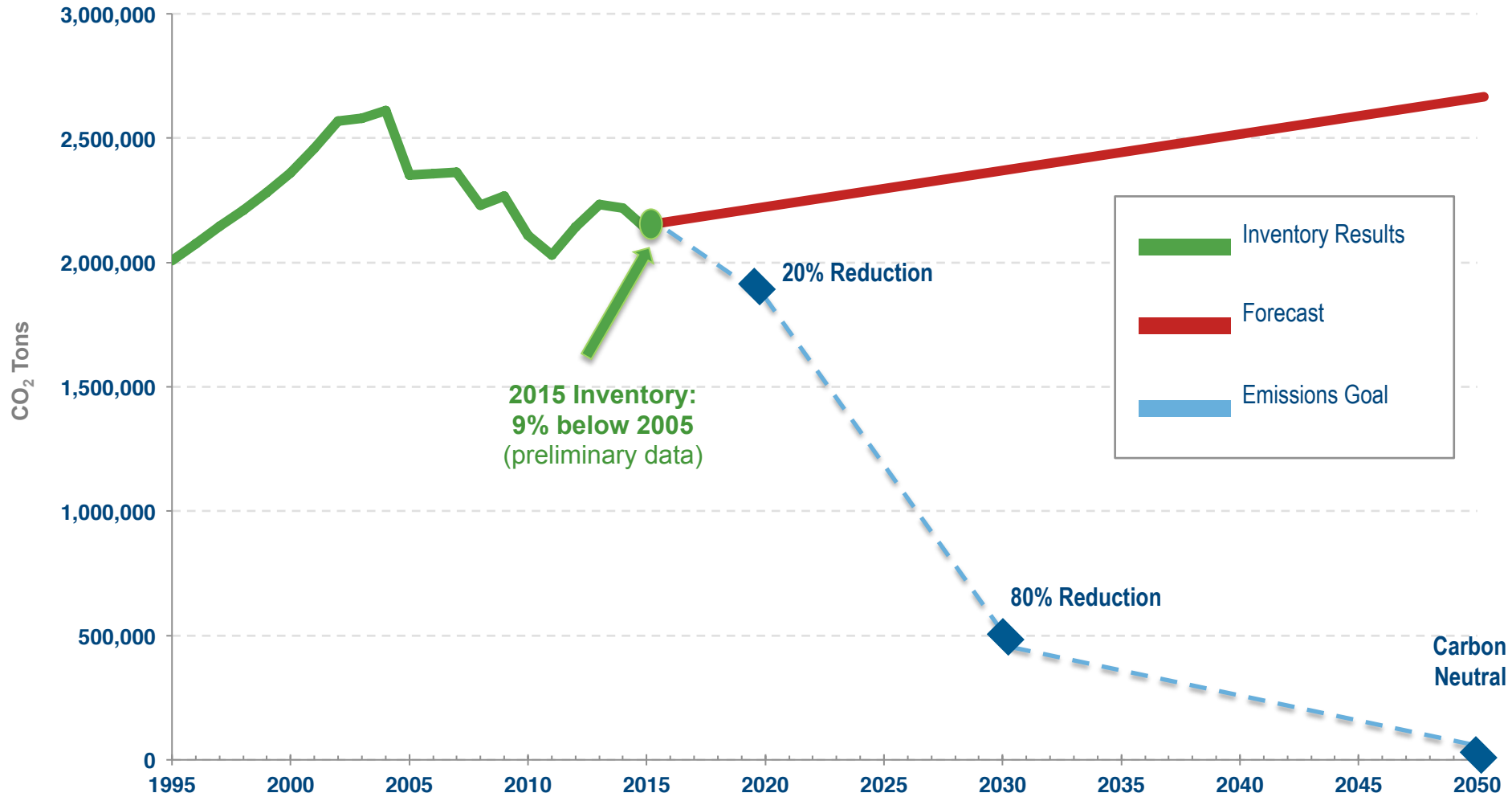
(ESTIMATED 497,000 TONS)



OVERALL TOTAL: 109% = 2020 GOAL POTENTIAL

(ESTIMATED 542,000 TONS)

APPROXIMATELY 43,000 TONS ABOVE OUR 2020 GOAL



Aspiration to Implementation

2015

ASPIRATIONAL

Climate Action PLAN

2016

OPERATIONAL

Road to 2020
Forging Our *Efficient* Future

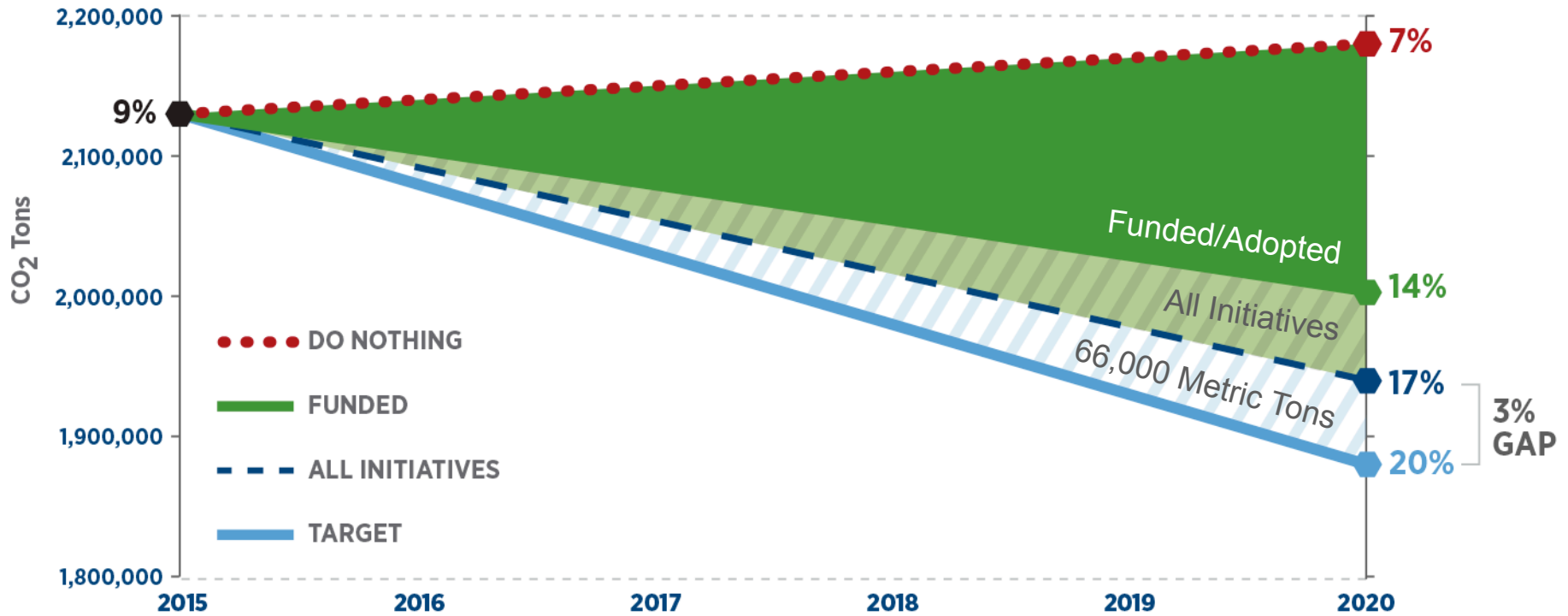
2017

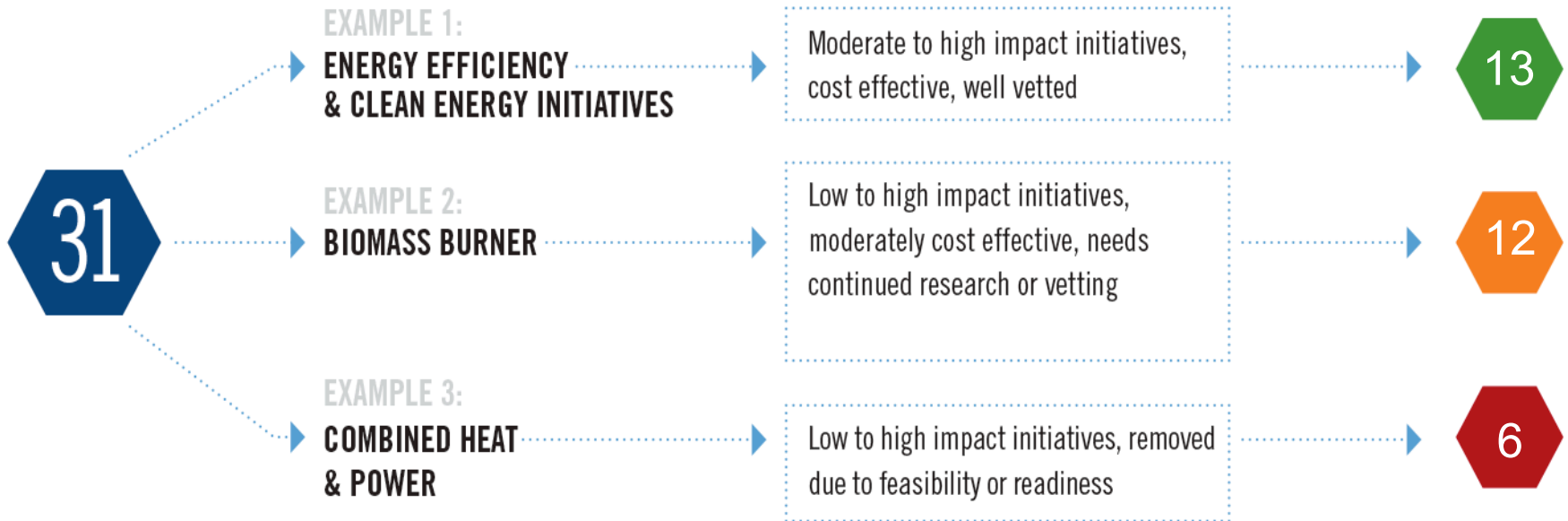
IMPLEMENTATION

 **FORTIFY**
HEALTHY. VIBRANT. RESILIENT.

GOALS & FRAMEWORK

Climate Action PLAN





 COUNCIL MOVED FORWARD

 IMPLEMENT AS READY

 STOP/PAUSE

- Climate Wise
- City Energy Project
- Homewise



- Solar incentives for utilities customers
- Geothermal exchange
- Fleet conversion



