



# Regional Water Planning

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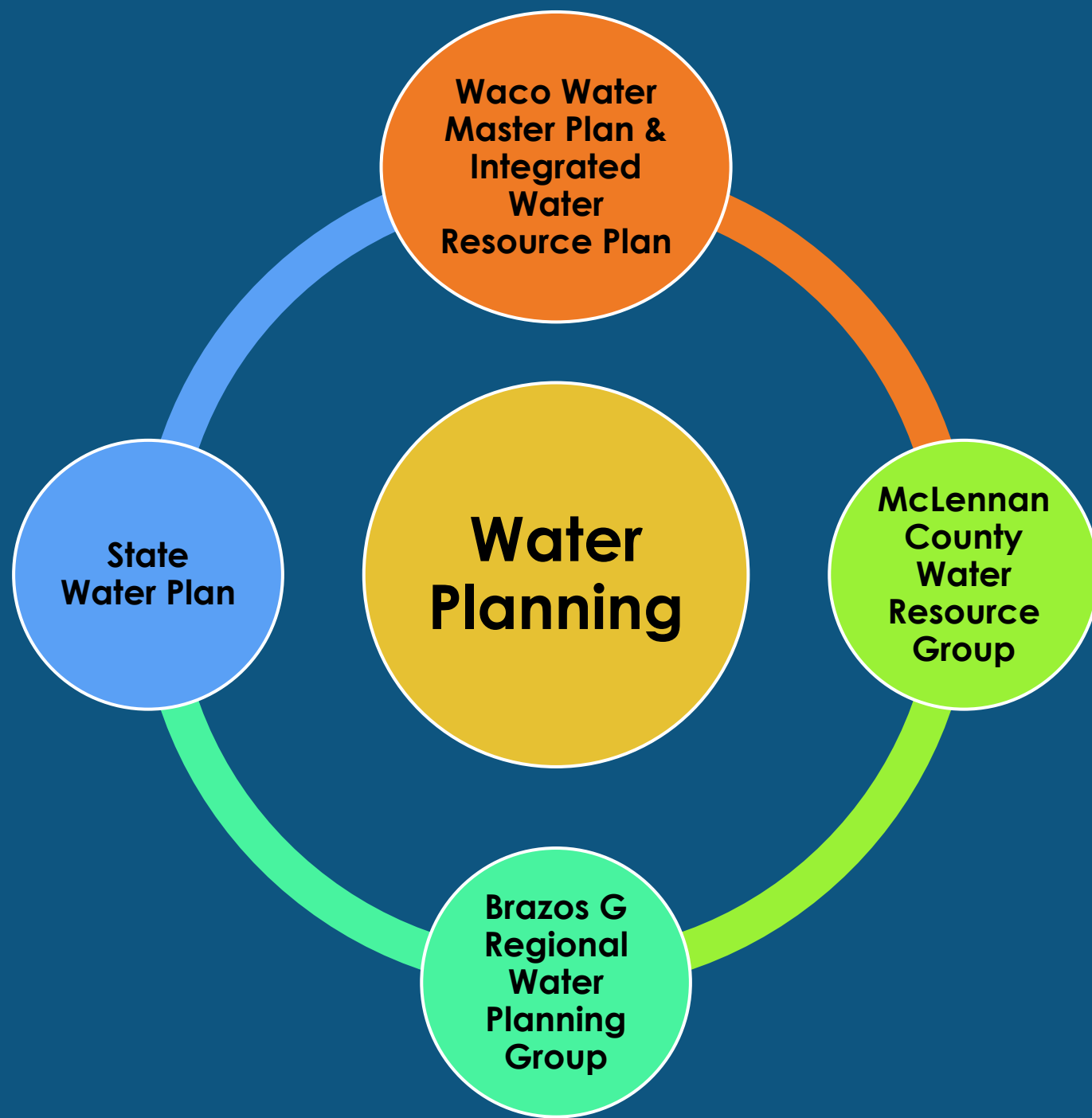
# Overview

## Regional Water Planning

- Waco Water Master Plan
- McLennan County Water Resource Group
- Brazos G Regional Water Planning Group
- State Water Plan

## 2023/2024 Master Plan

- Water Demand Evaluation
- Supply Options
- Timeline



# City Master Plan

Water Model Update

4

Evaluation of Water Demand



Water Supply & Reuse Analysis



Water Hydraulic Analysis

Water Distribution Risk & Condition Analysis

Water Facility Code & Condition Assessment

Capital Improvements Plan



Integrated Water Resource  
Planning –  
a comprehensive approach  
to water resource planning

Evaluate a wide mix of  
water supply options

Evaluate demand  
management options

Long range water supply  
planning

# County Plan

**McLennan County  
Water Resource Group**

**County Wide**

**Conjunctive Use**

**Need Support from  
Groundwater District to  
Succeed**

**Rate Plan**



How does the County  
Plan Impact Waco?





# County – McLennan County Water Resource Group

## ▶ Southern Trinity Aquifer

- ▶ In Decline
- ▶ Either does not recharge or recharges slowly
- ▶ If decline continues some may come to City of Waco for water
- ▶ Southern Trinity Groundwater District has contracted for a study of the aquifer

