HITTING THE TRAIL

THE LONG PATH FOR FUTURE WATER MANAGEMENT

FREESE AND NICHOLS

Getting Ready for Tomorrow's Adventure

Check the forecast

Readying supplies

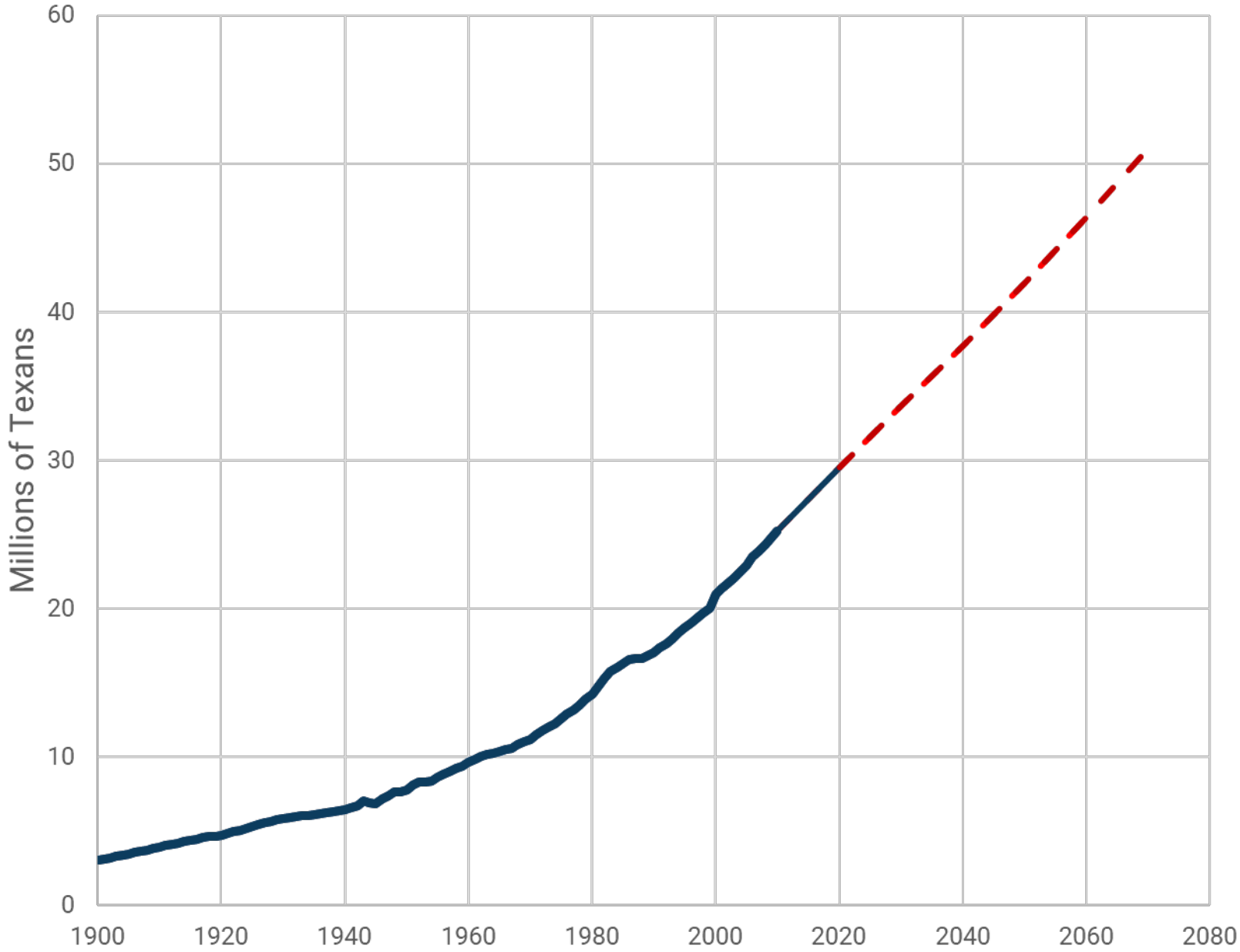
Select path

Assemble team

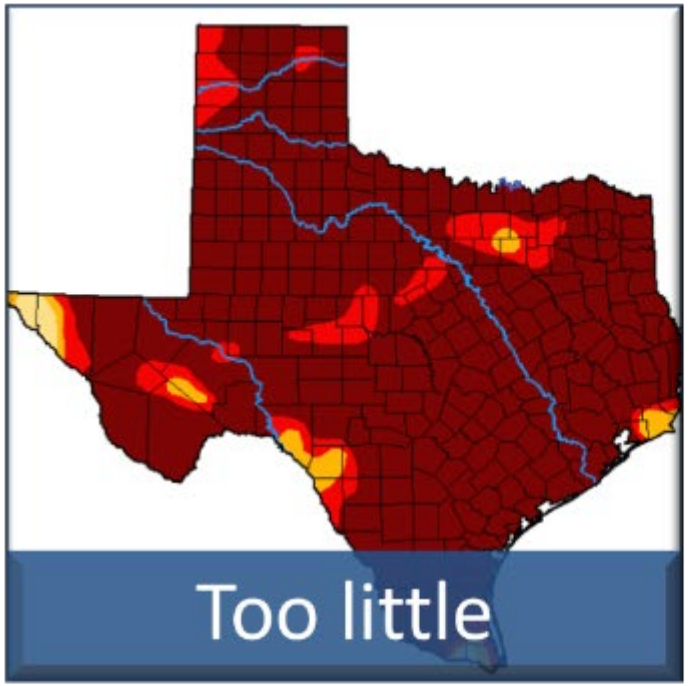
Backup plans

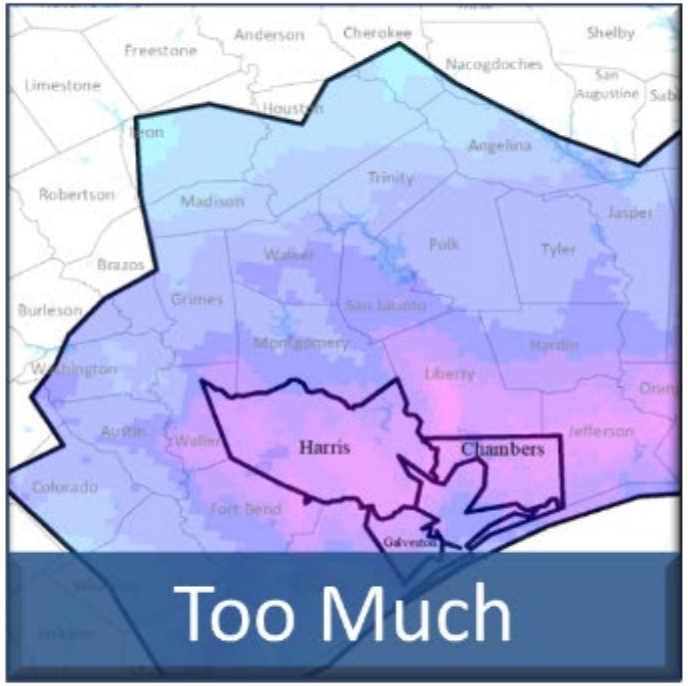
Get an early start

The Texas Miracle