Planned CAP-Driven Technology



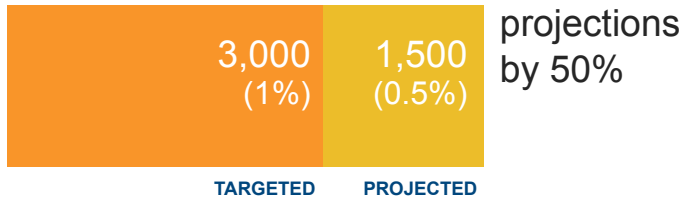
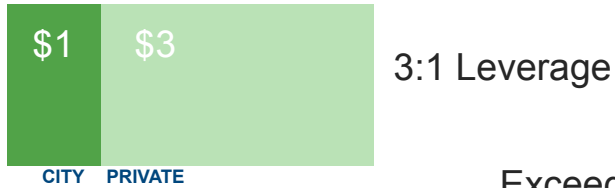
- Biomass Energy: Regional Composting Waste to Energy Facility
- Two Stroke Engine Phase Out
- Natural Gas Flare Recapture

\$10 PROBLEM



Critical to have private sector investment to create the climate economy

IMPACTS – FINANCIAL & CARBON



ENERGY SAVINGS

1 Gigawatt Hours (GWh) = 1M Kilowatt Hours



Climate Action: Organics Ordinance and P3 Projects



- Organics Ordinance
- Biodegester P3 with Woodward, Inc. to produce energy, create cost savings, and use city facilities for experimental technology

zero
waste
FORT COLLINS



F O R T I F Y

F O R T C O L L I N S

HEALTHY. EFFICIENT. RESILIENT.

FORTIFY TIP #10

SAVE MONEY

and reduce energy use by

INSULATING your
WALLS & ATTIC



- Proactive and resilient planning: Create plans and build the plan
- Adopt data-driven approaches to climate action
- Climate action is infinitely scalable



Poll Question #2

Marisa Flores Gonzalez
Senior Planner, Austin Water



WATER FORWARD

INTEGRATED WATER RESOURCE PLAN

Austin Water Forward AMWA Innovation Webinar

September 13, 2017



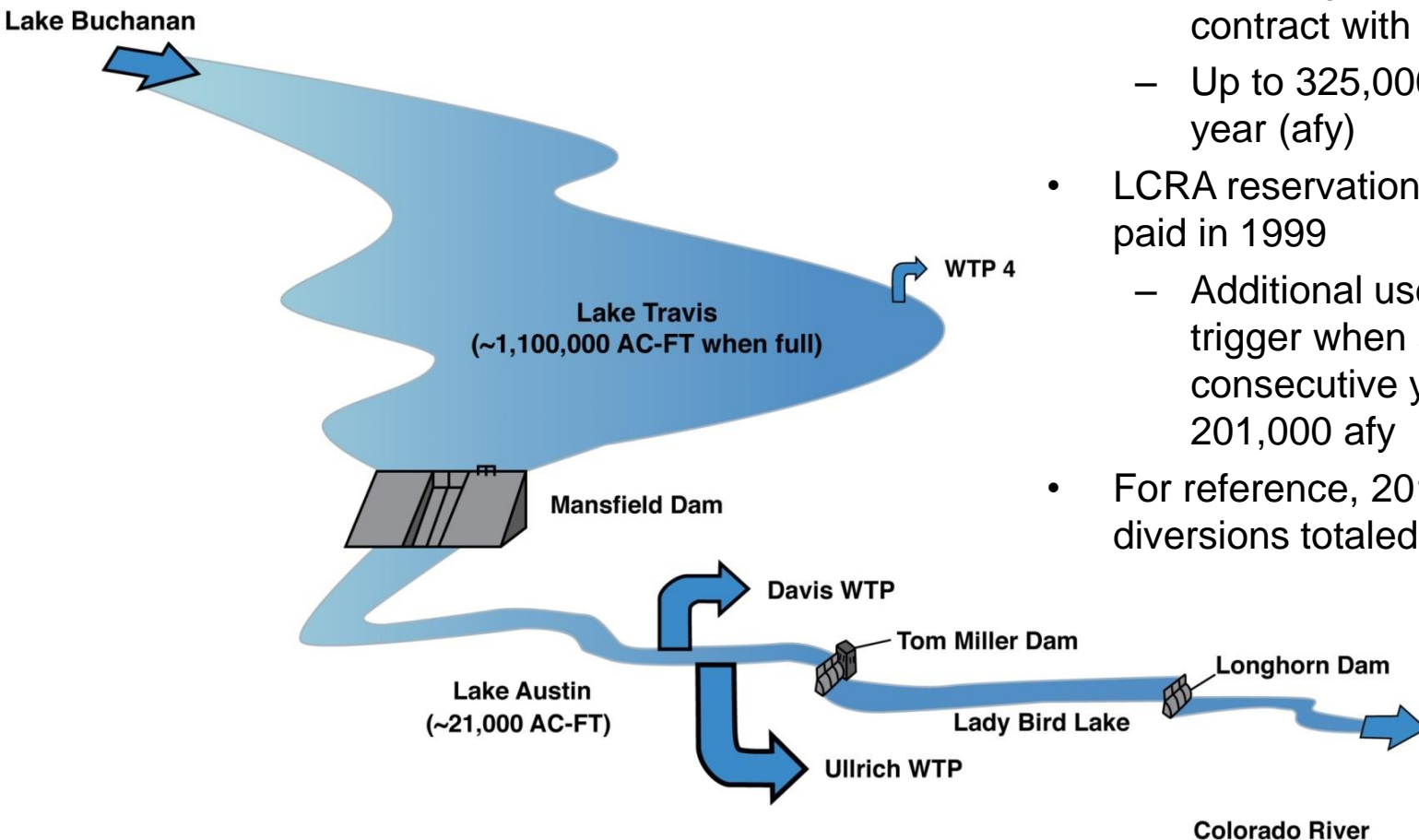
Water Forward

Integrated Water Resource Plan (IWRP)

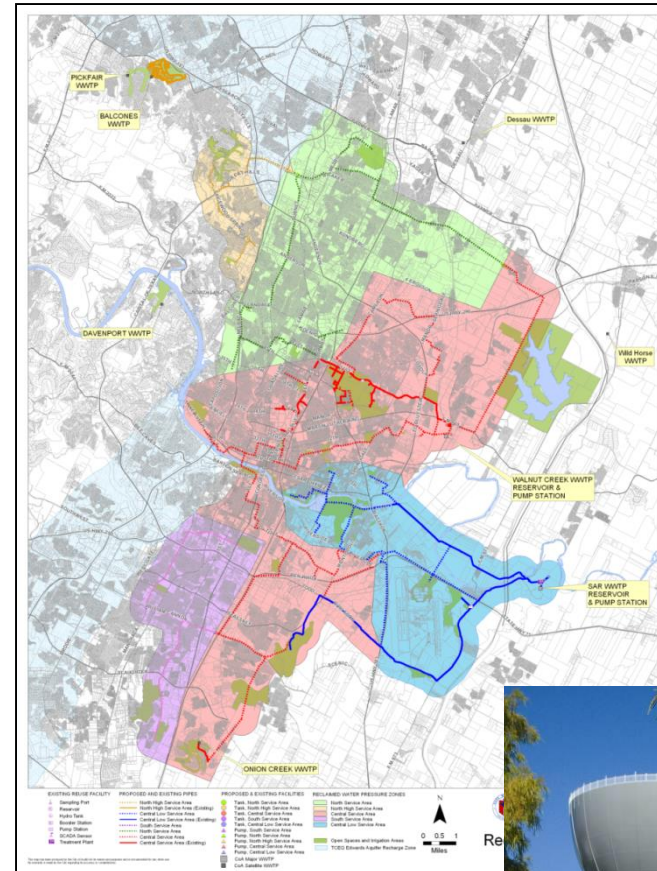
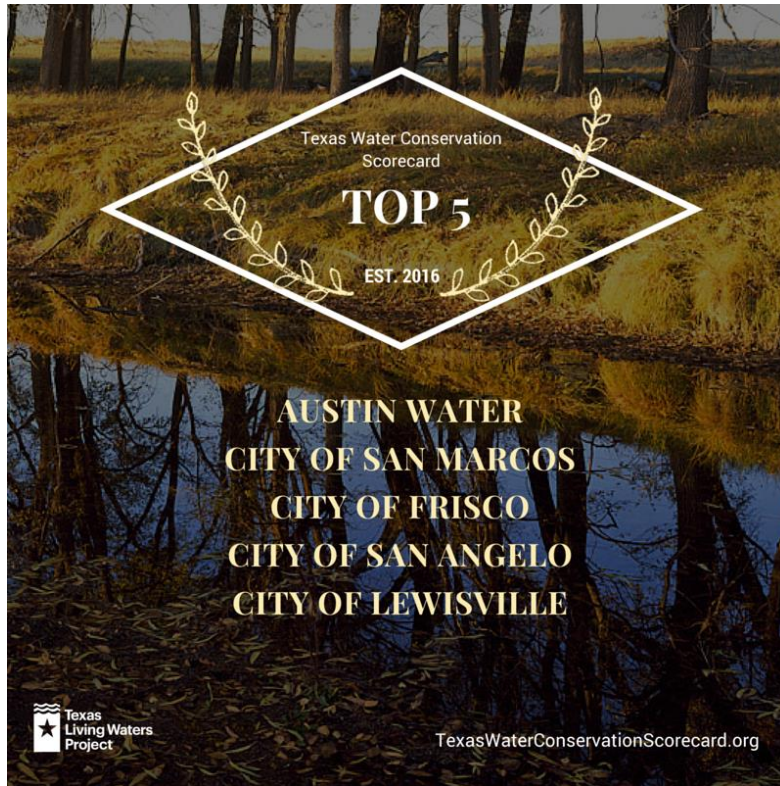
- Austin Water is leading the development of a 100 year water plan that reflects our community's values
- Goal: Ensure a diversified, sustainable, and resilient water future, with strong emphasis on water conservation
- Incorporates planning for drought and climate change
- Council-appointed Task Force meets monthly
- Interdepartmental coordination and coordination with the community to make sure plan is implementable
- Plan projected to be completed in mid-2018 with planned updates on a five year cycle