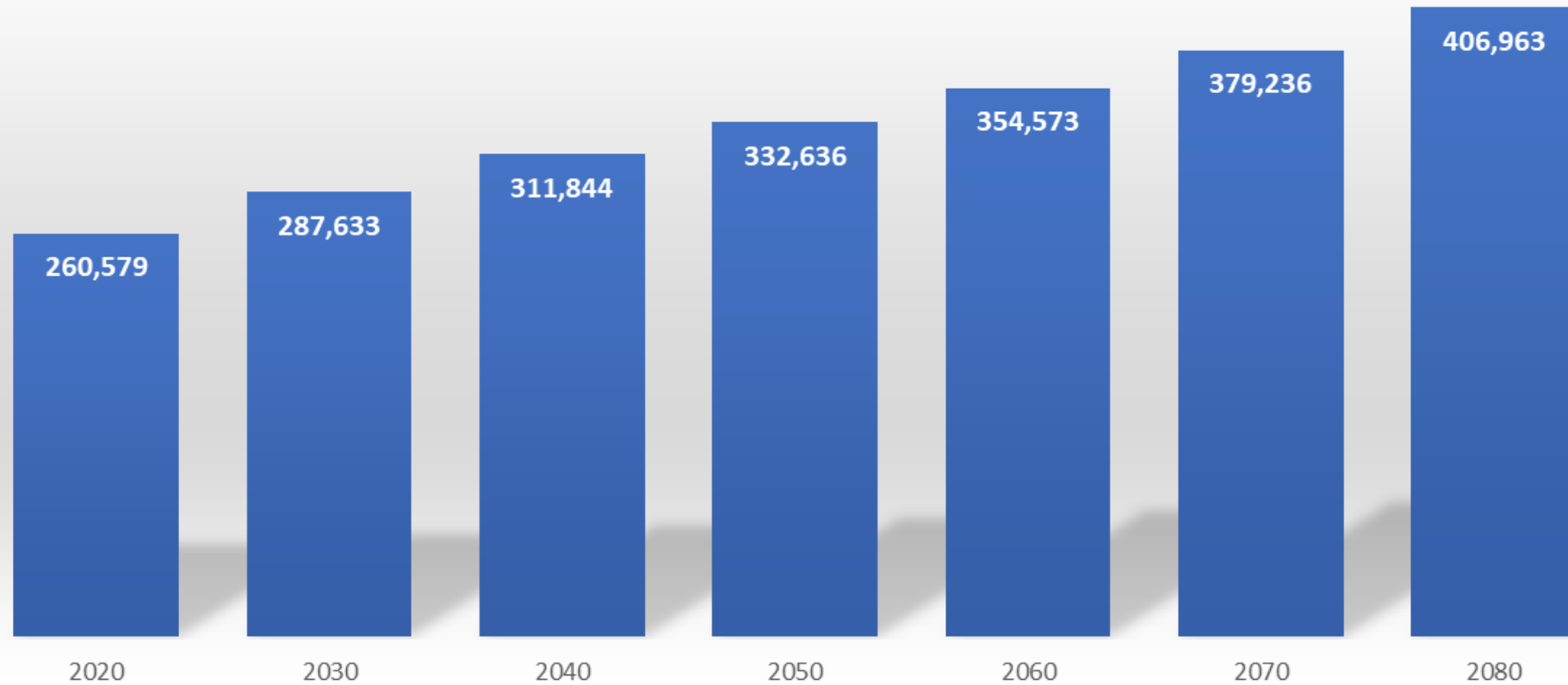
## ▶ Conjunctive Use

- ▶ Calls for those close to Waco who can utilize surface water versus ground water to do so
- ▶ Those utilizing groundwater should monetarily support the increase in cost for those switching to surface water
- ▶ Rate study to determine what this would look like is underway



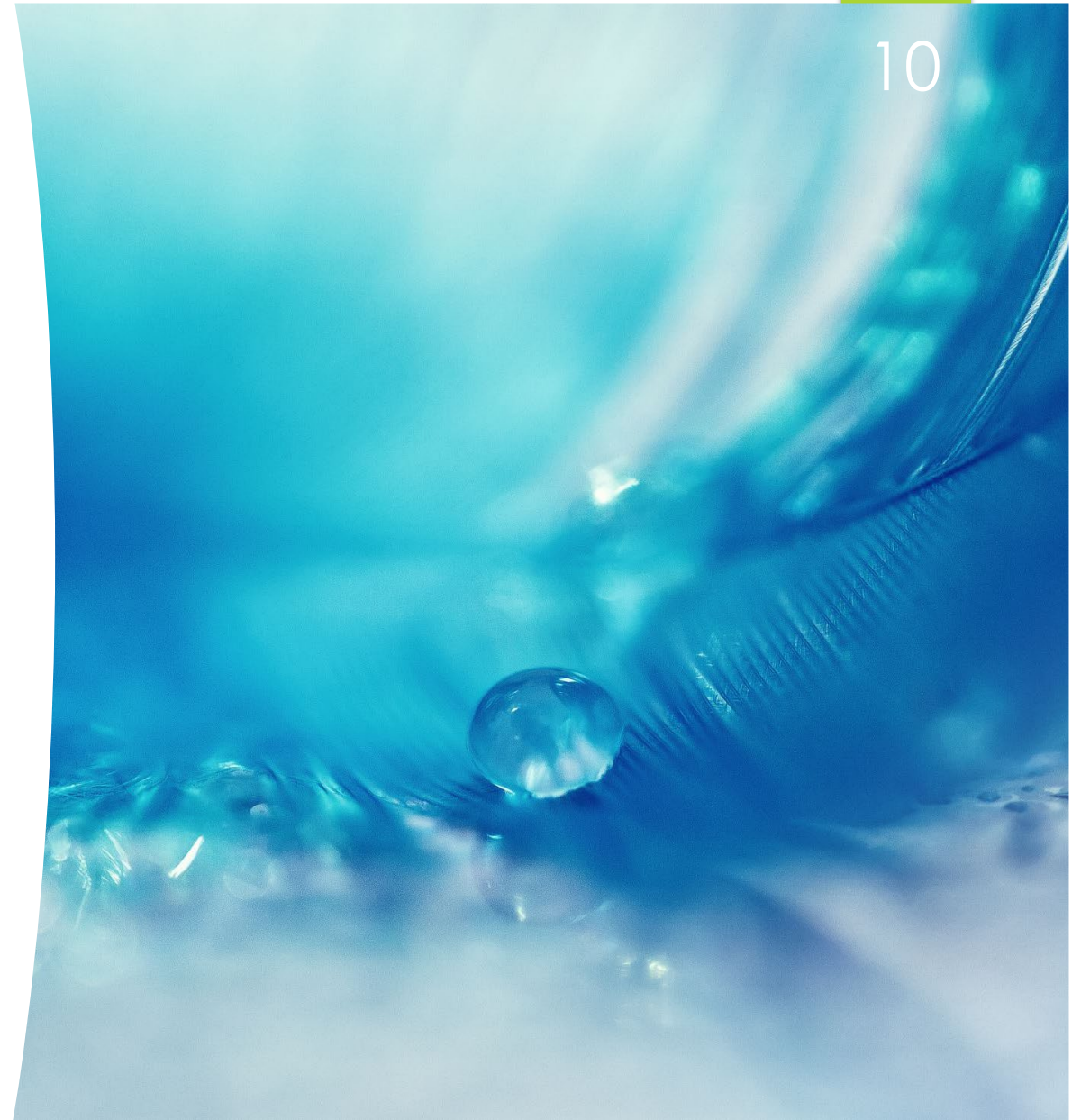
# McLennan County Growth

## McLennan County Population Projections



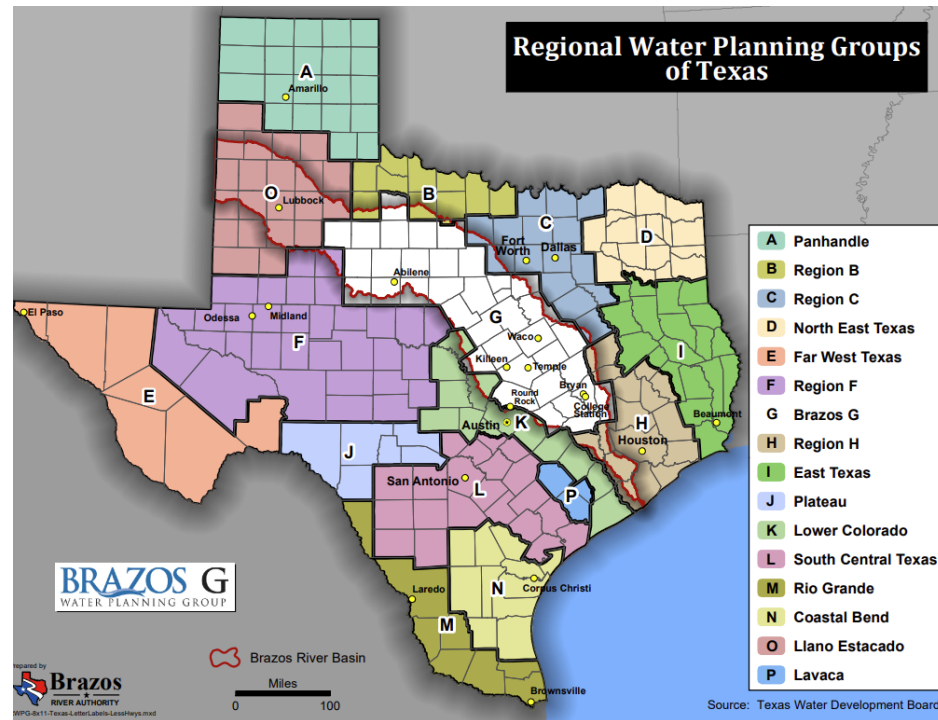
## Brazos G Regional Water Planning Group