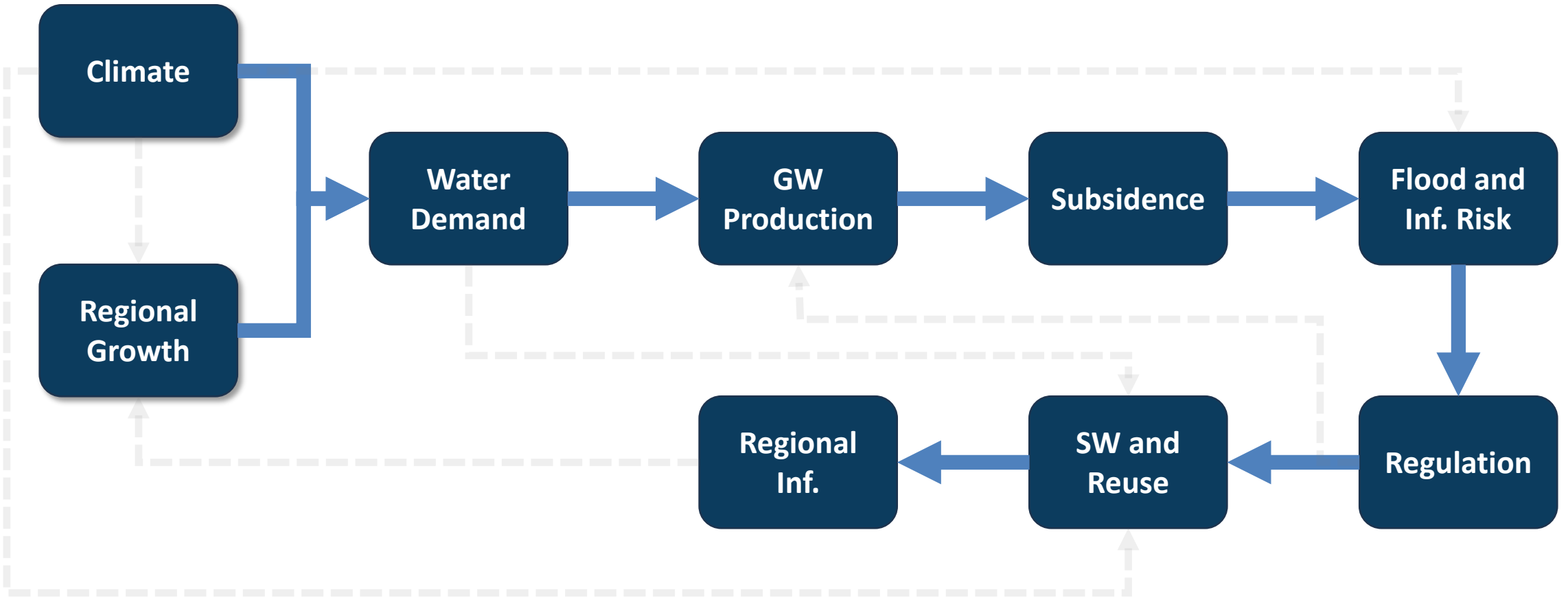


No Walk in the Park

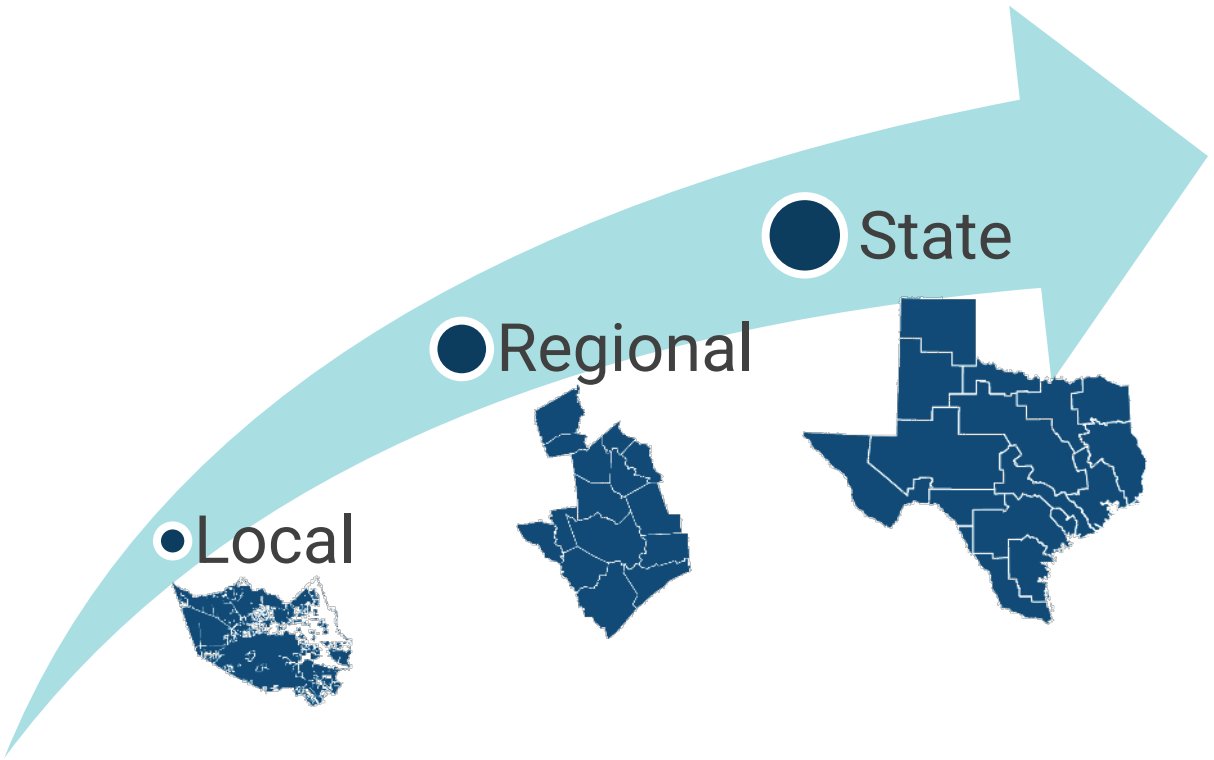




The Need for an Integrated Approach



Who's Planning the Trip?



