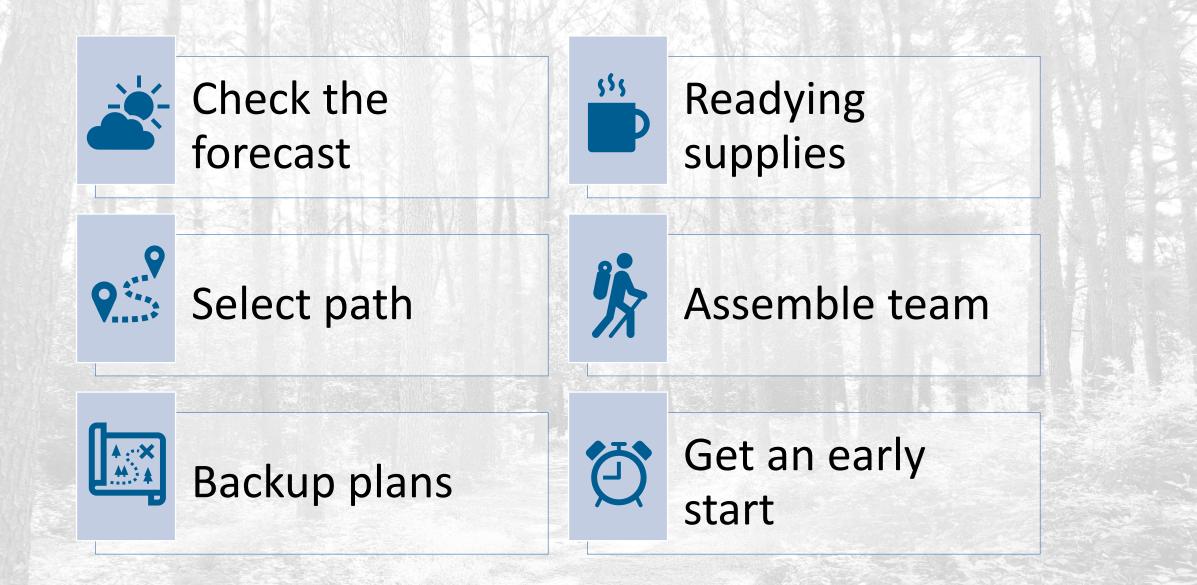
# HITTING THE TRAIL

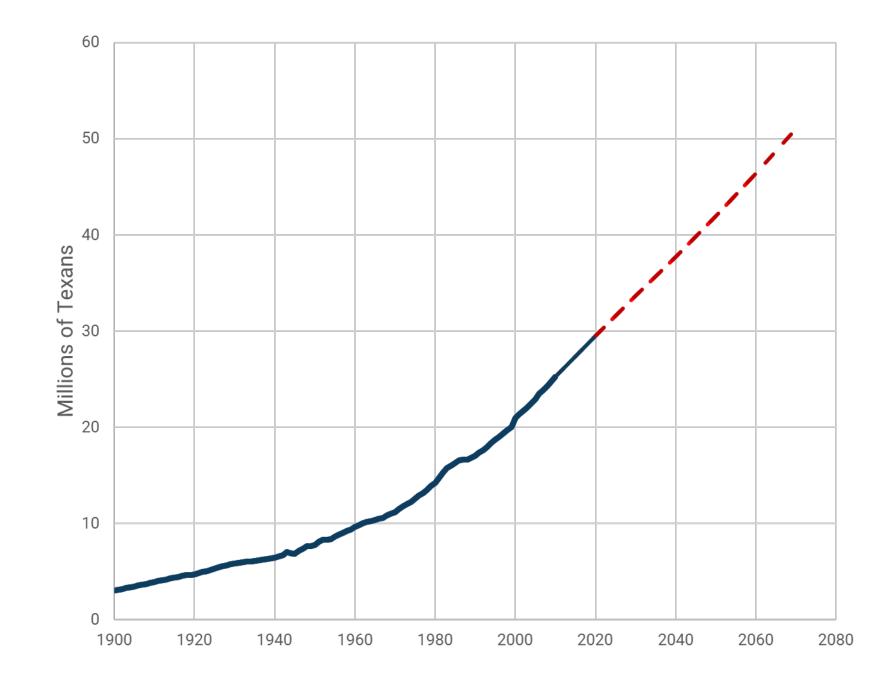
THE LONG PATH FOR FUTURE WATER MANAGEMENT