- Foremost responsibility is the development of a regional water plan that identifies both long and short-term water supply needs and recommend water management strategies for addressing them.





# Brazos G Regional Water Planning Group

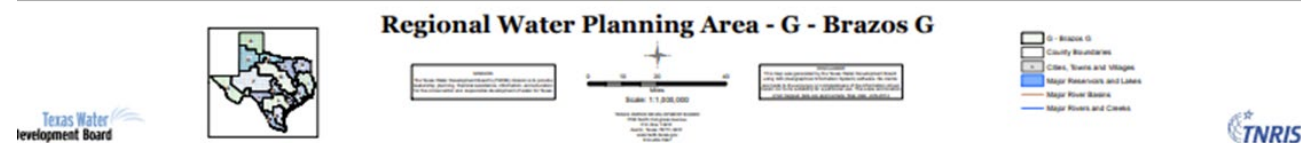
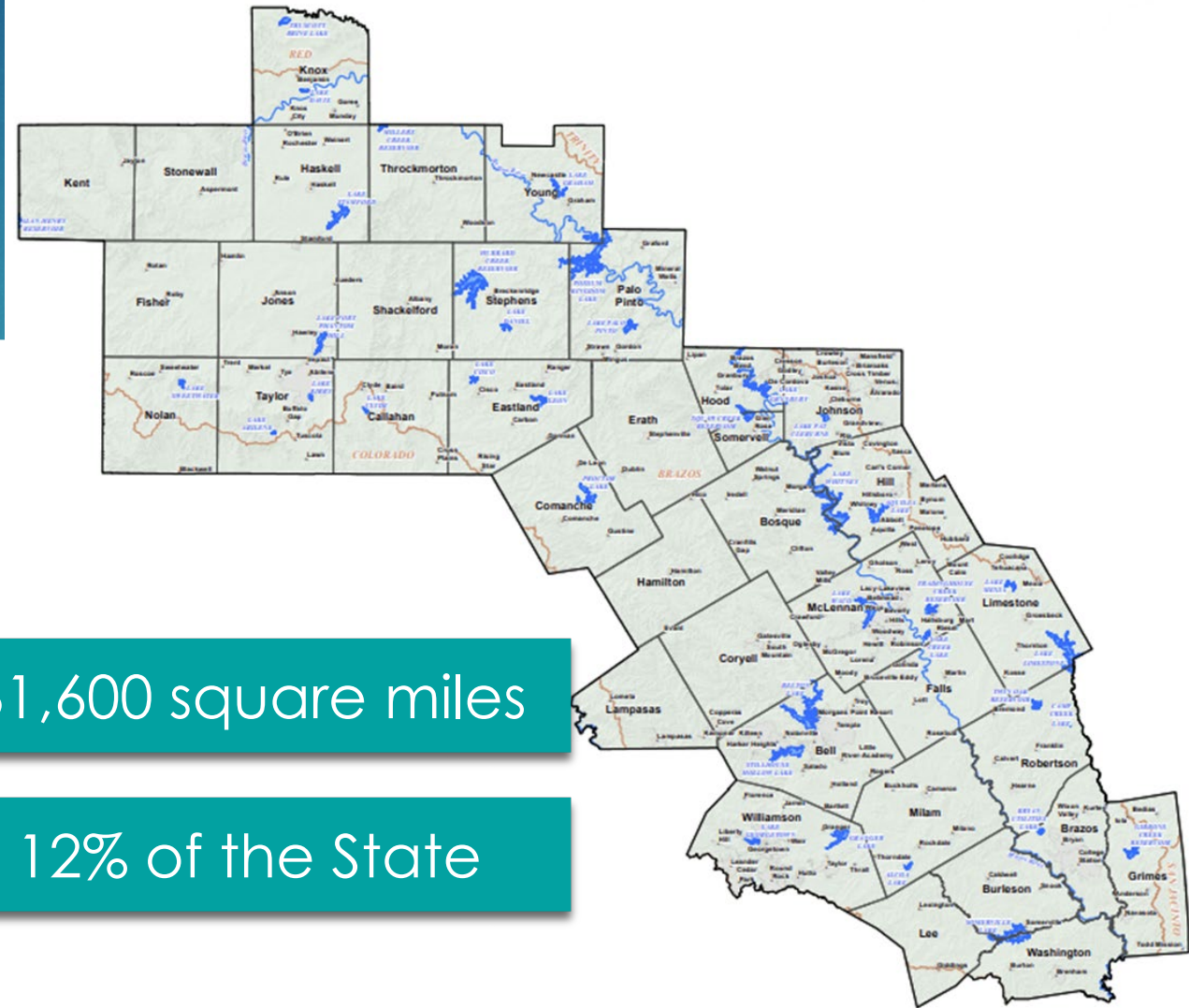


- ▶ Drought of the 1950's – Texas Water Development Board
- ▶ 1997 – New approach – Regional Planning Groups
- ▶ For Water Planning the State is divided into 16 Regions
- ▶ The Brazos River Basin is divided into 3 regions
- ▶ The City of Waco is in Region G – from Southeast of Lubbock to Southeast of College Station
- ▶ On a 5 year planning cycle



# Brazos G Region

- ▶ 37 Counties
- ▶ 22 Voting Members
  - ▶ 2 Representing Agriculture
  - ▶ 1 Representing Small Business
  - ▶ 3 Representing Counties
  - ▶ 1 Representing Water Districts
  - ▶ 1 Representing Environmental
  - ▶ 5 Representing Ground Water Management
  - ▶ 1 Representing Industry
  - ▶ 4 Representing Municipalities
  - ▶ 1 Representing the Public
  - ▶ 1 Representing River Authorities
  - ▶ 1 Representing Electric Generating Utilities
  - ▶ 1 Representing Water Utilities



# Brazos G Regional Water Planning

## Group Task With:

- ▶ Describe the water planning area
- ▶ Quantify current & projected population and water demand over a 50 year planning horizon
- ▶ Evaluate & quantify water availability & current water supplies
- ▶ Identify water surpluses & shortages
- ▶ Identify and remove infeasible water management strategies from previous plan
- ▶ Approve & submit a technical memorandum
- ▶ Identify, evaluate, and recommend water management strategies and projects to meet identified water needs
- ▶ Evaluate impacts of the regional water plan on water quality, agriculture, natural resources, water resources of the state and describe how the plan is consistent with protection for the above.
- ▶ Develop drought response information and recommendations
- ▶ Recommend regulatory, administrative, and legislative changes
- ▶ Describe the level of implementation of the previous regional water plan and provide a comparison between the two
- ▶ Adopt the draft and final regional water plan, including the required level of public participation

## What the Regional Water Planning Groups(RWPG) Don't Do



Implement the water strategies or projects recommended



Plan for the environment as a water user group.