Industries

Local cities and utilities

Wholesale providers

Local regulators

Regional Planning Groups

State agencies

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 SUBSIDENCE DISTRICT

FORT BEND SUBSIDENCE DISTRICT

1 Develop Population and Demand Projections

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

2 Conduct Alternative Water Supply Assessment

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

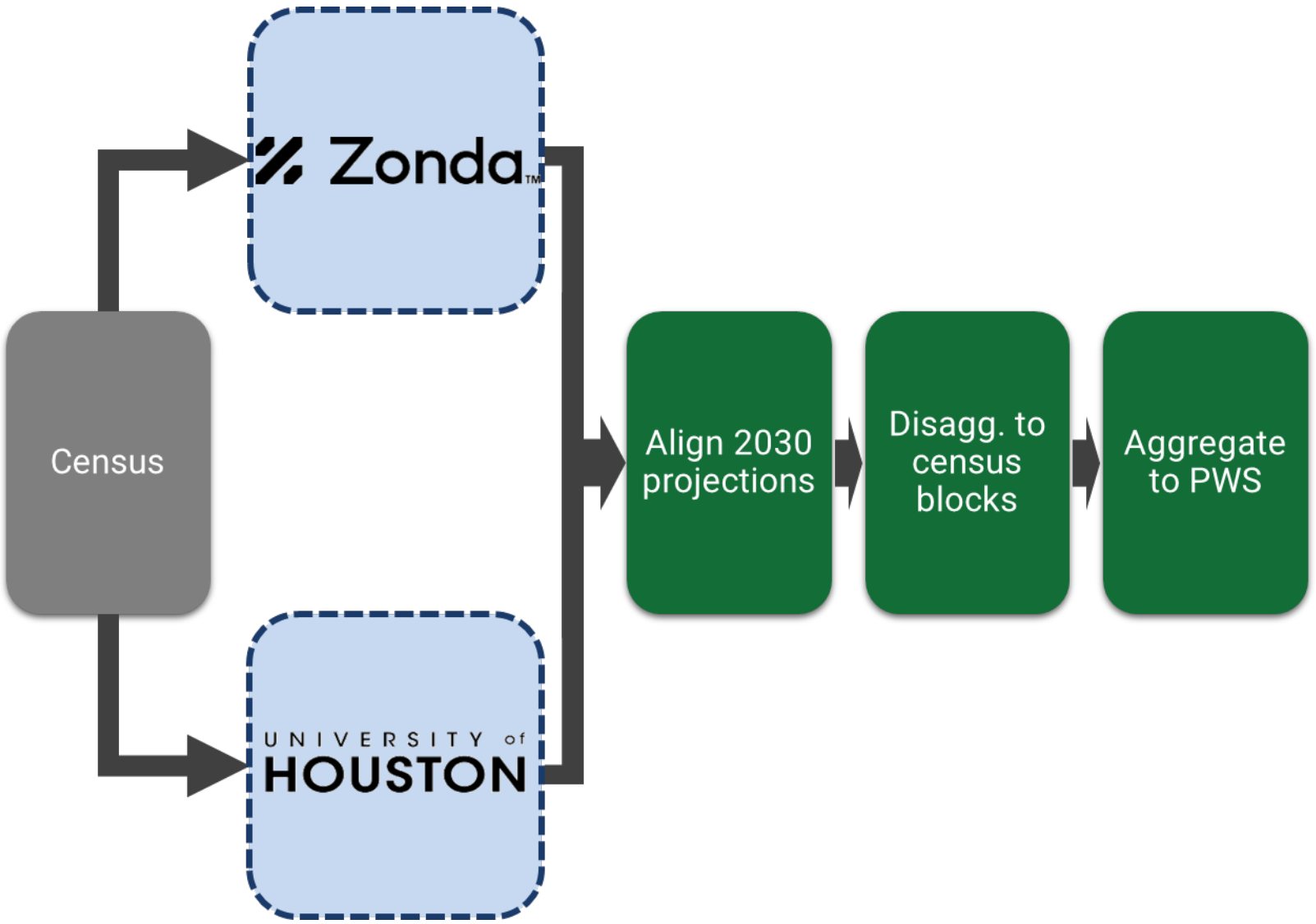
3 Develop the Gulf Coast Land Subsidence and Groundwater Flow Model

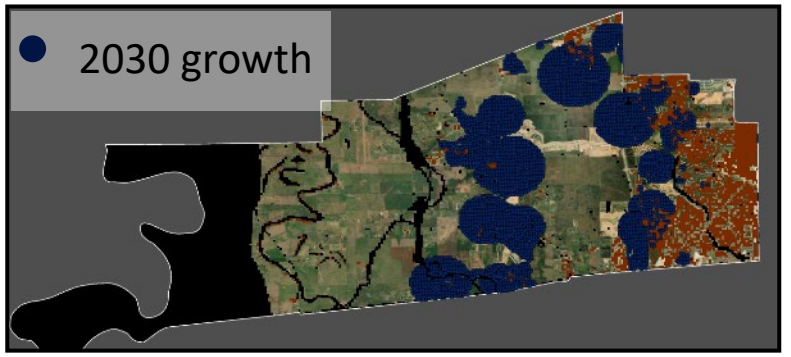
Development of the GULF-2023 model for simulating regional groundwater flow and subsidence in the Gulf Coast Aquifer.

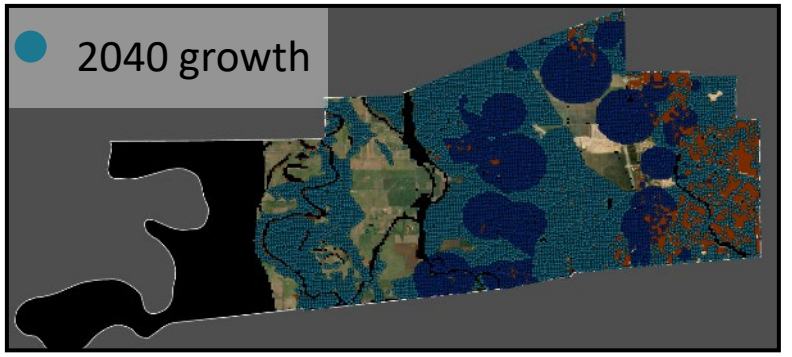
4 Evaluate Regulatory Scenarios

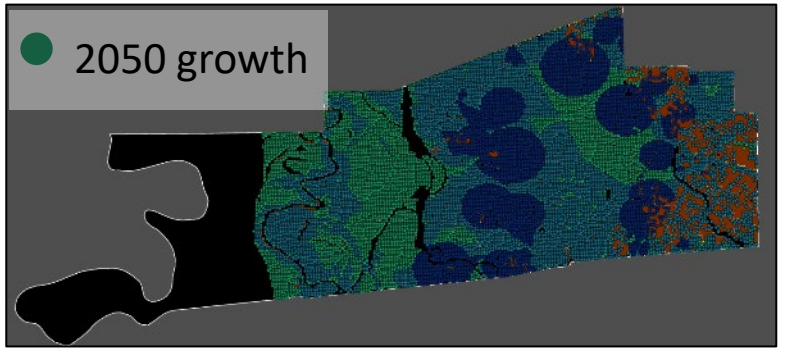
Evaluate the performance of the HGSD and FBSD regulatory plans and consider refinements to the regulatory plan framework to accommodate future growth, alternative water supplies, and the most recent aquifer science.