# GETTING READY FOR TOMORROW'S ADVENTURE

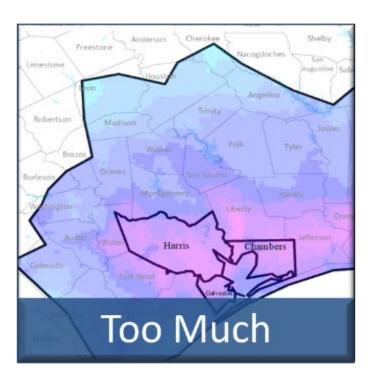


# THE TEXAS MIRACLE



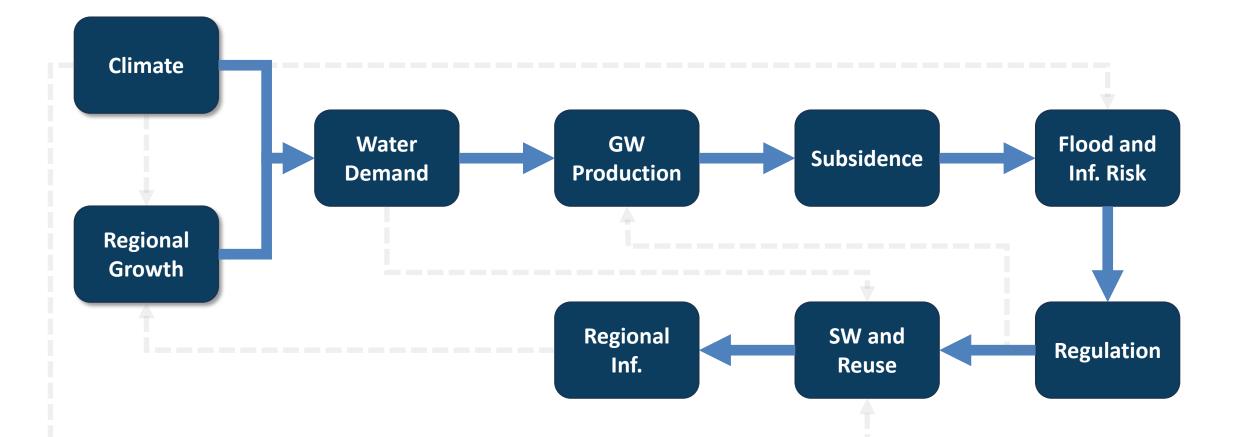
# NO WALK IN THE PARK



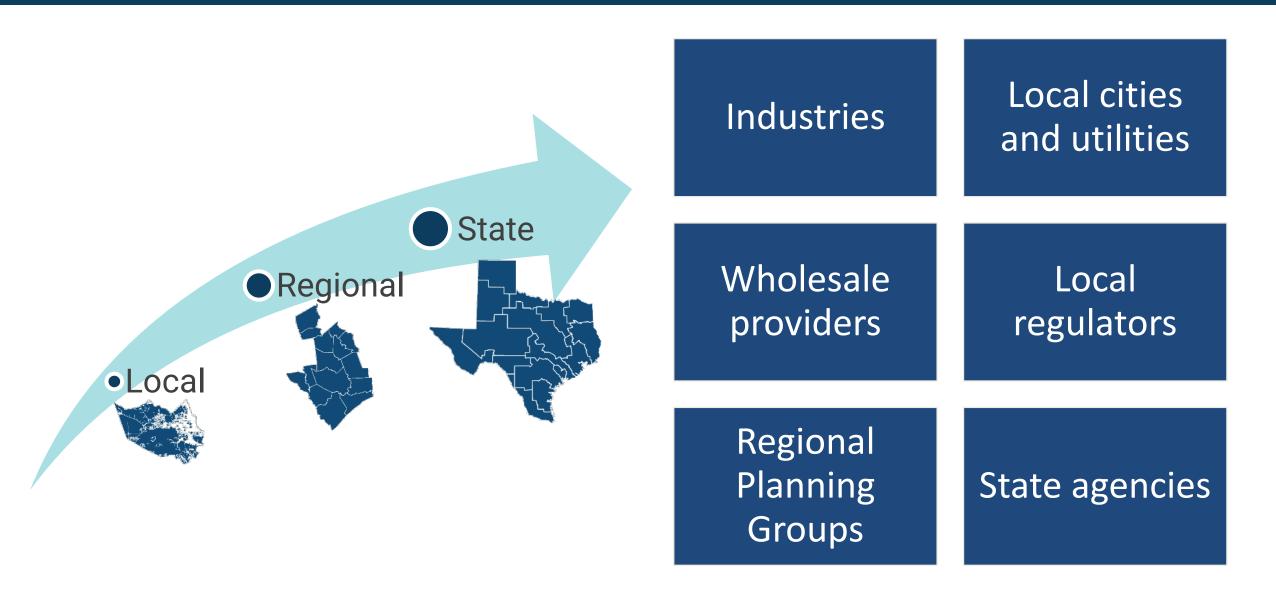




# THE NEED FOR AN INTEGRATED APPROACH



# WHO'S PLANNING THE TRIP?



# SUBSIDENCE DISTRICTS

Special Purpose Districts with focus on subsidence prevention

## Research, education, and regulation

Phased conversion to alternative sources by area

Major driver of billions of dollars in regional infrastructure development

# JOINT REGULATORY PLAN REVIEW

#### HARRIS-GALVESTON





## Develop Population and Demand Projections

Develop projections of population and water demand over a ten-county area through the year 2100.