Authority to issue or modify groundwater permits



Authority to issue or modify surface water or water reuse rights



How Does Brazos Region  
G Water Plan Impact  
Waco?

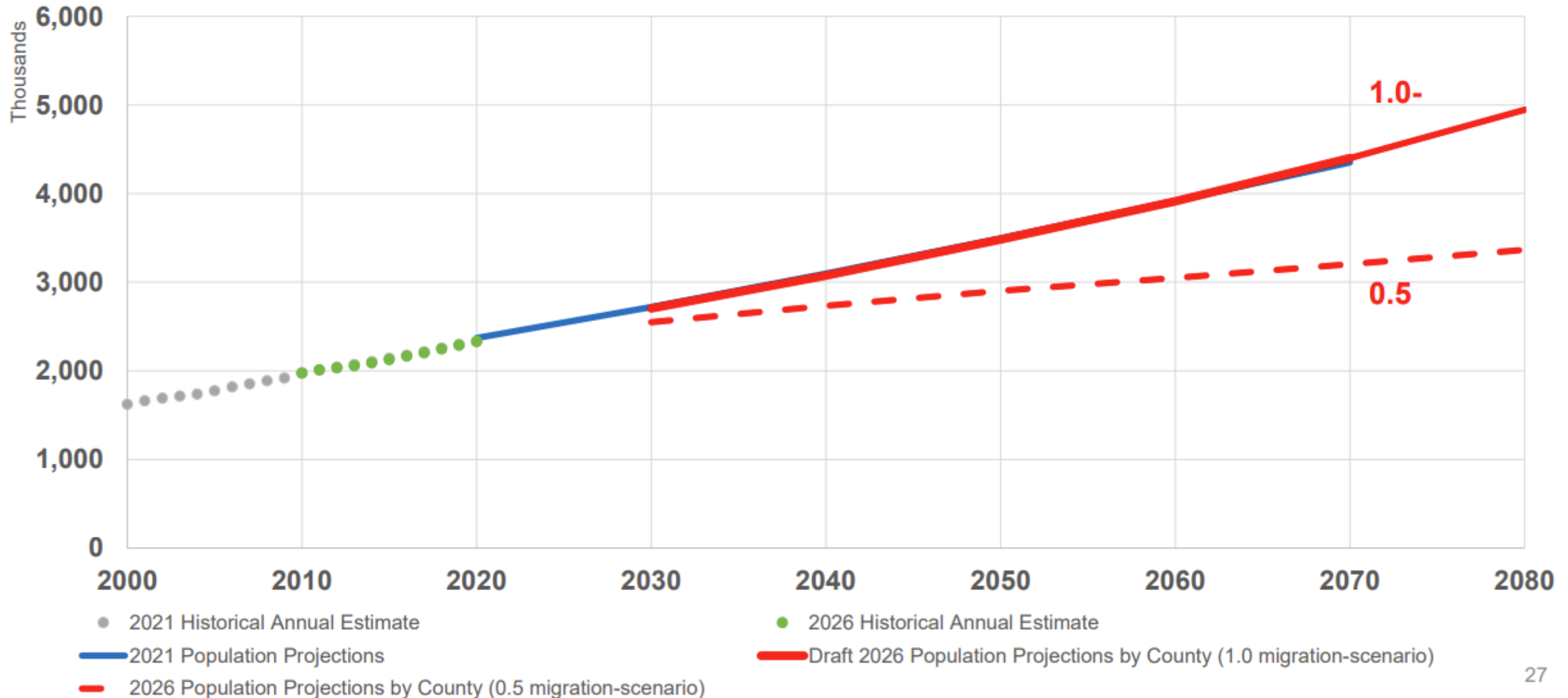


## Brazos G Regional Water Planning Group

- ▶ City of Waco - Water Deficit by 2060
- ▶ Other Entities water deficit strategy includes Lake Waco
- ▶ To qualify for State of Texas low interest financing and grants, projects must be listed in the Regional Water Plan
- ▶ Growth in Region G

◀ Why Waco needs to have input into Brazos G Regional Water Planning Group's 2026 Plan

# Brazos G – Draft Regional Population Projections





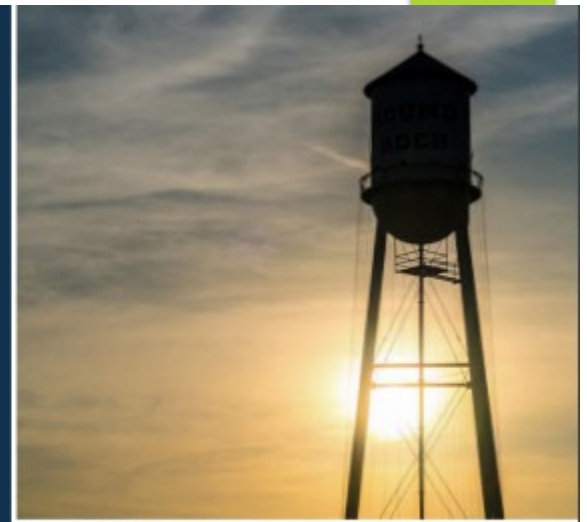
# 2022 State Water Plan

“To lead the state’s effort in ensuring a secure water future for Texas and it’s citizens.”

**2022**  
State Water Plan

WATER  
FOR  
TEXAS

Texas Water  
Development Board



# The State Plan

- POLICY RECOMMENDATIONS
- DROUGHT & DROUGHT RESPONSE
- FUTURE POPULATION DEMANDS
- WATER AVAILABILITY & EXISTING SUPPLIES
- WATER SUPPLY NEED
- WATER MANAGEMENT STRATEGIES & PROJECTS
- CONSERVATION
- FINANCING NEEDS

# From the State Plan

- ▶ TX population is expected to increase 73% between 2020-2070.
  - ▶ From 29.7M to 51.5M
- ▶ TX existing water supply, those rivers/reservoirs that can be relied on in the event of a drought, will decline by approximately 18% between 2020-2070.
- ▶ Capital cost to implement the 2400+ water strategy projects by 2070 is \$80 billion in 2018 dollars
- ▶ 25% of the population of Texas will have less than ½ the municipal water supply required during a record drought
- ▶ If Texas does not implement the water supply strategies and projects, a severe drought could cause \$110 billion of economic damages