Population and Demand Projections









Model Updates

- New GULF 2023 Model
- Newer data and software
- Finer spatial resolution
- Improved layer definition
- Enhanced subsidence methods

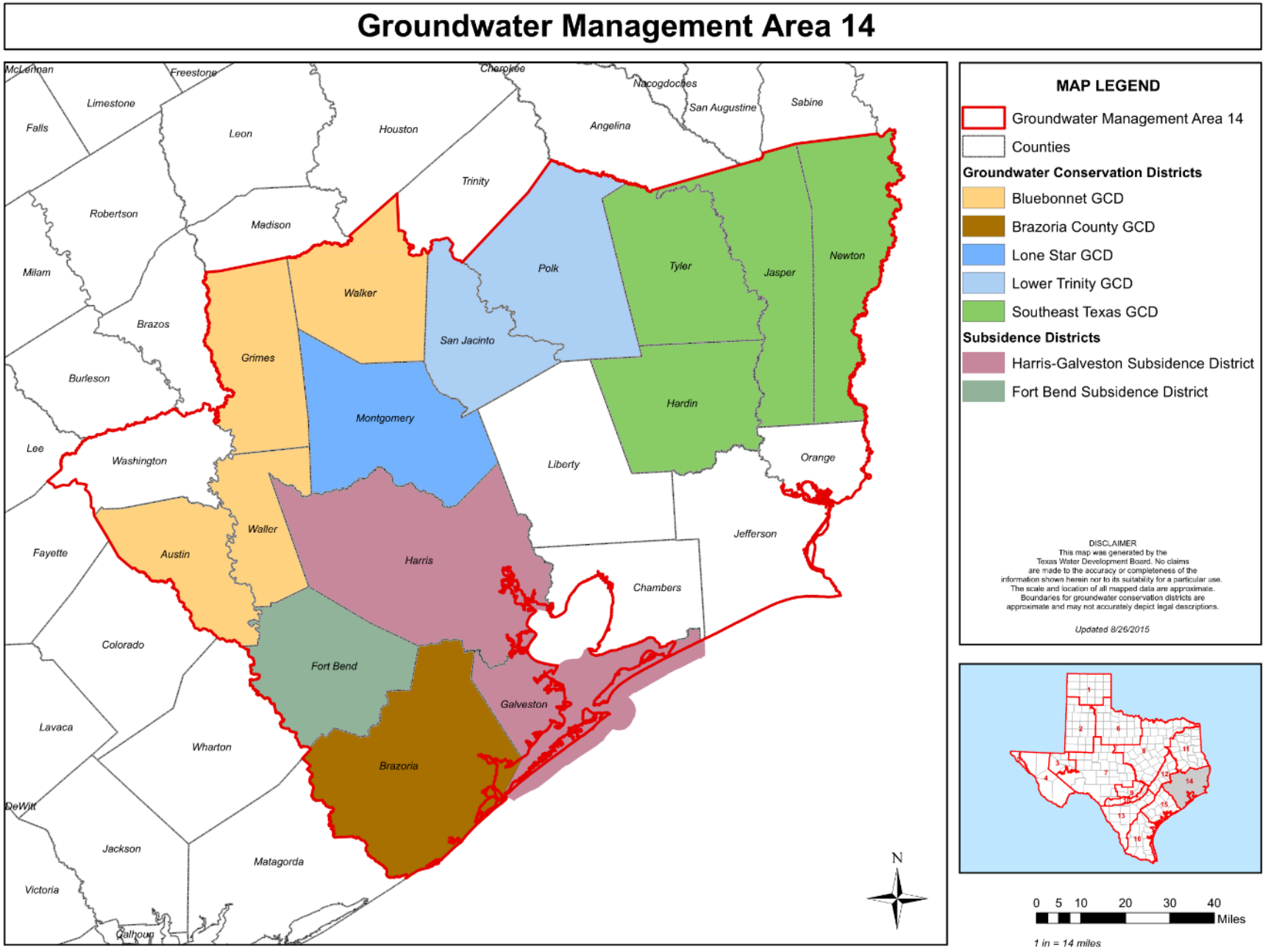
Scenario Evaluation