Austin’s 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
- For reference, 2016 municipal diversions totaled ~143,000 AF



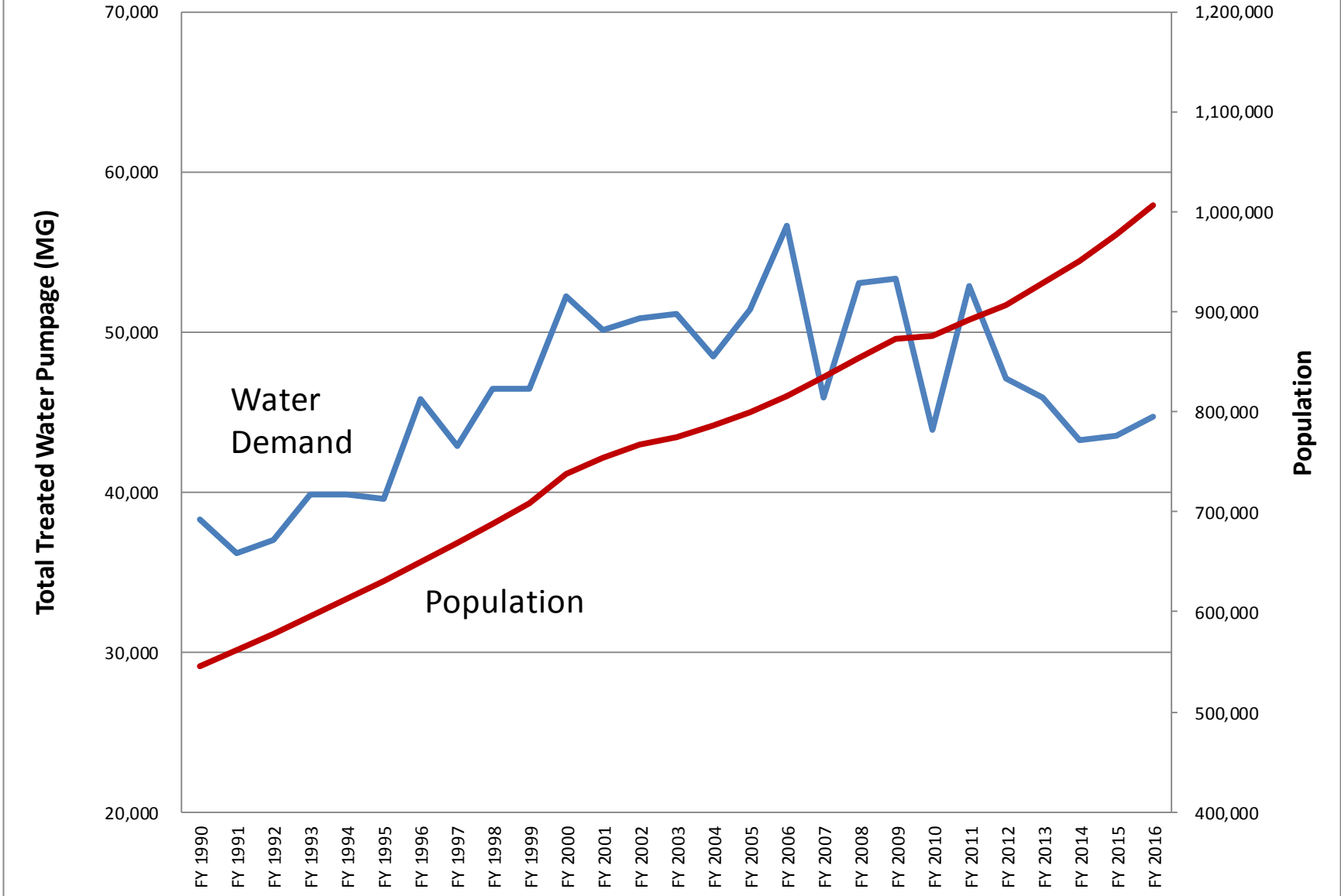
Austin is Texas' Top Water Conservation Scoring Utility



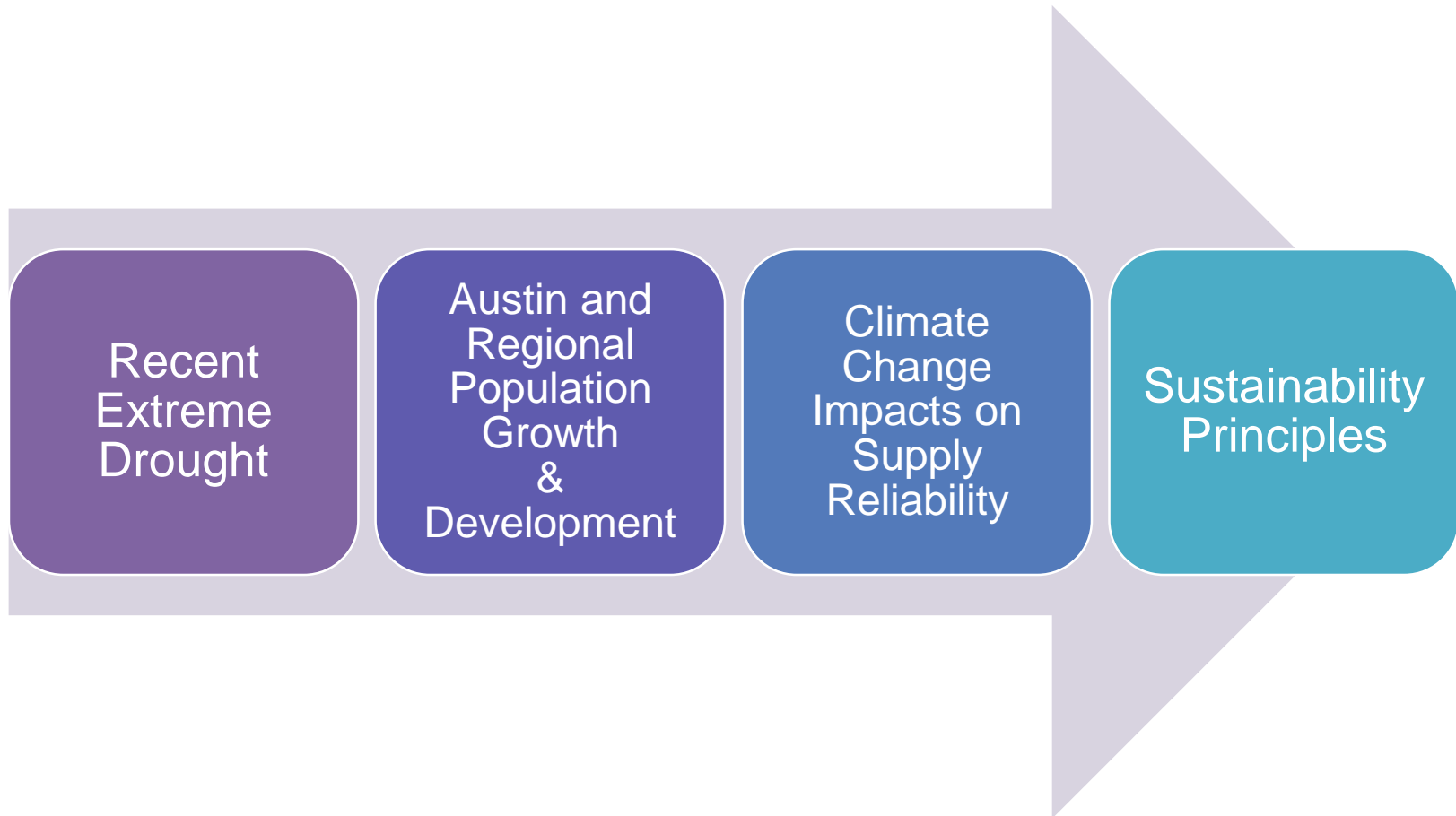
Texas Living Waters Project:
Partnership of the Sierra Club Lone Star Chapter, National Wildlife Federation, and Galveston Bay Foundation