Growth



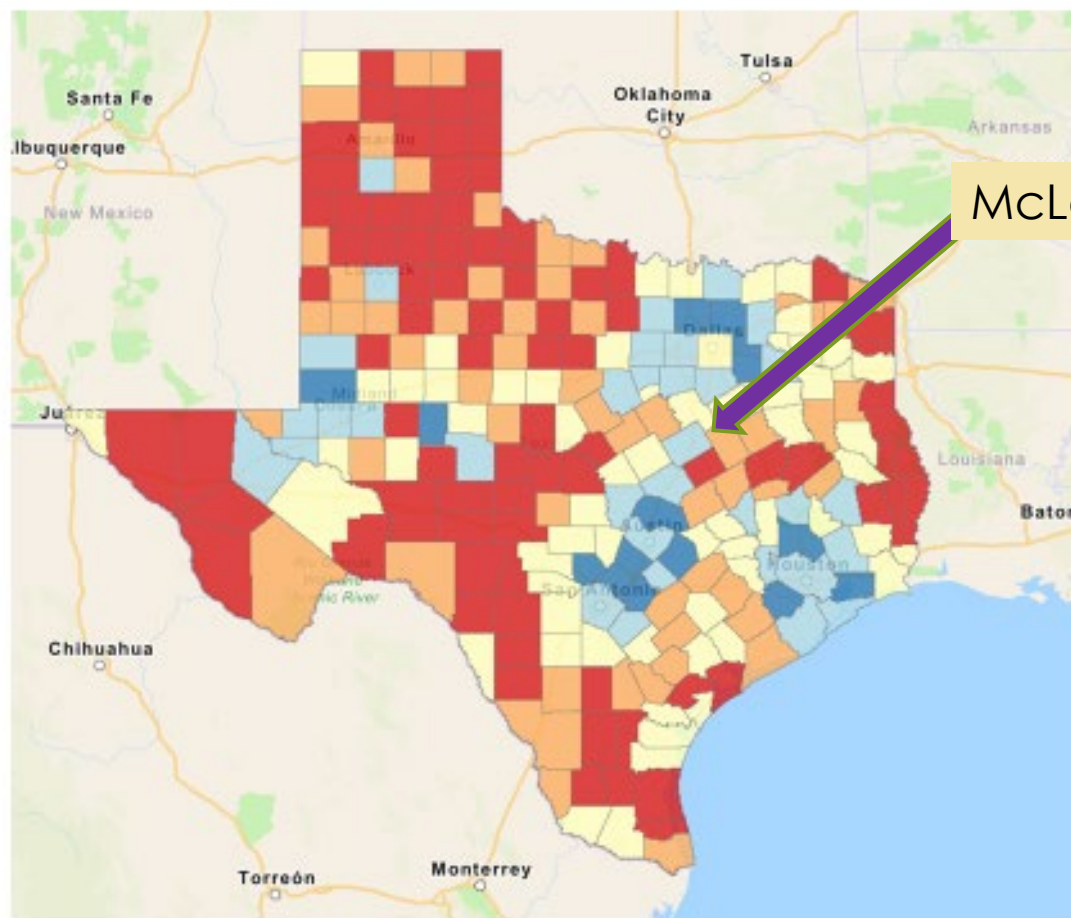
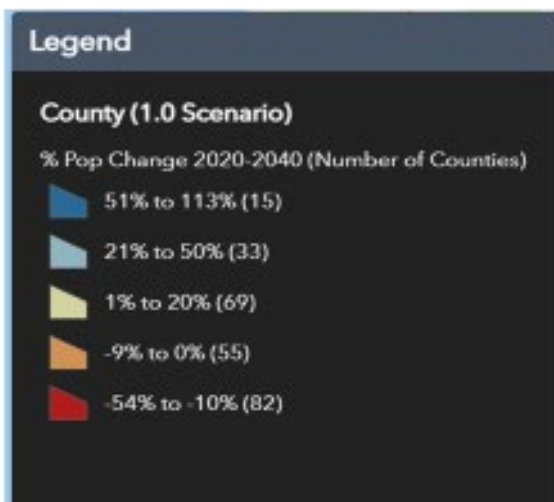


## Population Change, the US and Selected States, 2010-2020, 2020-2021

	2010 Population	2020 Population	Numeric Change 2010-2020	Percent Change 2010-2020	Numeric Change 2020-2021	Percent Change 2020-2021
United States	308,745,538	331,449,281	22,703,743	7.4%	392,665	0.12%
<b>Texas</b>	<b>25,145,561</b>	<b>29,145,505</b>	<b>3,999,944</b>	<b>15.9%</b>	<b>310,288</b>	79% of U.S. Total 1.06%
Florida	18,801,310	21,538,187	2,736,877	14.6%	211,196	0.98%
California	37,253,956	39,538,223	2,284,267	6.1%	-261,902	-0.66%
Georgia	9,687,653	10,711,908	1,024,255	10.6%	73,766	0.69%
Washington	6,724,540	7,705,281	980,741	14.6%	19,907	0.26%
North Carolina	9,535,483	10,439,388	903,905	9.5%	93,985	0.90%
New York	19,378,102	20,201,249	823,147	4.2%	-319,020	-1.58%
Arizona	6,392,017	7,151,502	759,485	11.9%	98,330	1.37%
Colorado	5,029,196	5,773,714	744,518	14.8%	27,761	0.48%
Virginia	8,001,024	8,631,393	630,369	7.9%	10,230	0.12%
Tennessee	6,346,105	6,910,840	564,735	8.9%	55,099	0.80%
Utah	2,763,885	3,271,616	507,731	18.4%	56,291	1.72%