## Conduct Alternative Water Supply Assessment

Review alternative water supplies for the capability of reducing future groundwater demand.

## Develop the Gulf Coast Land Subsidence and Groundwater Flow Model

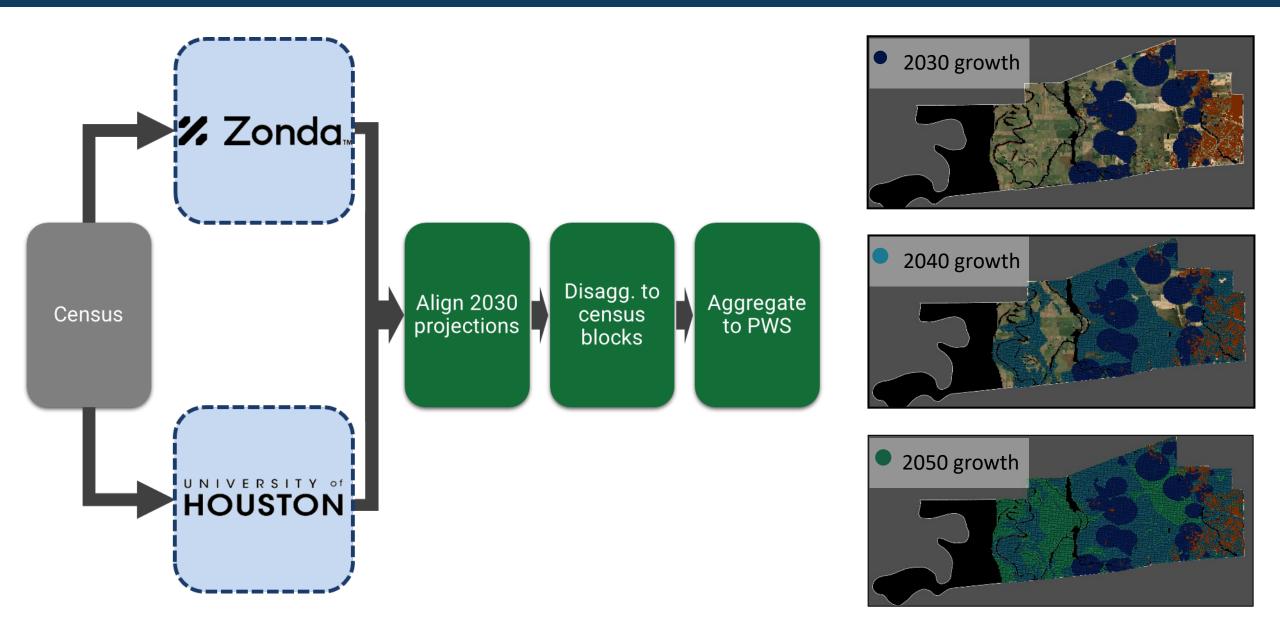
Development of the GULF-2023 model for simulating regional groundwater flow and subsidence in the Gulf Coast Aquifer.

## Evaluate Regulatory Scenarios

Evaluate the performance of the HGSD and FBSD regulatory plans and consider refinements to the regulatory plan framework to accommodate future growth, alternative water supplies, and the most recent aquifer science.



# POPULATION AND DEMAND PROJECTIONS



# MODEL UPDATES

New GULF 2023 Model Newer data and software Finer spatial resolution Improved layer definition Enhanced subsidence methods Assess current regulatory plans

Examine multiple scenarios Inform retention or adjustment

# GROUNDWATER MANAGEMENT AREA PROCESS

#### **Groundwater Management Area 14** McLenna Freestone Nacogdoches MAP LEGEND Limestone Sabine San Augustine Groundwater Management Area 14 Falls Angelina Houston Leon Counties Groundwater Conservation Districts Trinity Bluebonnet GCD Robertson Madison Brazoria County GCD Lone Star GCD Newton Tvle Polk Milam Jasper Lower Trinity GCD Walker Southeast Texas GCD Brazos Subsidence Districts San Jacinto Grimes Harris-Galveston Subsidence District Burleson Fort Bend Subsidence District Hardin Montgomery Lee Orange Washington Liberty Walle Jefferson DISCLAIMER Fayette This map was generated by the Texas Water Development Board. No claims Austin are made to the accuracy or completeness of the information shown herein nor to its suitability for a particular use Chambers The scale and location of all mapped data are approximate. Boundaries for groundwater conservation districts are approximate and may not accurately depict legal descriptions Updated 8/26/2015 Colorado Fort Bend Lavaca Wharton Brazoria Jackson Ν Matagorda Victoria 20 30 Galhoug