Assess current regulatory plans

Examine multiple scenarios

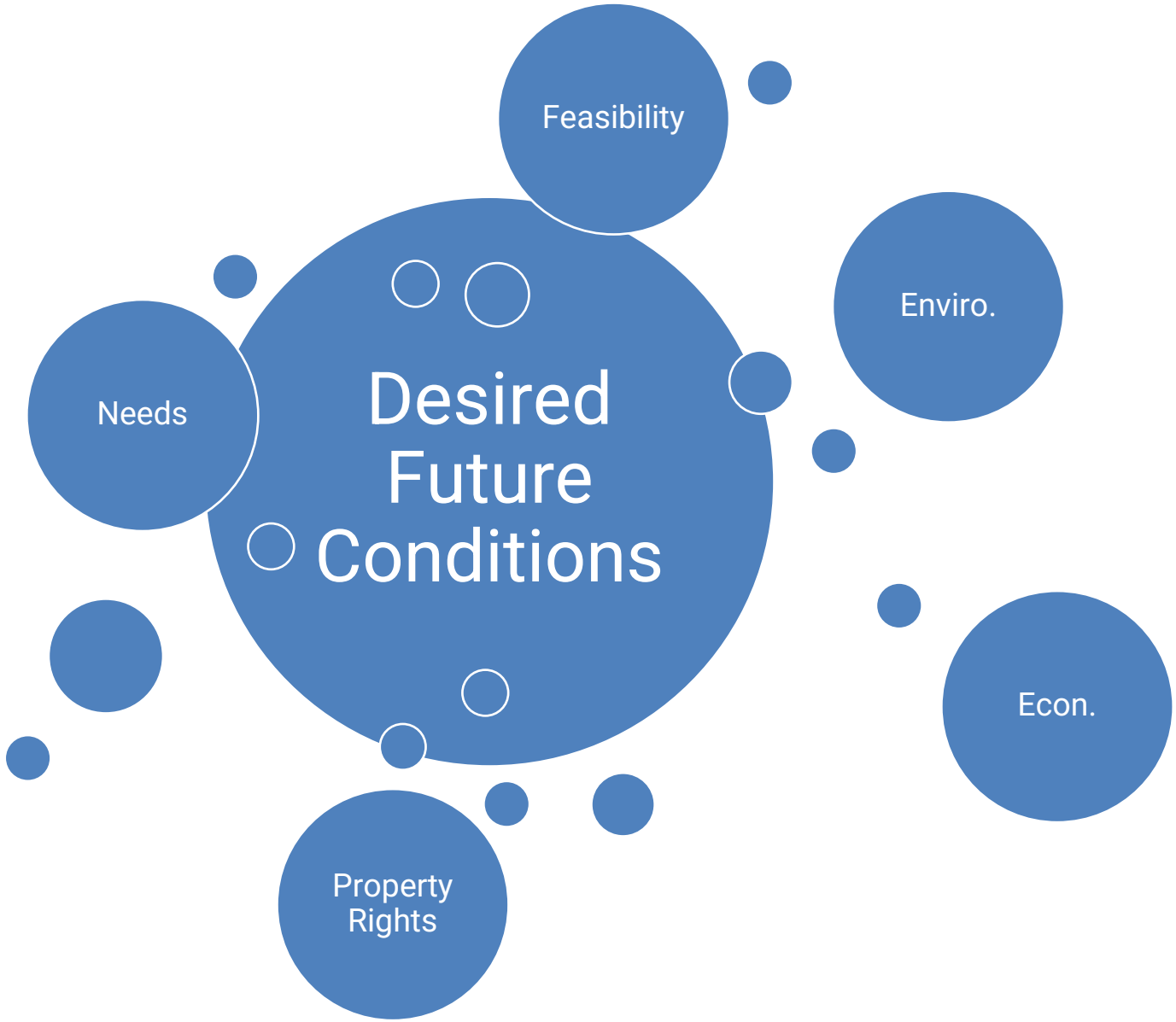
Inform retention or adjustment

Groundwater Management Area Process



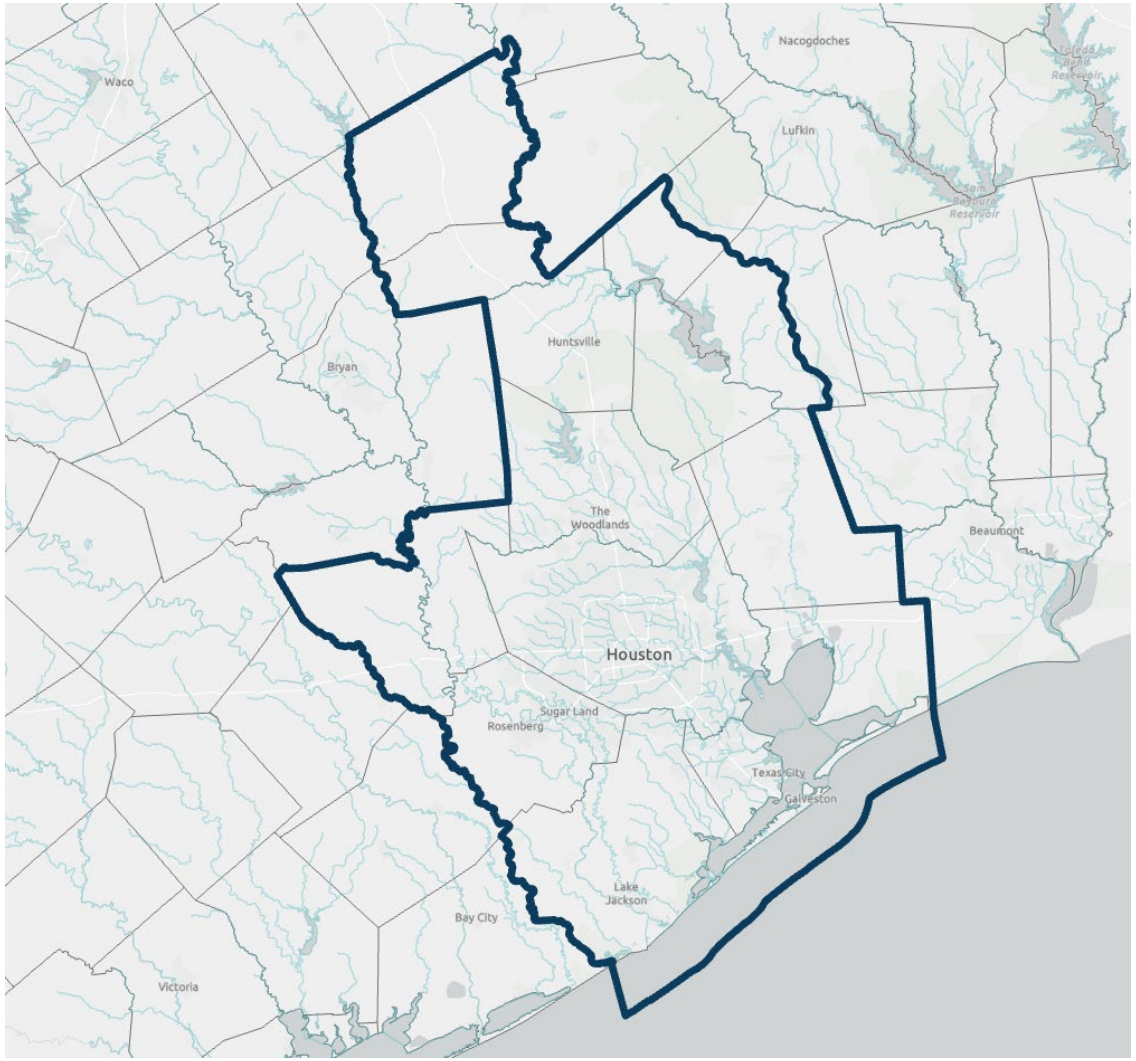
https://www.twdb.texas.gov/groundwater/management_areas/maps/