Reclaimed Water Master Plan

Austin's Water Demand and Population

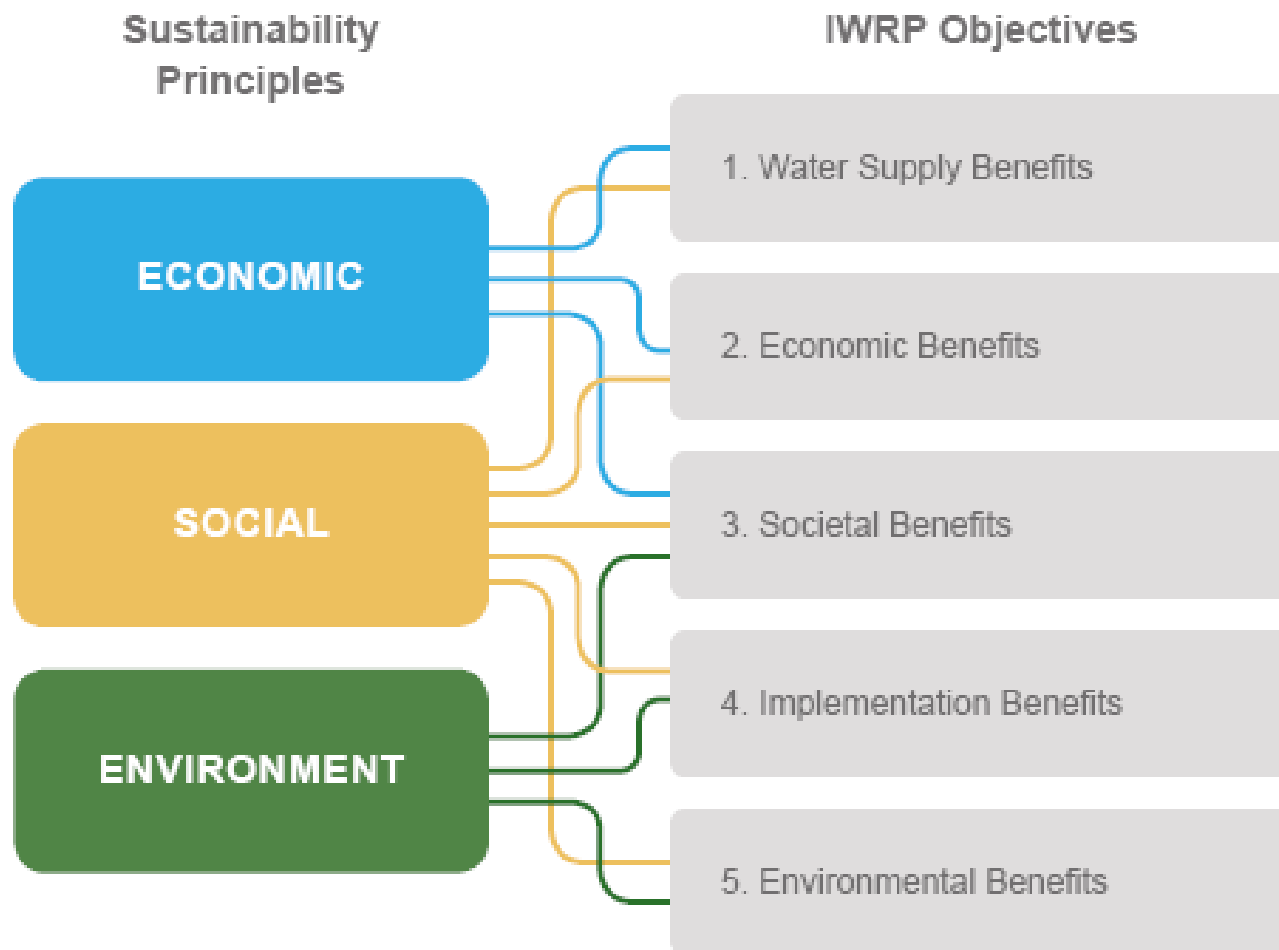


Drivers for Austin's IWRP

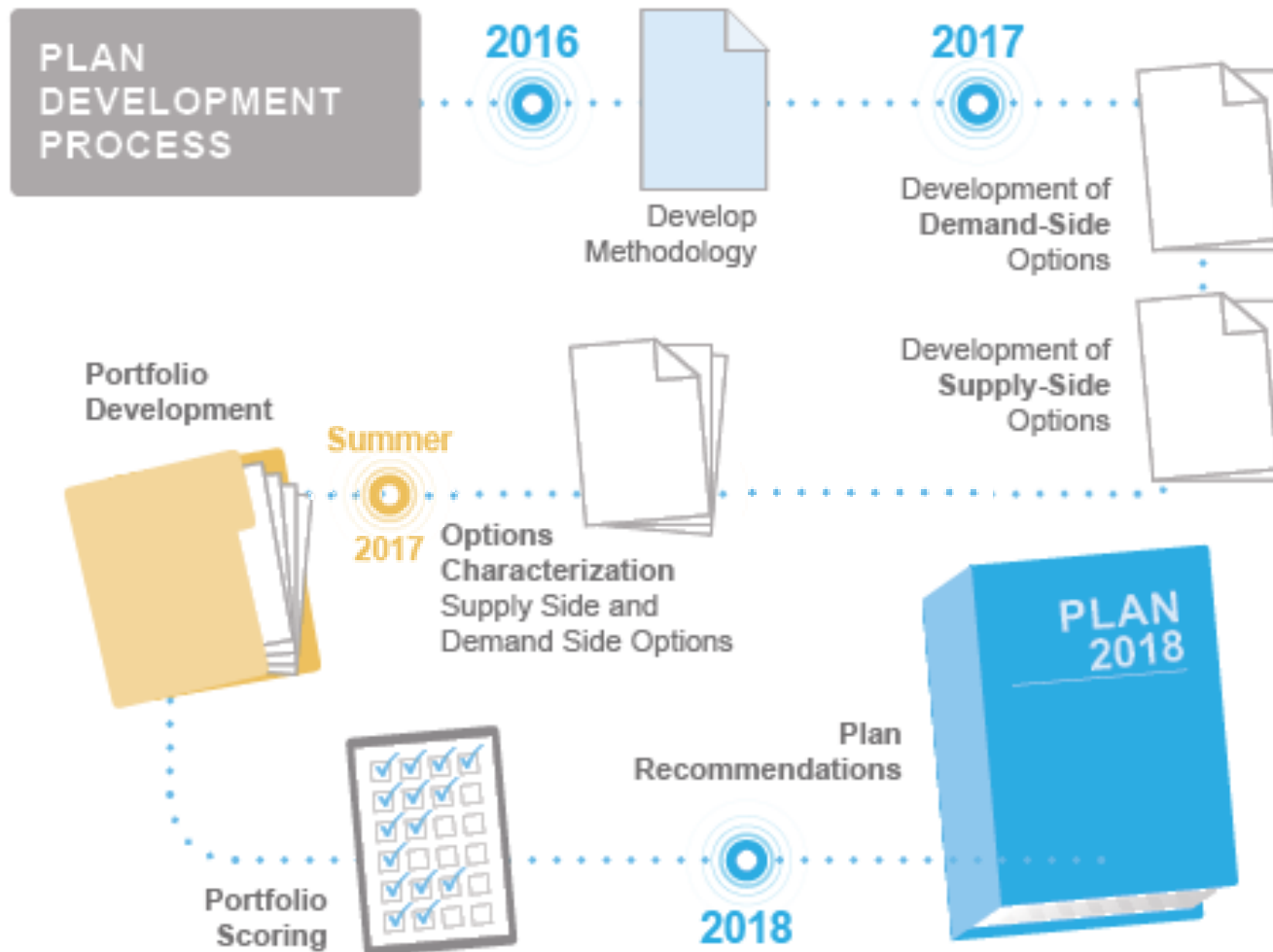


Development of Austin's IWRP was a key recommendation from
2014 City Task Force on Water Resources