1 in = 14 miles

https://www.twdb.texas.gov/groundwater/management\_areas/maps/

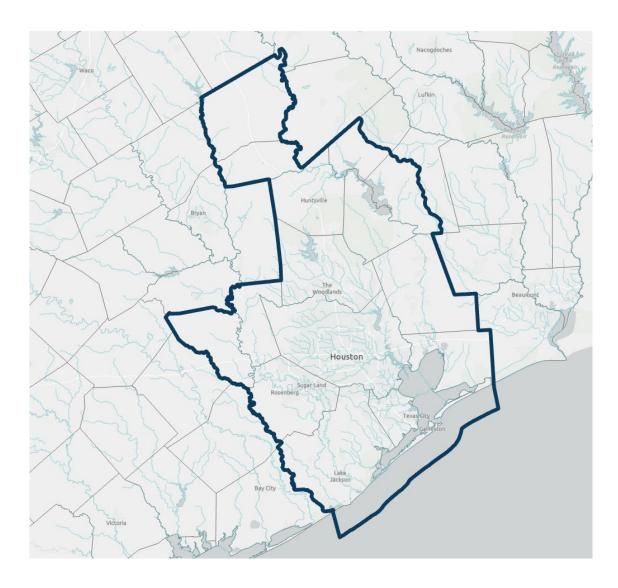
# JOINT PLANNING FOR GROUNDWATER



Regional Water Planning



# ABOUT REGION H





## Extends over 15 counties

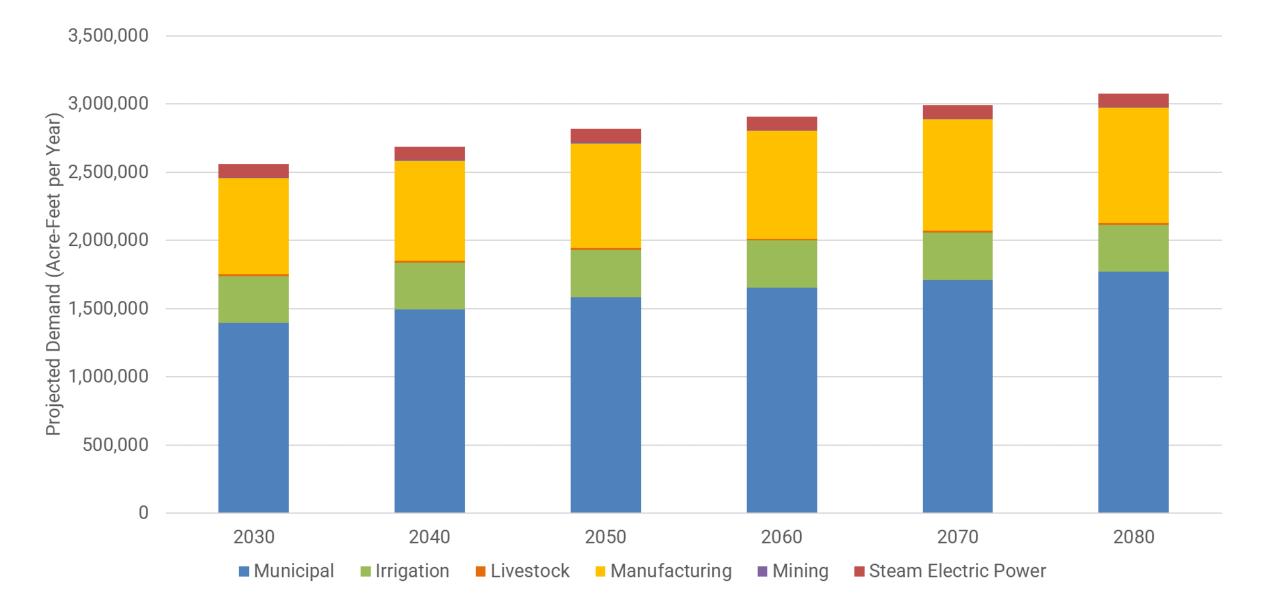


Two major and four minor aquifers