## Projected Percent Population Change, Texas Counties, 2020-2040



McLennan County

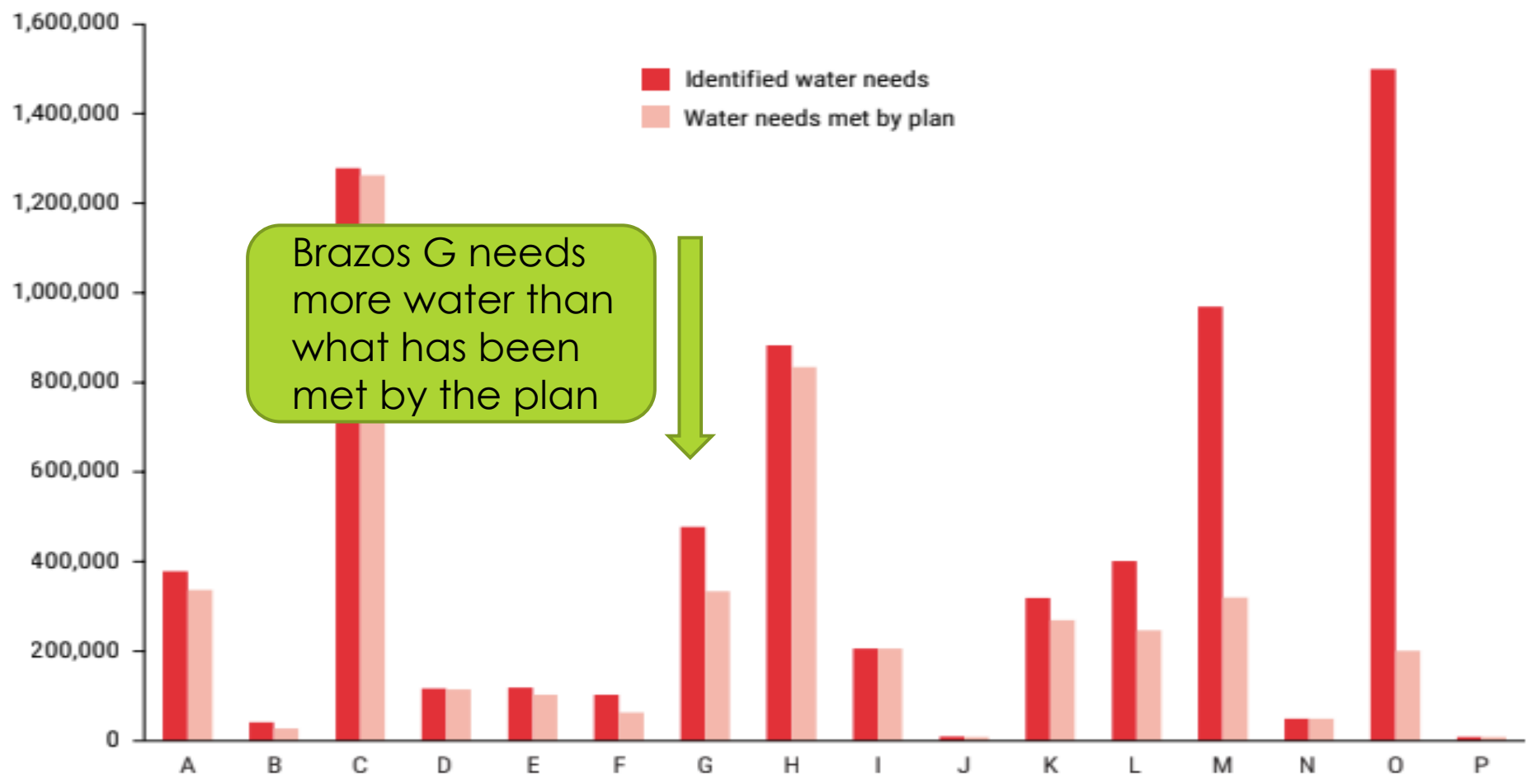


## State Water Needs



# State Water Needs

Figure ES-8. Annual water supply needs and needs met by the plan by region in 2070 (acre-feet)