Five IWRP Objectives Aligned with the Principles of Sustainability

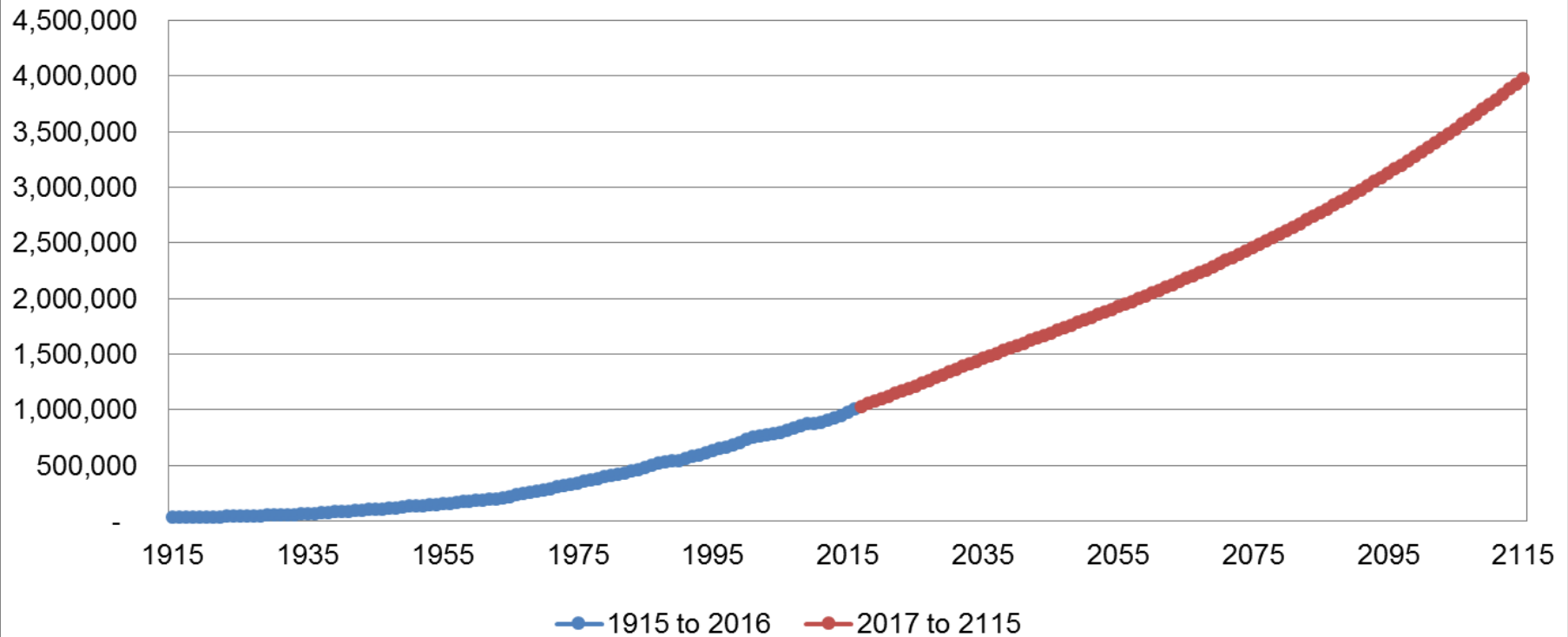


IWRP Development Process

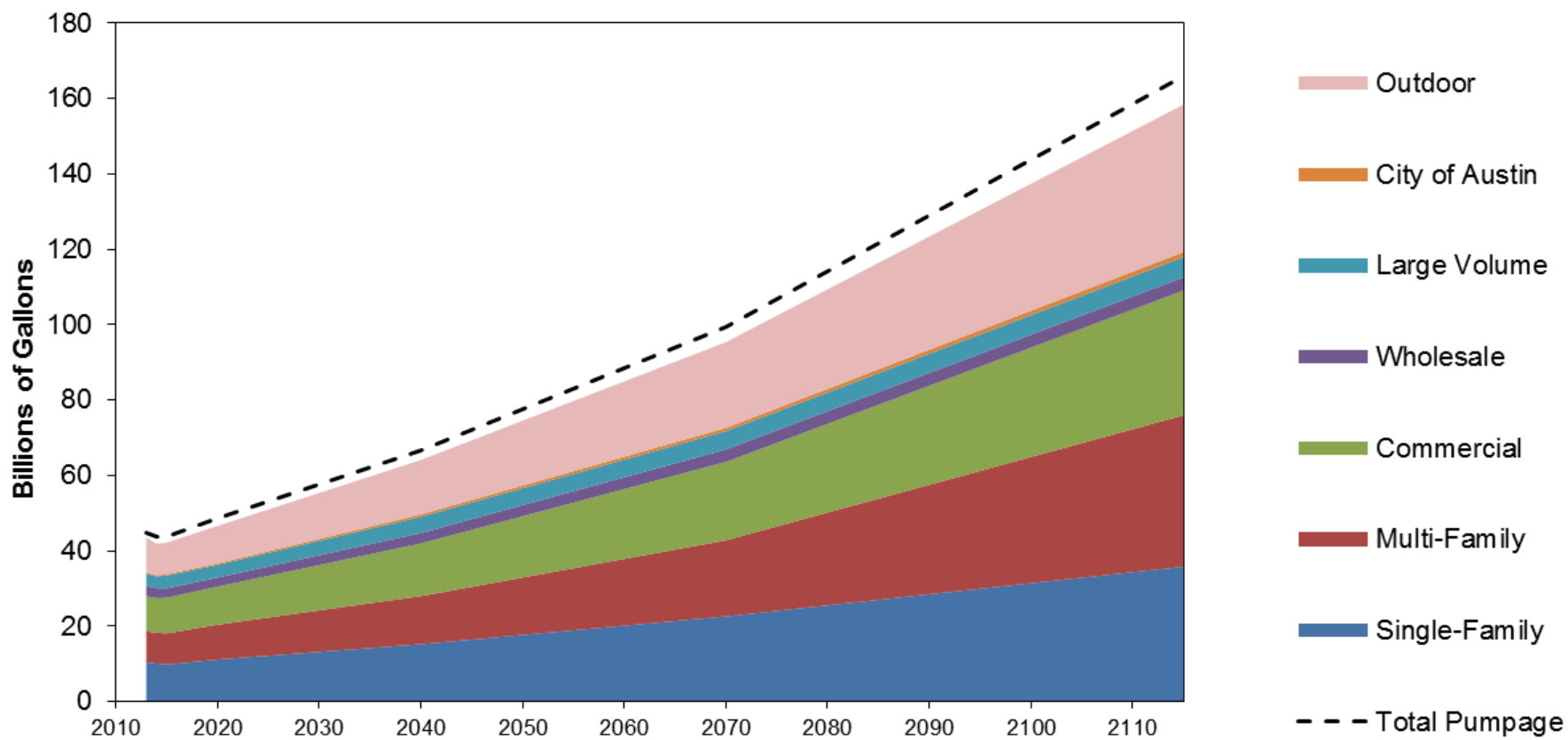


We will be gathering public input throughout the plan process

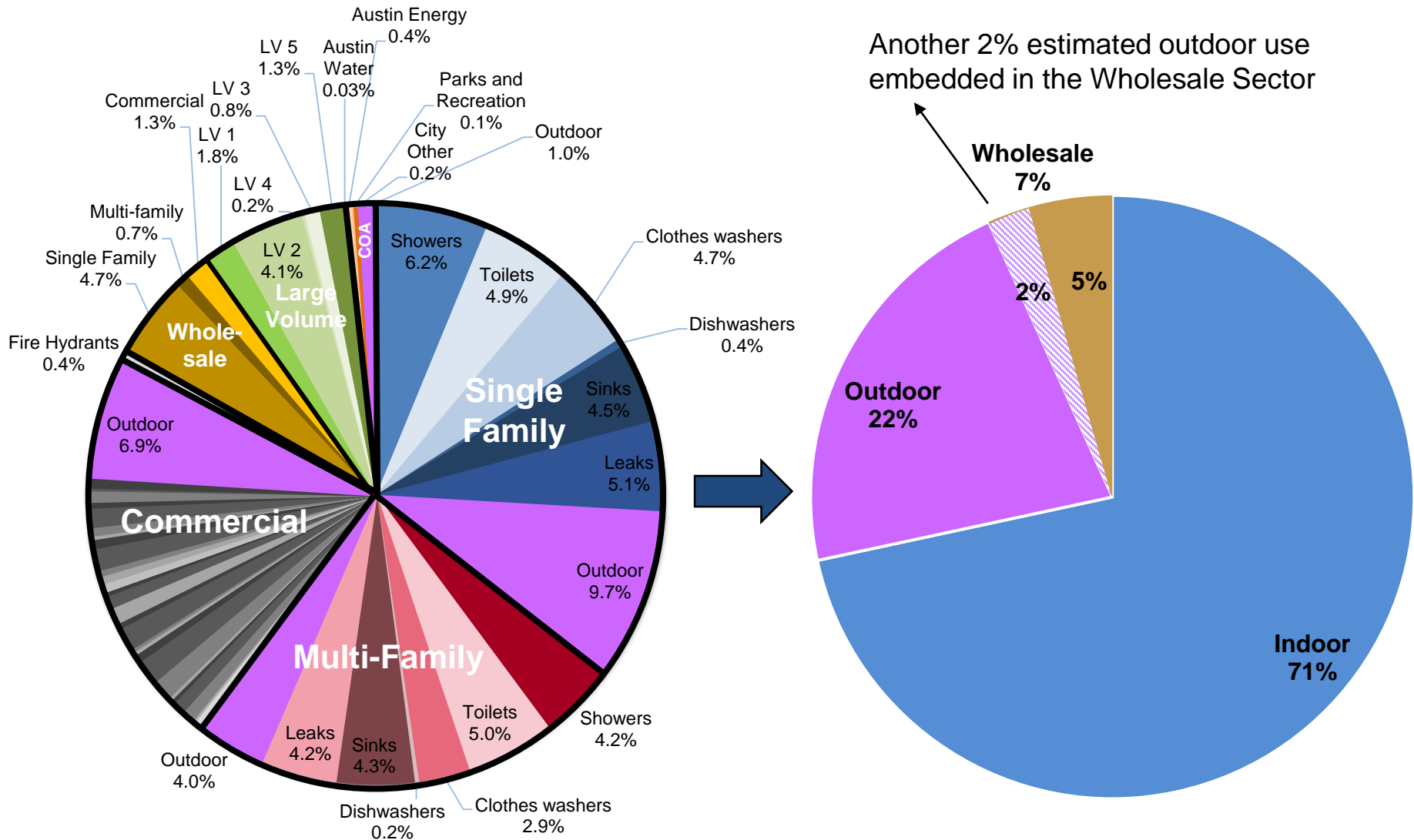
Austin Water Served Population



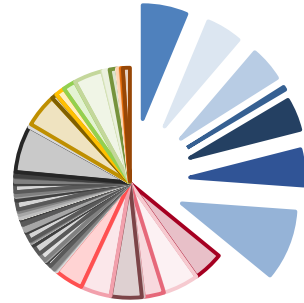
Baseline City-Wide Consumption Projections