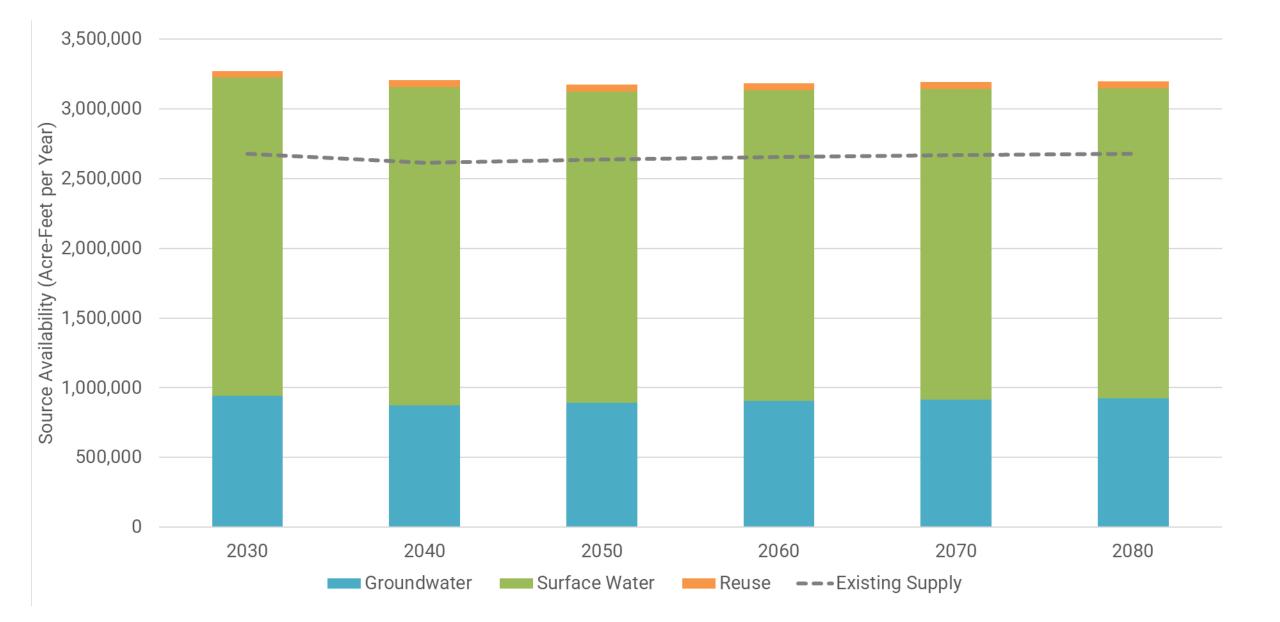
Three river basins andthree major reservoirs

26 volunteer Planning Group members

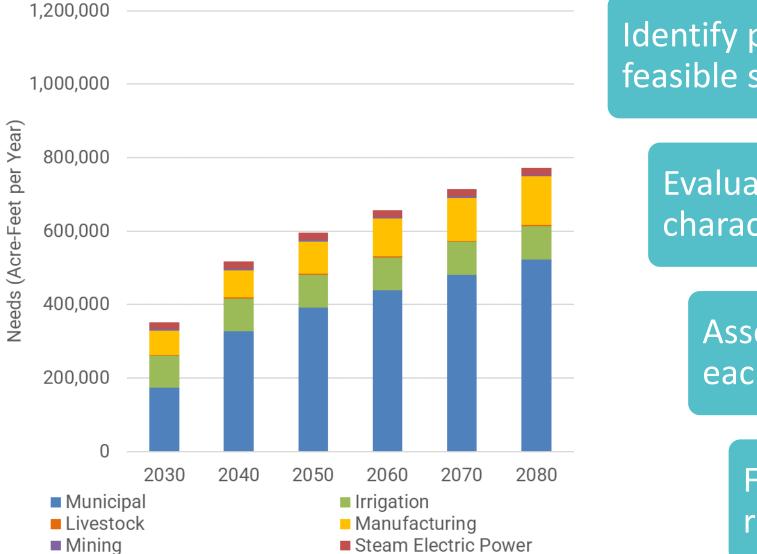
# WATER DEMANDS



# Sources and Existing Supply



# FUTURE NEEDS AND PATH FORWARD



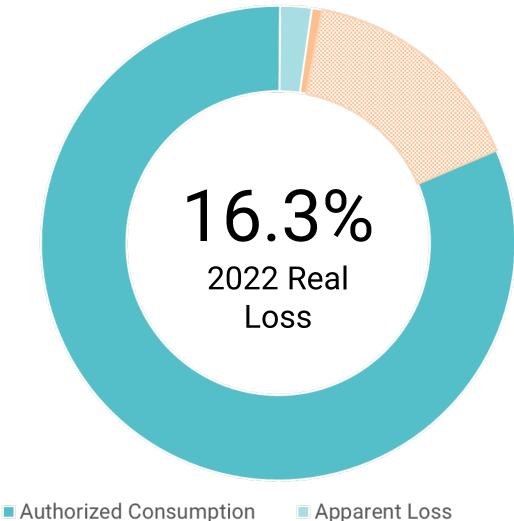
Identify potentially feasible strategies