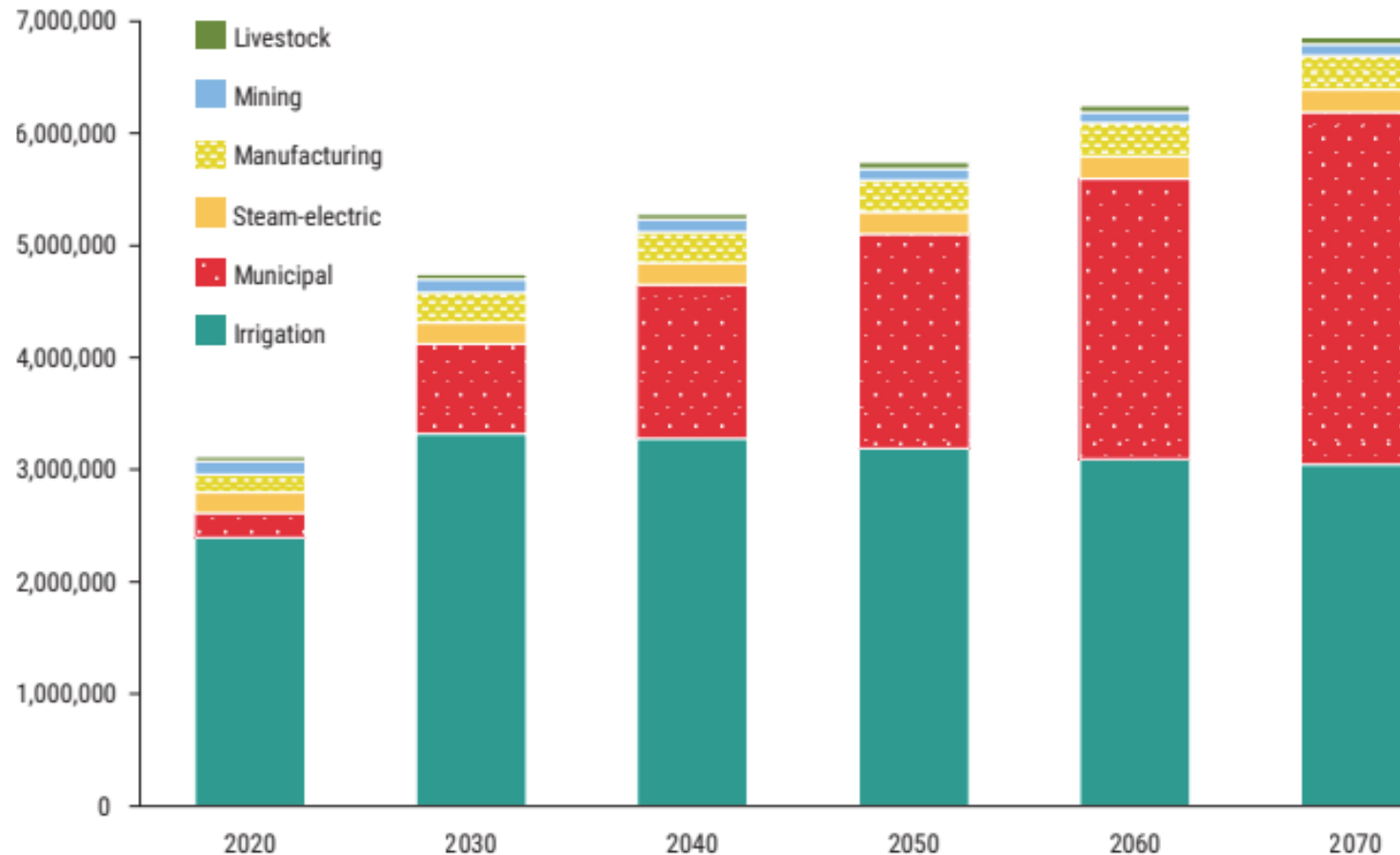


Brazos G needs more water than what has been met by the plan



# Projected Annual Water Needs

Figure 6-1. Projected annual water needs by water use category (acre-feet)\*

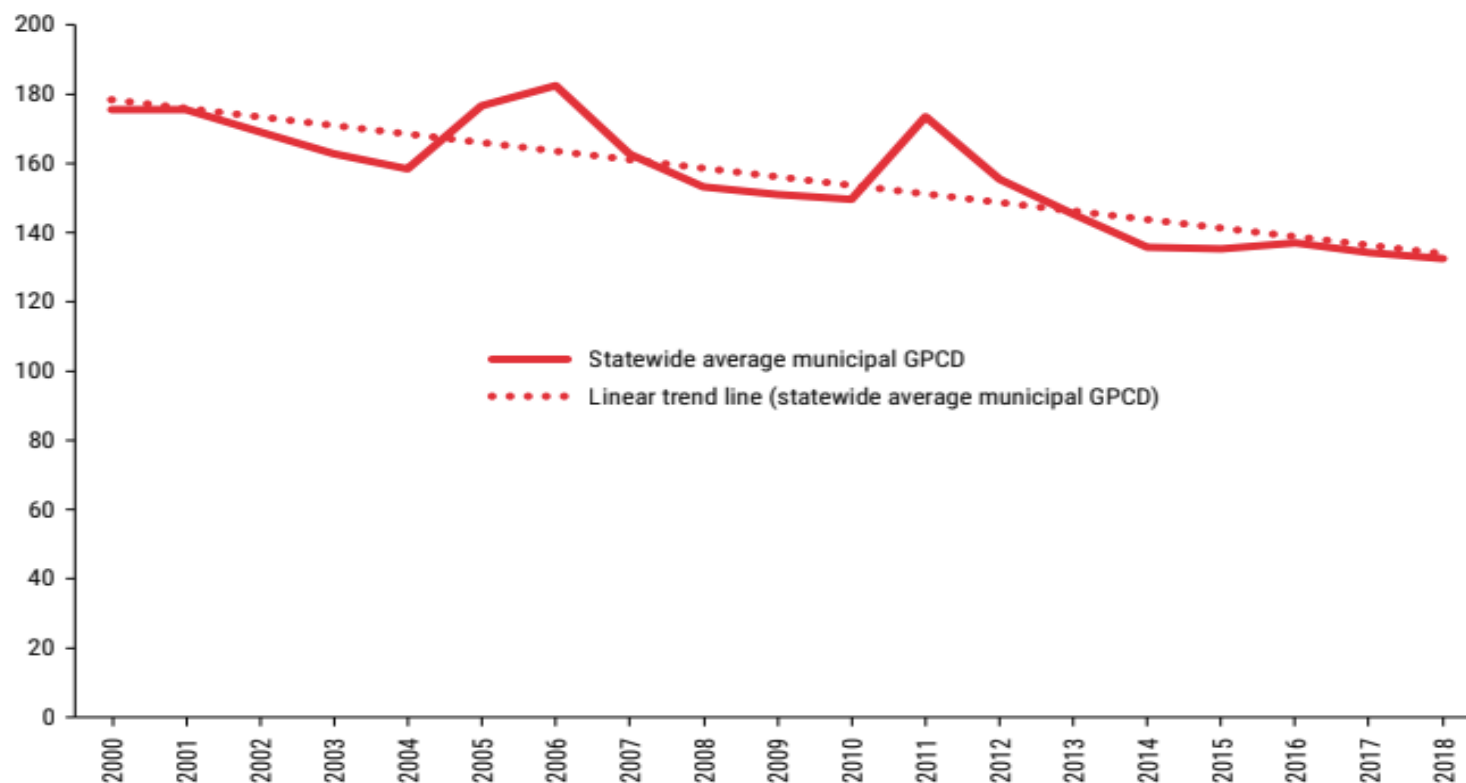


\* Water use categories are presented in the order listed in the legend.



# Historical Statewide Municipal GPCD

Figure 8-2. Historical statewide average municipal gallons per capita per day (2000–2018)



GPCD = gallons per capita per day

Waco's GPCD in  
2021  
was 168

# City of Waco Water Master Plan & Integrated Water Resource Plan





# The Evaluation of Water Demand





What goes into the evaluation of water demand?