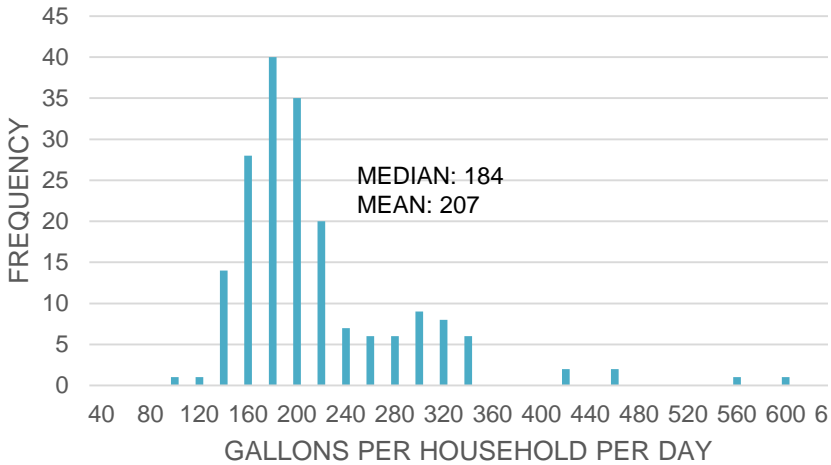
Indoor vs. Outdoor Consumption



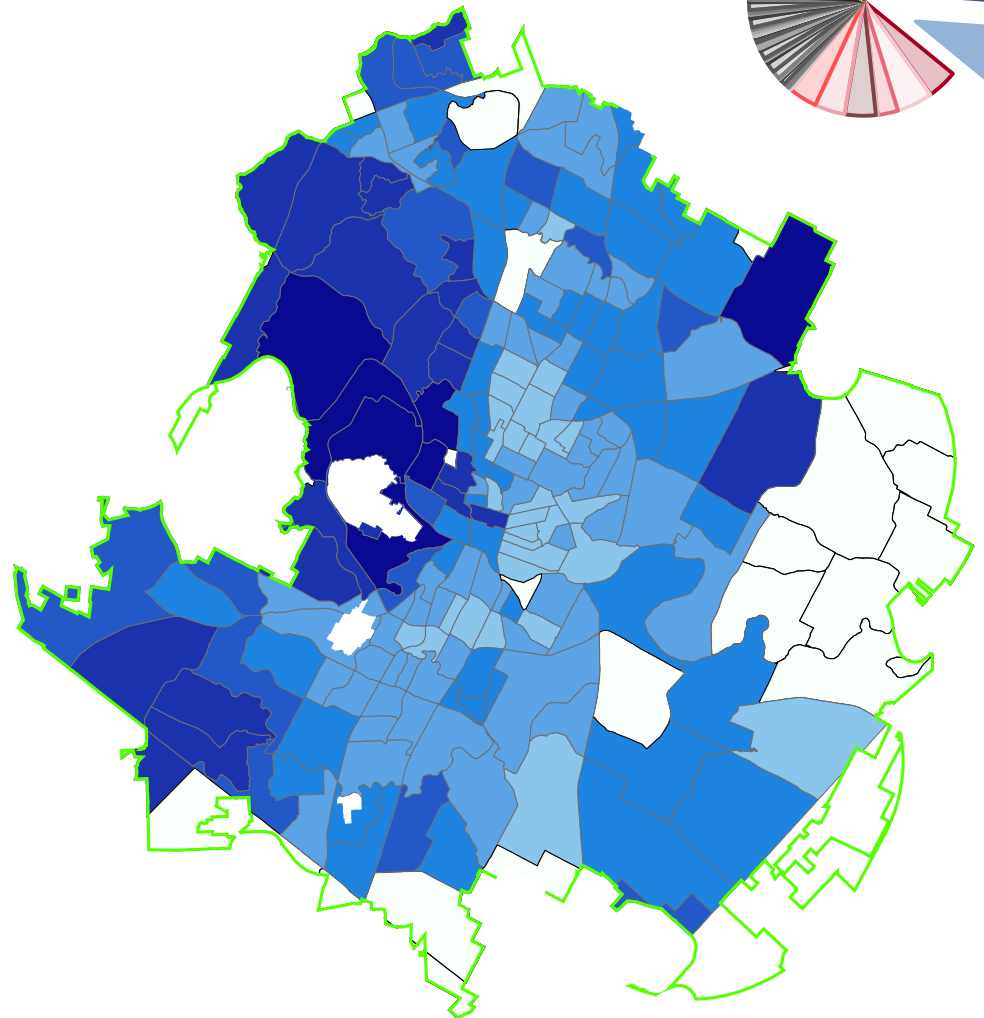
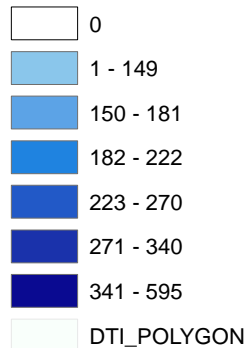
Base Year Single Family Daily Household Consumption



Single Family Daily Household Consumption



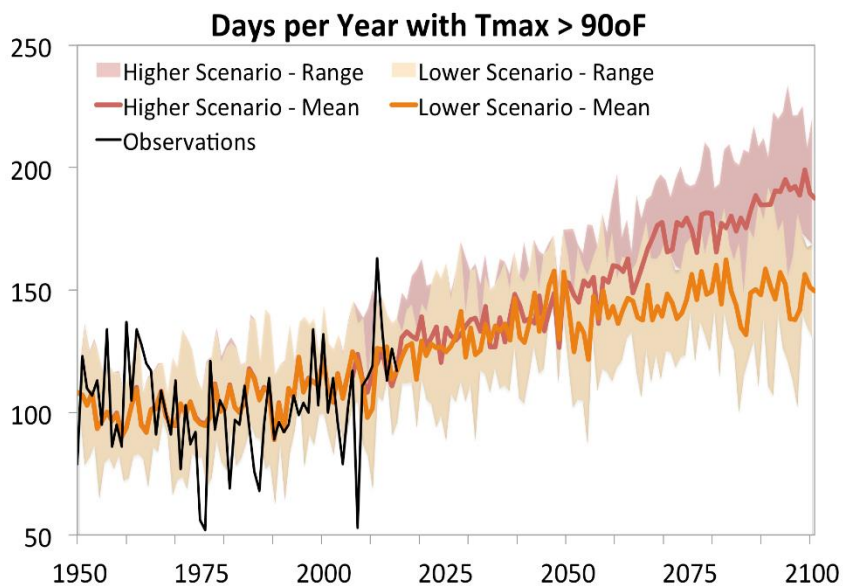
Gallons/Household/Day



A Changing Climate in Austin

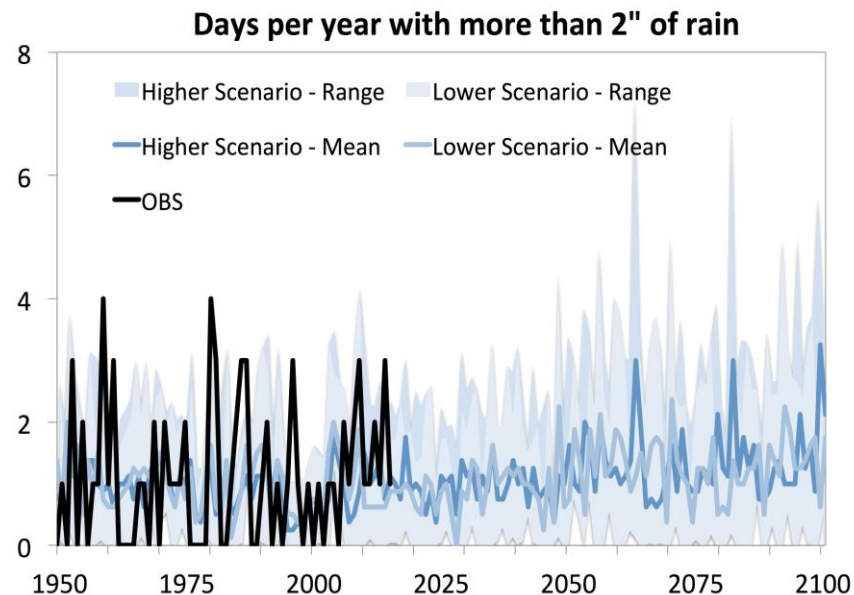
Higher temperatures

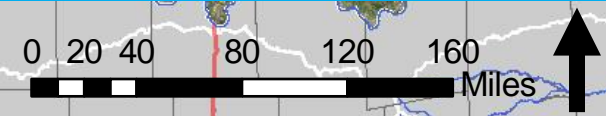
- Projected temperature increases
- Higher evaporation and increased drought intensity