Evaluate for overall characteristics

Assess suitability for each entity with need

Filter and develop recommendations

# DON'T KNOW WHAT YOU'VE GOT TILL IT'S GONE



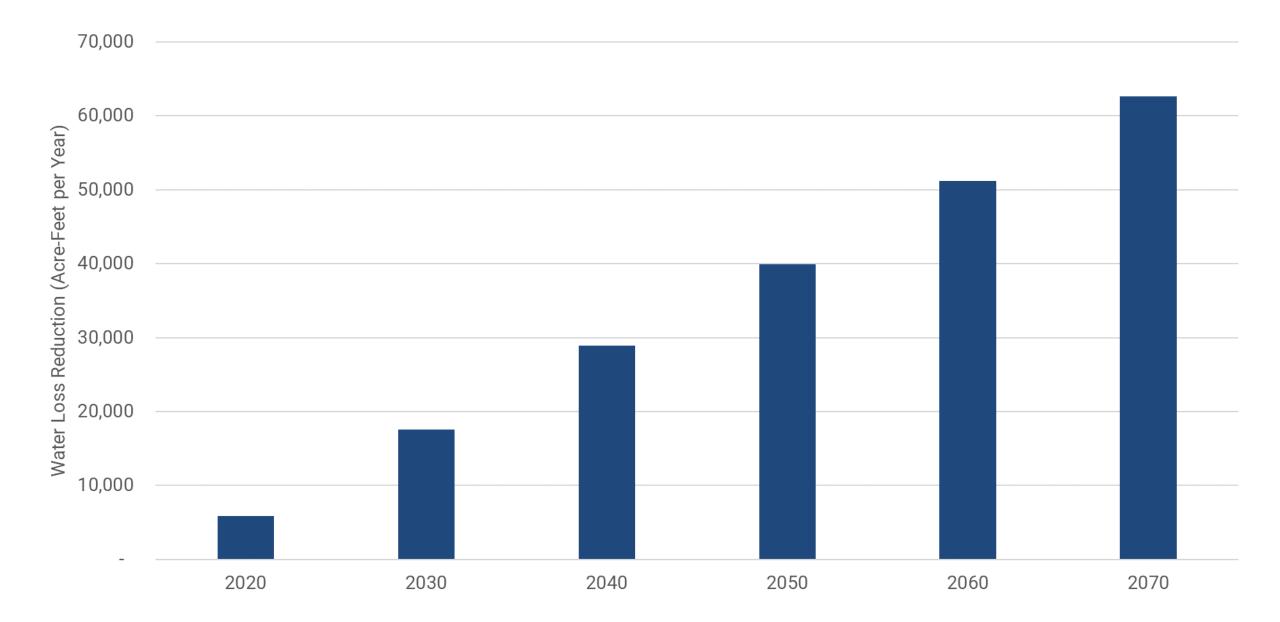
Reported Breaks

Unreported Loss

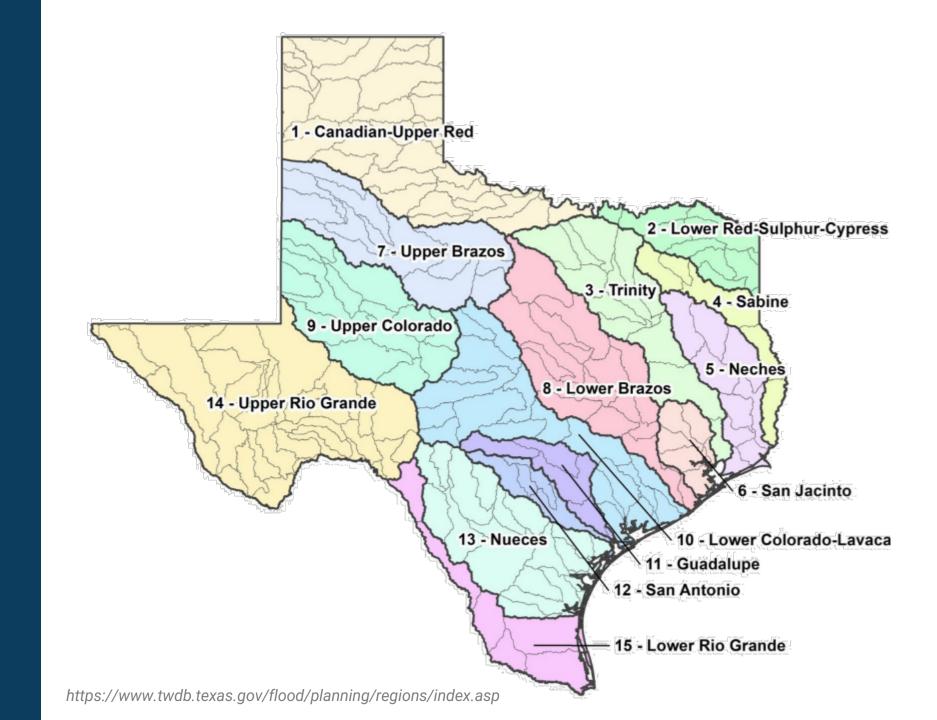
## Varies by year

- Total demand
- Areas of growth
- Shrink-swell soils
- Median  $\approx$  9-12 gpcd
- New development masks some issues
- What if high-loss systems could trim 1% per year?