Population Projections & Land Use Assumptions

Recent Development Trends & what is in the pipeline

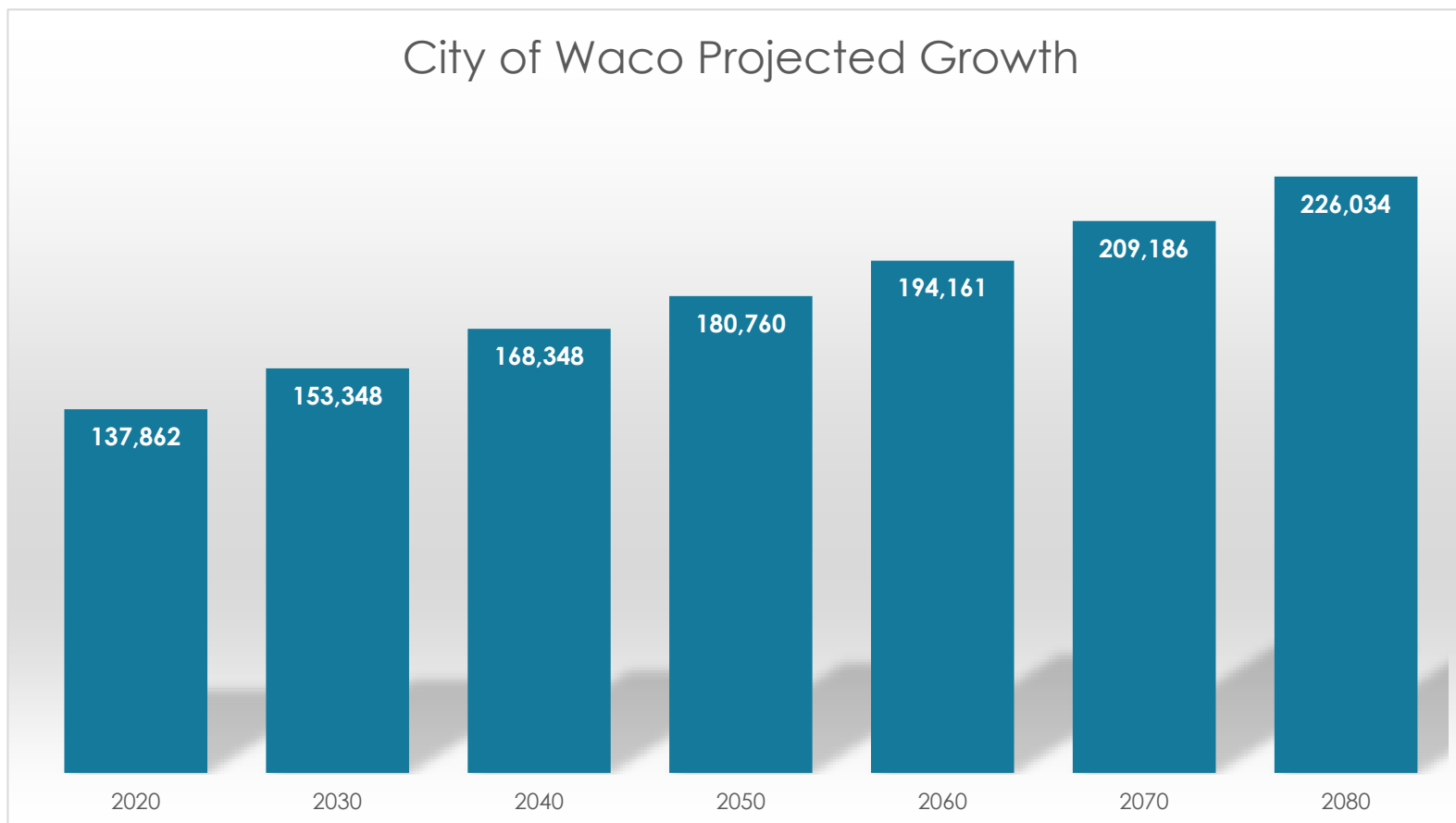
Monthly connections & Historical Usage

Water Production data

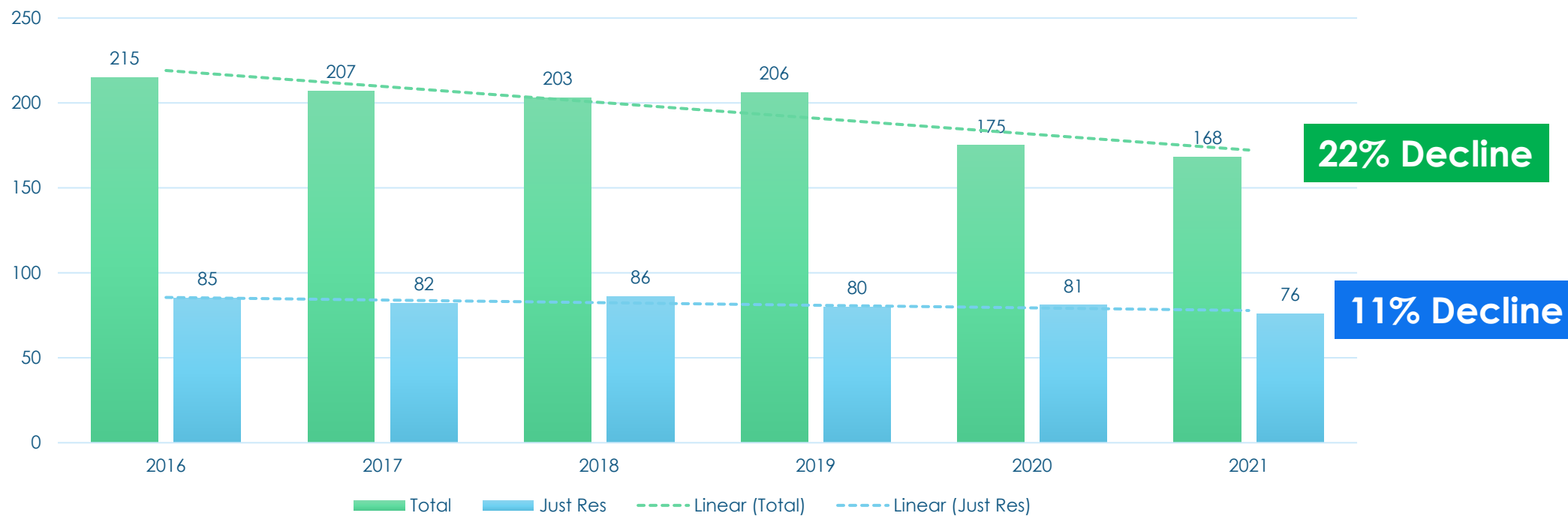
CCN & ETJ for advantageous growth

Wholesale contract demands and potential for increase demands

# Projected Growth



# Gallons Per Capita Per Day





# Water Supply Analysis



## What goes into the evaluation of water supply?

Existing & future capacities of source water(s) and water treatment facilities

Regulatory constraints to achieve additional capacity from existing systems

Treatment capacity, process & conveyance constraints to achieving additional capacity from existing system

Review of contractual contracts for current & future demands

Gap analysis

Water Scenarios (IWRP)

## Water Supply Strategies

Indirect potable reuse

Non-potable reuse for irrigation & industries

Aggressive water conservation

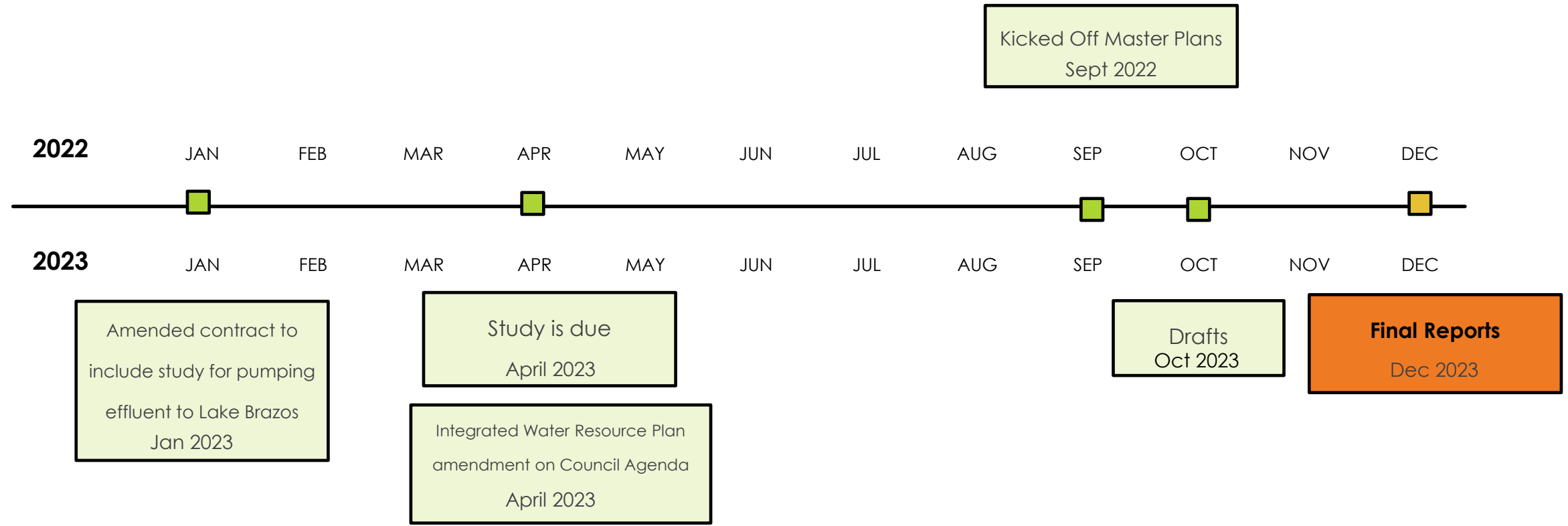
Other water source (purchase) that may be available

Raising Lake Waco's conservation pool for additional storage

Aquifer storage and recovery



# ACTION PLAN



Kicked Off Master Plans  
Sept 2022

2022

JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

2023

JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Amended contract to include study for pumping effluent to Lake Brazos  
Jan 2023

Study is due  
April 2023

Integrated Water Resource Plan amendment on Council Agenda  
April 2023

Drafts  
Oct 2023

**Final Reports**  
Dec 2023



## Key Takeaways

Multiple Groups  
are involved in  
Water Planning

Waco is  
participating at  
every level of  
water planning

Master Plan and  
an Integrated  
Water Resource  
Plan is underway

Full Reports by  
the end of the  
year



# Questions