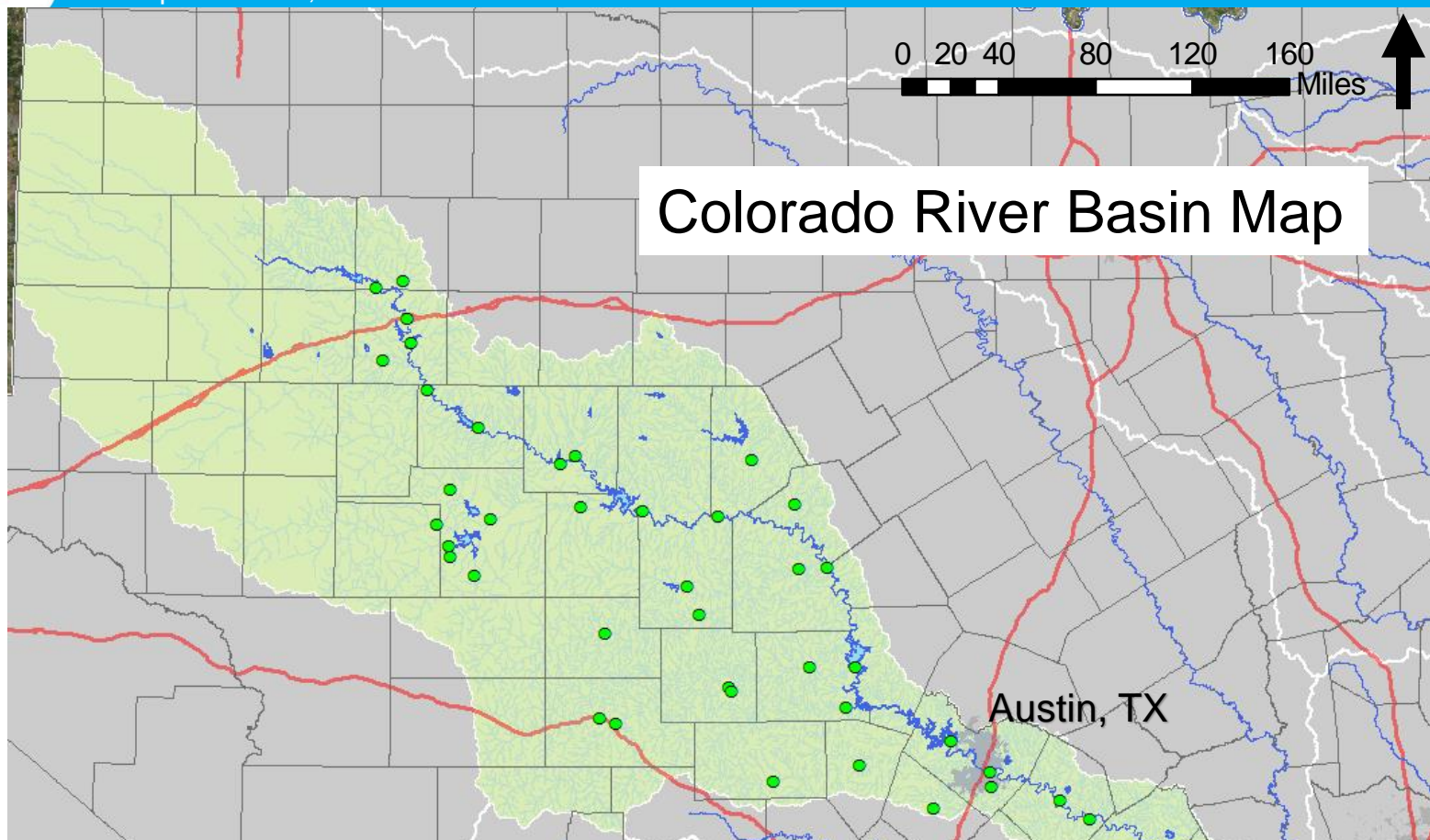
Increases in heavy precipitation

- Projected increases in magnitude and number of heavy rain events





Colorado River Basin Map

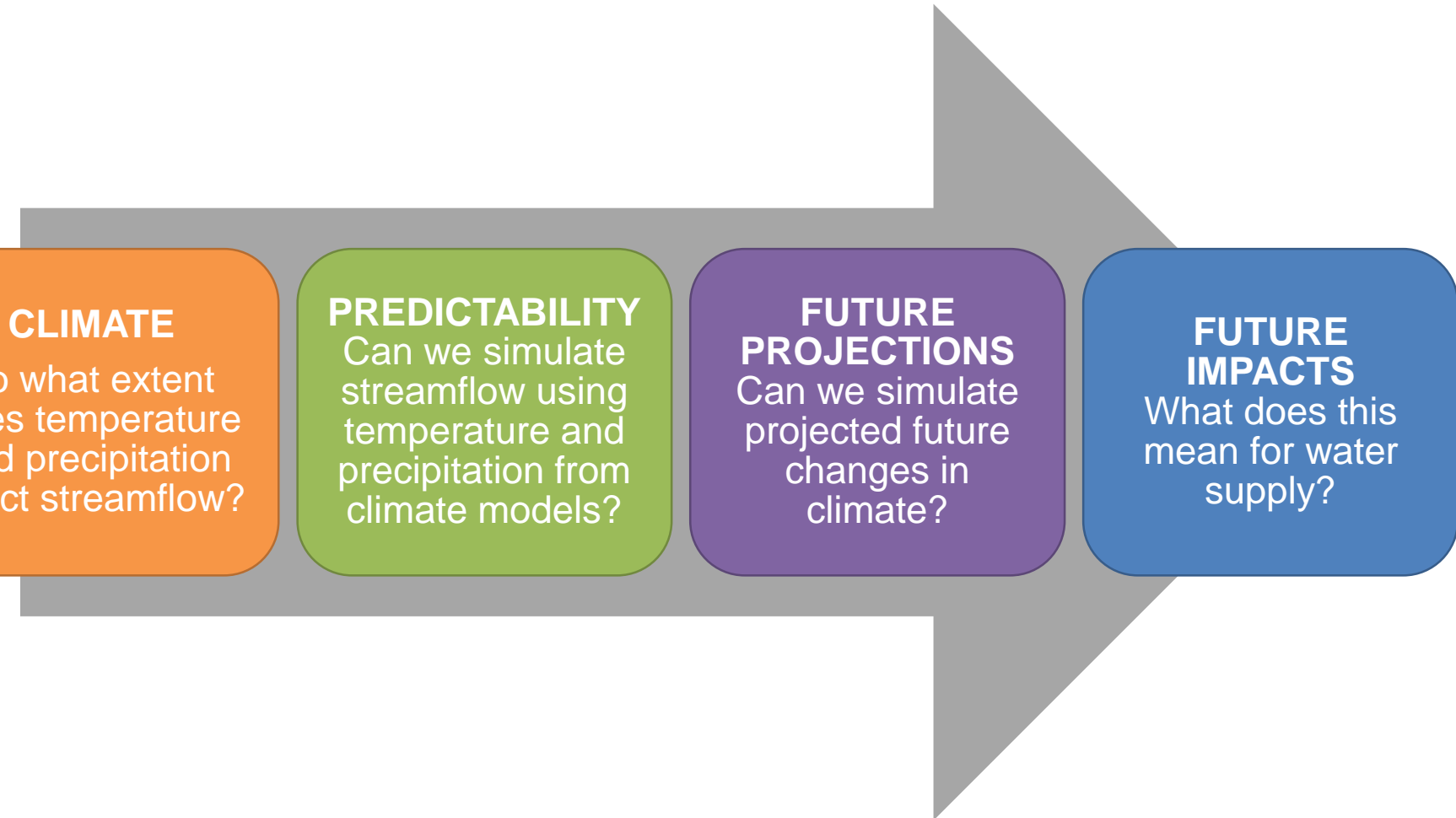


Legend

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

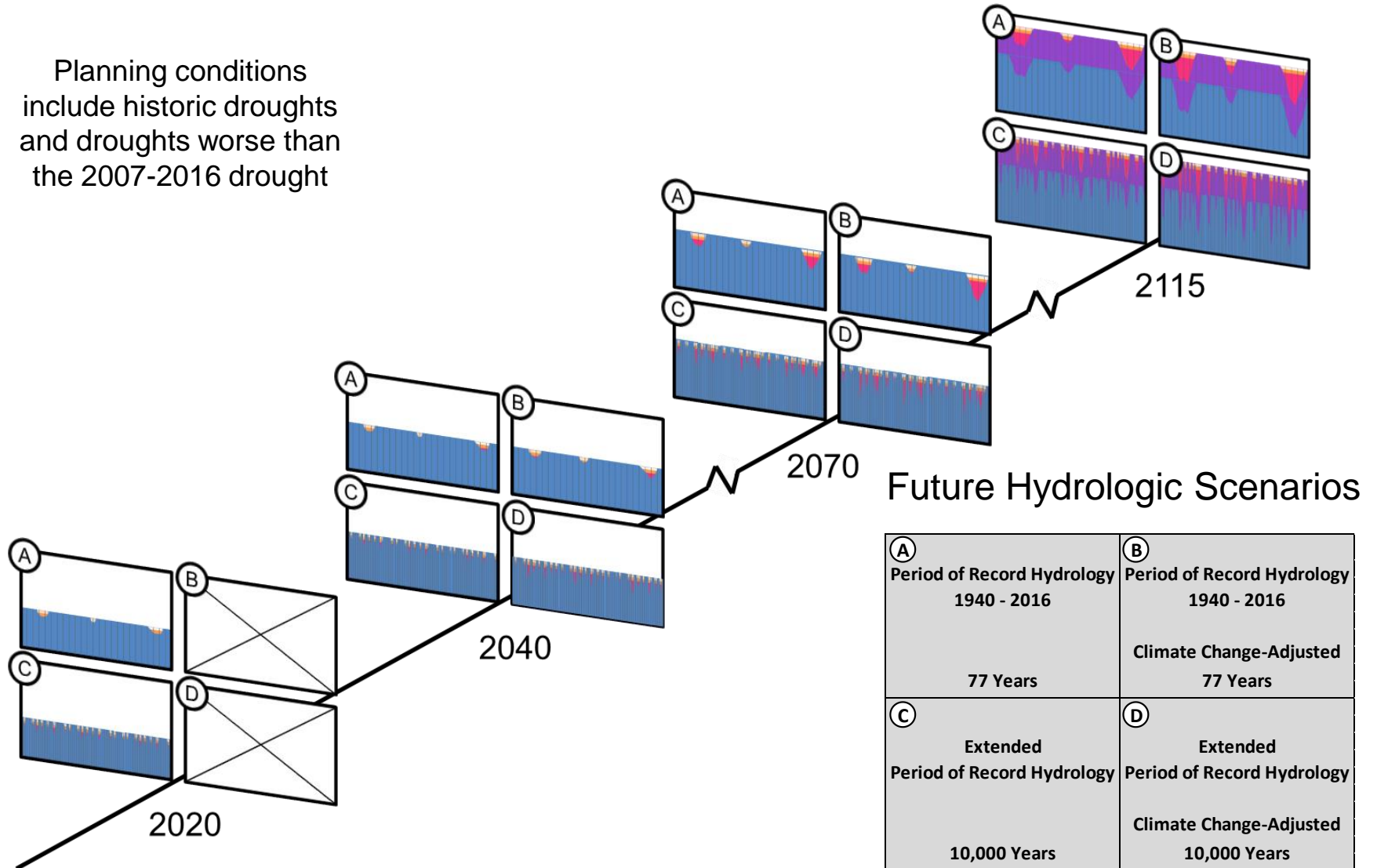
Austin, TX

Climate Change and Hydrology Analysis



Planning For Change and Uncertainties

Planning conditions include historic droughts and droughts worse than the 2007-2016 drought



Top Options Moving Forward

Demand Management Options

Advanced Metering Infrastructure (AMI)

Water Loss Control Utility Side

Commercial, Industrial and Institutional (CII) Ordinances
Cooling Towers and Steam Boilers

Water Use Benchmarking and Budgeting

Landscape Transformation Ordinance

Landscape Transformation Incentives

Irrigation Efficiency Incentives

Alternative Water Ordinances

Lot Scale Rainwater, Stormwater, AC Condensate,
Graywater, and Blackwater

Alternative Water Incentives

Lot Scale Rainwater, Stormwater, and AC Condensate

Alternative Water Incentives

Lot Scale Graywater and Blackwater

Supply Options

Aquifer Storage and Recovery

Brackish Groundwater Desalination

Direct Non-potable Reuse
(Purple Pipe System)

Direct Potable Reuse

Indirect Potable Reuse

Additional Supply from LCRA

Off-Channel Reservoir
w/ Lake Evaporation Suppression

Imported Option Category

Seawater Desalination Representative Option

Community Scale Rainwater Harvesting

Community Scale Stormwater Harvesting

Distributed Wastewater Reuse

Sewer Mining

Decentralized Options

Demand Management Options

Option Name	Yield (AF/yr)	Unit Cost (\$/AF)	Climate Resiliency Indicator
Development-focused Water Use Benchmarking and Budgeting	29,680	\$21	High
Landscape Transformation Ordinance	16,580	\$23	Medium
Water Loss Control Utility Side	13,060	\$3,690	High
Advanced Metering Infrastructure	9,380	\$2,800	High
Landscape Transformation Incentives	1,944	\$96	Medium
CII Ordinances for Cooling Towers and Steam Boilers	1,060	\$71	Medium
Irrigation Efficiency Incentives	570	\$202	Medium