# DON'T KNOW WHAT YOU'VE GOT TILL IT'S GONE



State and Regional Flood Planning



# AN EVOLVING PROCESS

Residual Flood Risk

### First Planning Cycle

- Collect data
- Establish baseline
  flood risk
- Focus on policy and known projects

## Second Planning Cycle

- Refine baseline
  flood risk
- Enhance policies
  - Identify new regional strategies and projects

### Future Planning Cycles

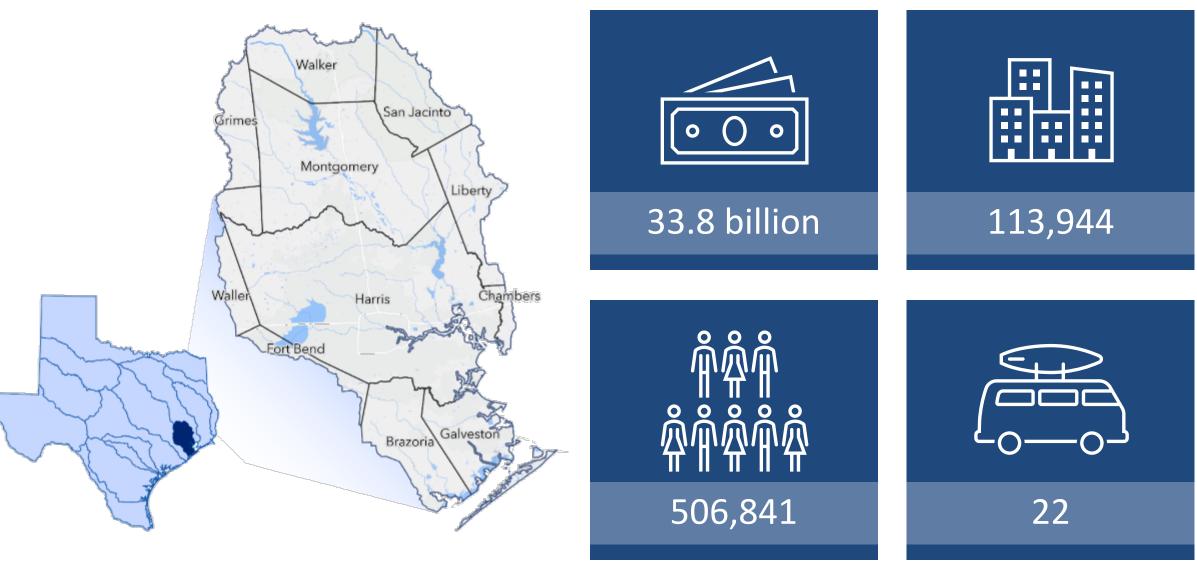
- Update baseline flood risk
- Continue to improve policies
- Move to next tier of projects

2020-2023 2024

2024-2028

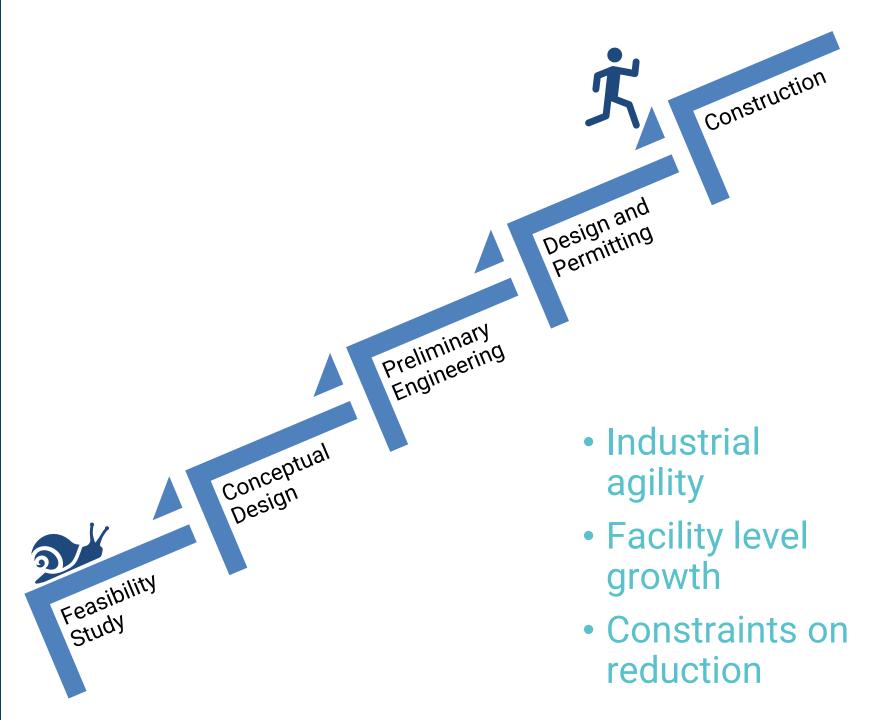
2029+

# BENEFITS OF PLANNING AHEAD

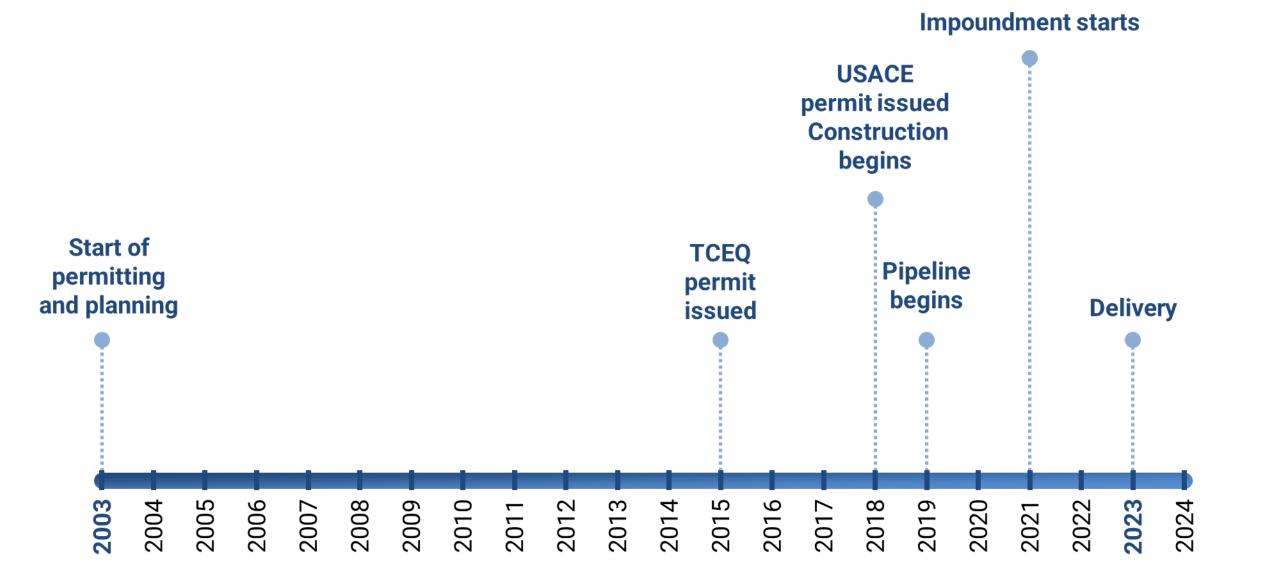


https://sanjacintofloodplanning.org/

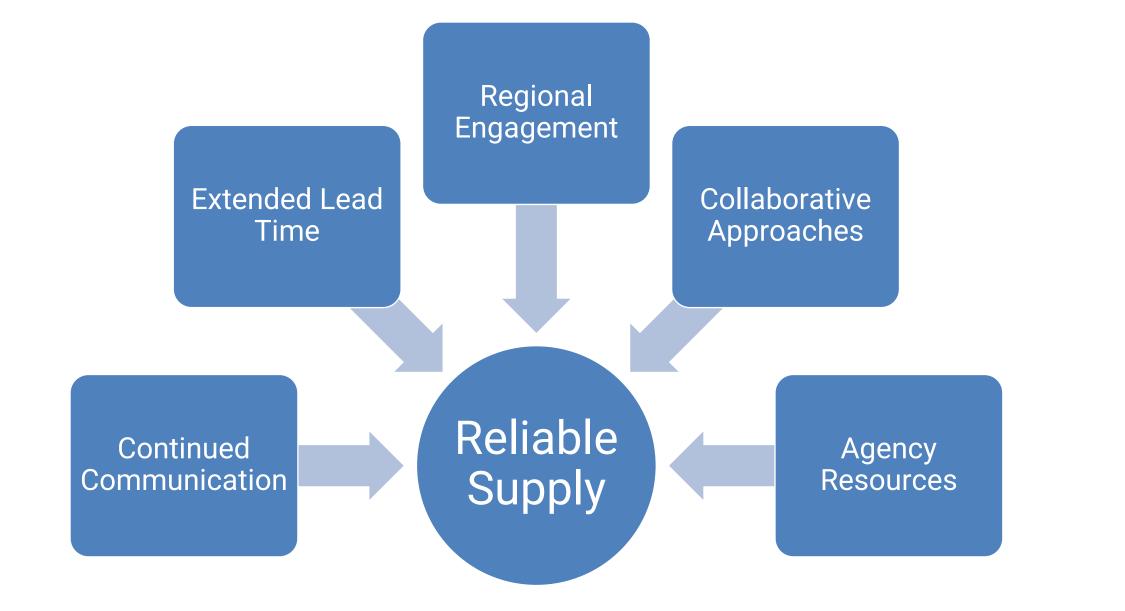
# Challenge and Opportunity



# CASE STUDY: BOIS D'ARC LAKE



# BUILDING ON EXISTING SUCCESS



## Philip Taucer, PE Philip.taucer@freese.com



AND

5

regionhwater.org

**REGION H** 

Water Planning Group