Decentralized Options

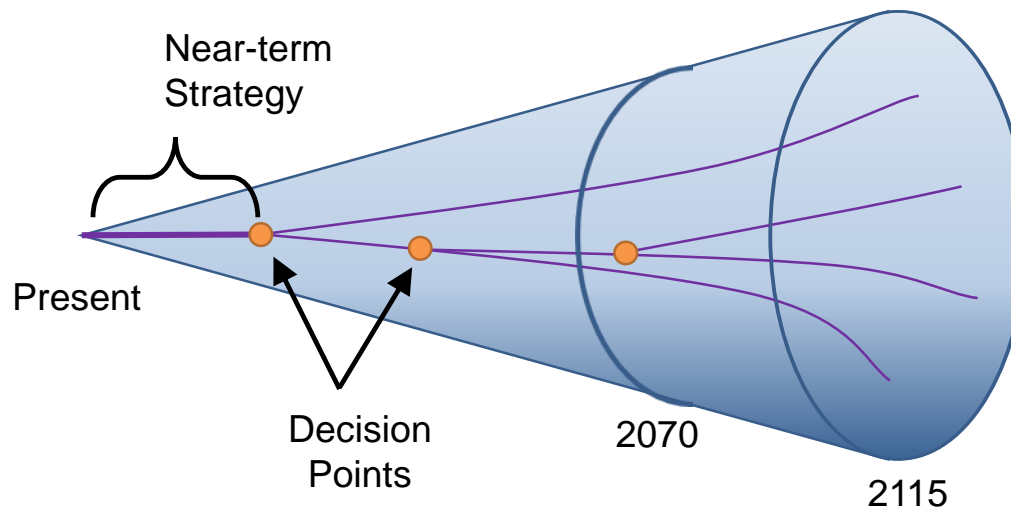
Option Name	Yield Bin	Unit Cost (\$/AF)	Climate Resiliency Indicator	
Alternative Water Ordinance	*	*	*	Demand Management Options
Alternative Water Incentives	*	*	*	
- AC Condensate Reuse	5,150	\$2,702	Medium	
- Rainwater Harvesting (lot-scale)	18,707-27,662	\$2,619-\$2,960	Medium	
- Stormwater Harvesting (lot-scale)	14,437 -24,472	\$5,510 - \$5,062	Medium	
- Graywater Harvesting (lot-scale)	1,188 – 3,583	\$3,044 - \$10,666	High	
- Wastewater Reuse (lot/building-scale)	78,636	\$12,692	High	
Stormwater Harvesting (community-scale)	10,700-22,387	\$1,522 - \$3,233	Medium	Supply Options
Rainwater Harvesting (community-scale)	1,540	\$9,612	Medium	
Sewer mining (wastewater skimming)	801-16,440	\$6,444 - \$3, 030	High	
Distributed wastewater systems	31,391	\$1,557	High	

Supply Options

Option Name	Yield (AF/yr)	Unit Cost (\$/AF)	Climate Resiliency Indicator
Imported Option Category - Seawater Desalination (representative option)	84,000	\$3,032	High
Additional Supply from Lower Colorado River Authority (LCRA)	54,600	\$352	Medium
Direct Non-potable Reuse (Reclaimed Water - Current Master Plan/ Region K)	43,100	\$1,229	High
Off-Channel Reservoir (OCR) with Lake Evaporation Suppression	25,827	\$846	Medium
Direct Potable Reuse (DPR)	20,000	\$2,204	High
Indirect Potable Reuse (IPR) Through LBL and Capture Local Inflows	20,000	\$605	High
Aquifer Storage and Recovery (ASR) – Carrizo-Wilcox	10,000	\$1,053	High
Brackish Groundwater Desalination	10,000	\$2,690	Medium

Some Key Points About Austin's Integrated Water Resource Plan

- We're implementing an adaptive management approach
- This process is about incremental changes we can make to get closer to our desired future
- The plan is anticipated to be updated on a five year cycle to allow new data to inform planning assumptions
- Future updates to the plan will allow us to build on the work we do today and learn from our actions



Thank You

Follow Water Forward and find
more information at
austintexas.gov/waterforward

WATER FORWARD



Austin is one of the fastest growing cities in the country. With a rapidly growing city and a changing climate, Austin Water is working with other city departments, a Council-appointed citizen Task Force, and the community to develop a water plan for the next century.

The goal of the Water Forward plan is to ensure a diversified, sustainable, and resilient water future, with strong emphasis on water conservation. This plan will consider a range of strategies such as water conservation, water reuse, aquifer storage and recovery (ASR), and others.

TOP CONTENT

- [Water Restrictions](#)
- [Water Conservation](#)
- [Reclaimed Water Program](#)
- [Residential Customer Service](#)
- [Contact Information](#)

CONTACT INFO

Email

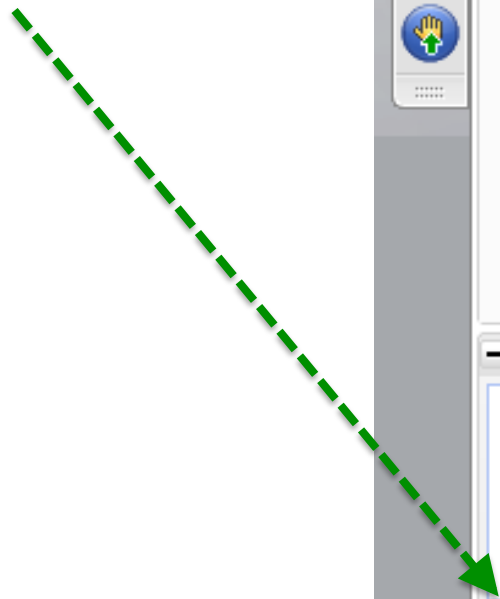


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Questions?

How to Ask a Question

Type and send your question.



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Poll Question #3

Open Discussion

We would like to use this innovation series as a conduit for sharing about innovation generally within the water utility sector.

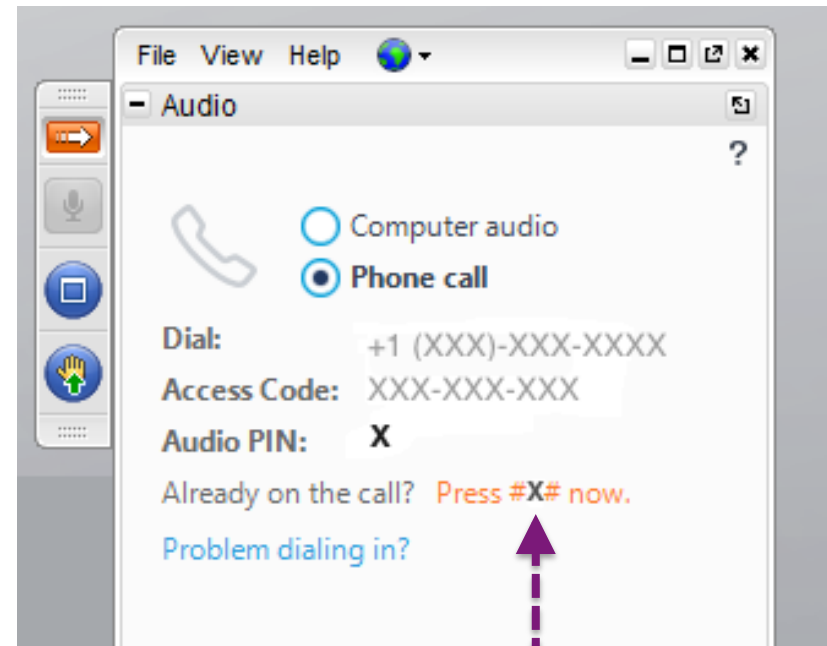
All lines will be unmuted. Please raise your hand to be recognized.

How to Raise Your Hand

Raise your hand 

Make sure your phone is unmuted.

We will unmute your audio connection and call on you.



If you dialed in, enter your Audio PIN on your phone keypad if you did not when you logged in.

Open Discussion

We would like to use this innovations series as a conduit for sharing about innovation generally within the water utility sector.

Question for discussion:

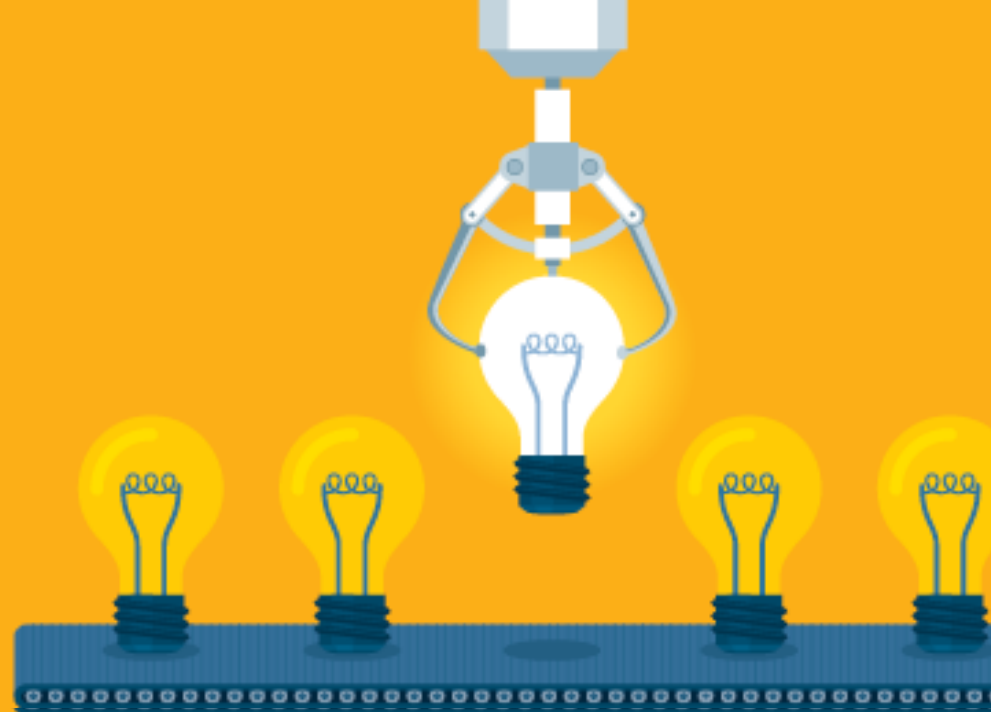
Does your water utility have a climate action plan or IWRP or water supply plan that takes into consideration climate impacts or GHG mitigation? If so, what are some key components of the plan?

All lines will be unmuted. Please raise your hand to be recognized.



ASSOCIATION OF
METROPOLITAN WATER AGENCIES

INNOVATION SERIES



Thank you.

Contact AMWA with questions:

Erica Brown

202-331-2820

brown@amwa.net