Joint Planning for Groundwater



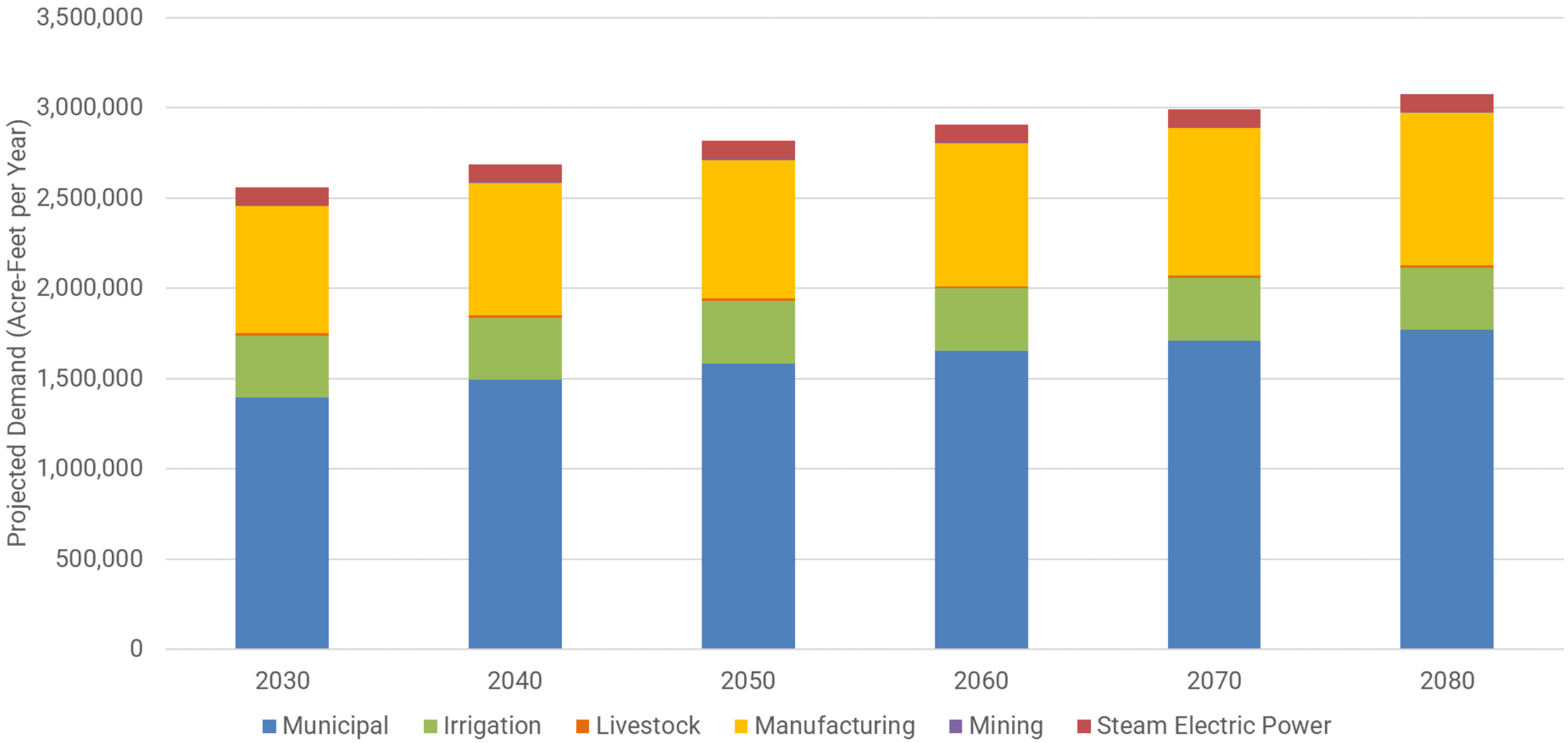
Regional Water Planning

About Region H

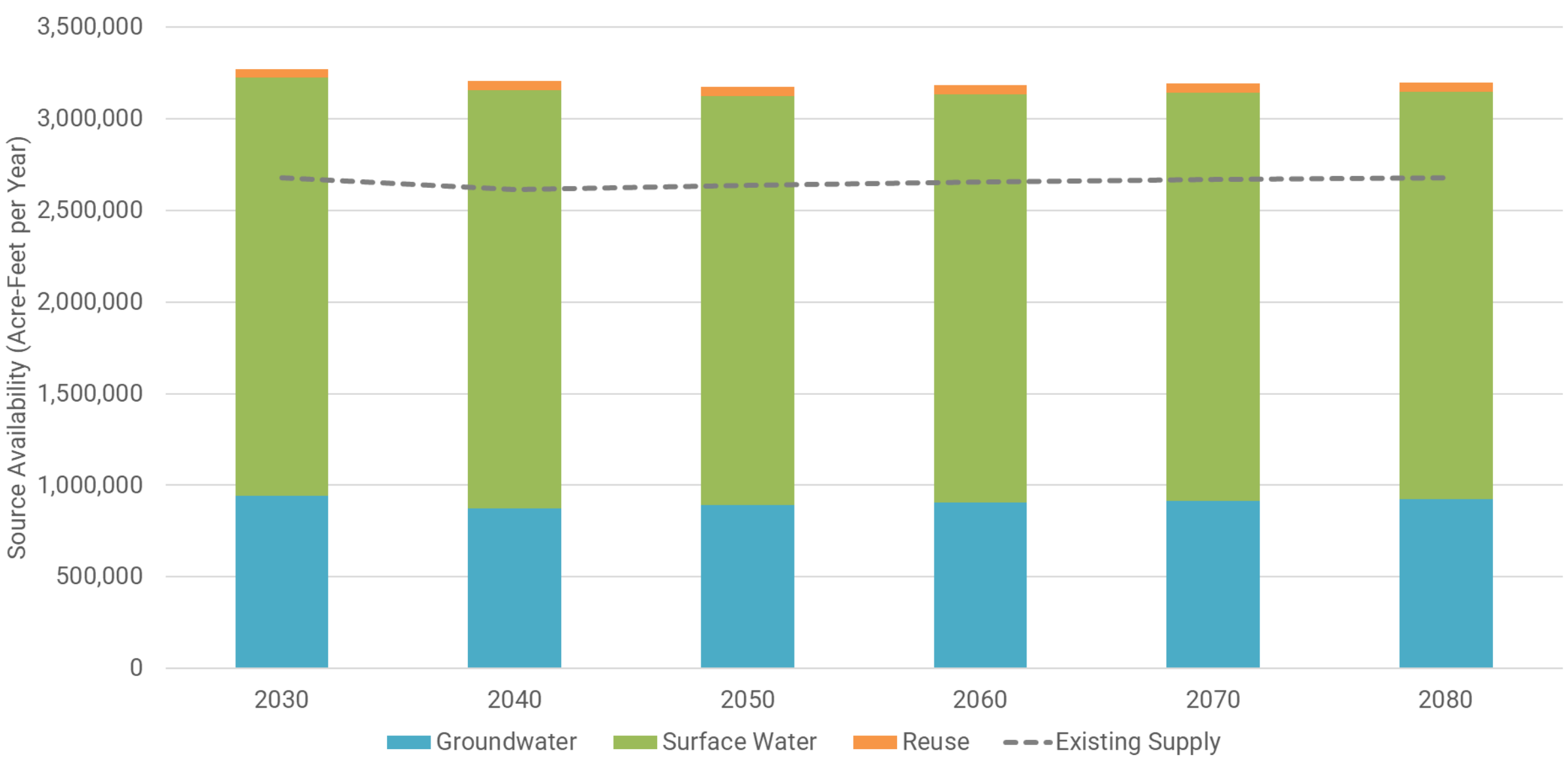


- Extends over 15 counties
- Two major and four minor aquifers
- Three river basins and three major reservoirs
- 26 volunteer Planning Group members

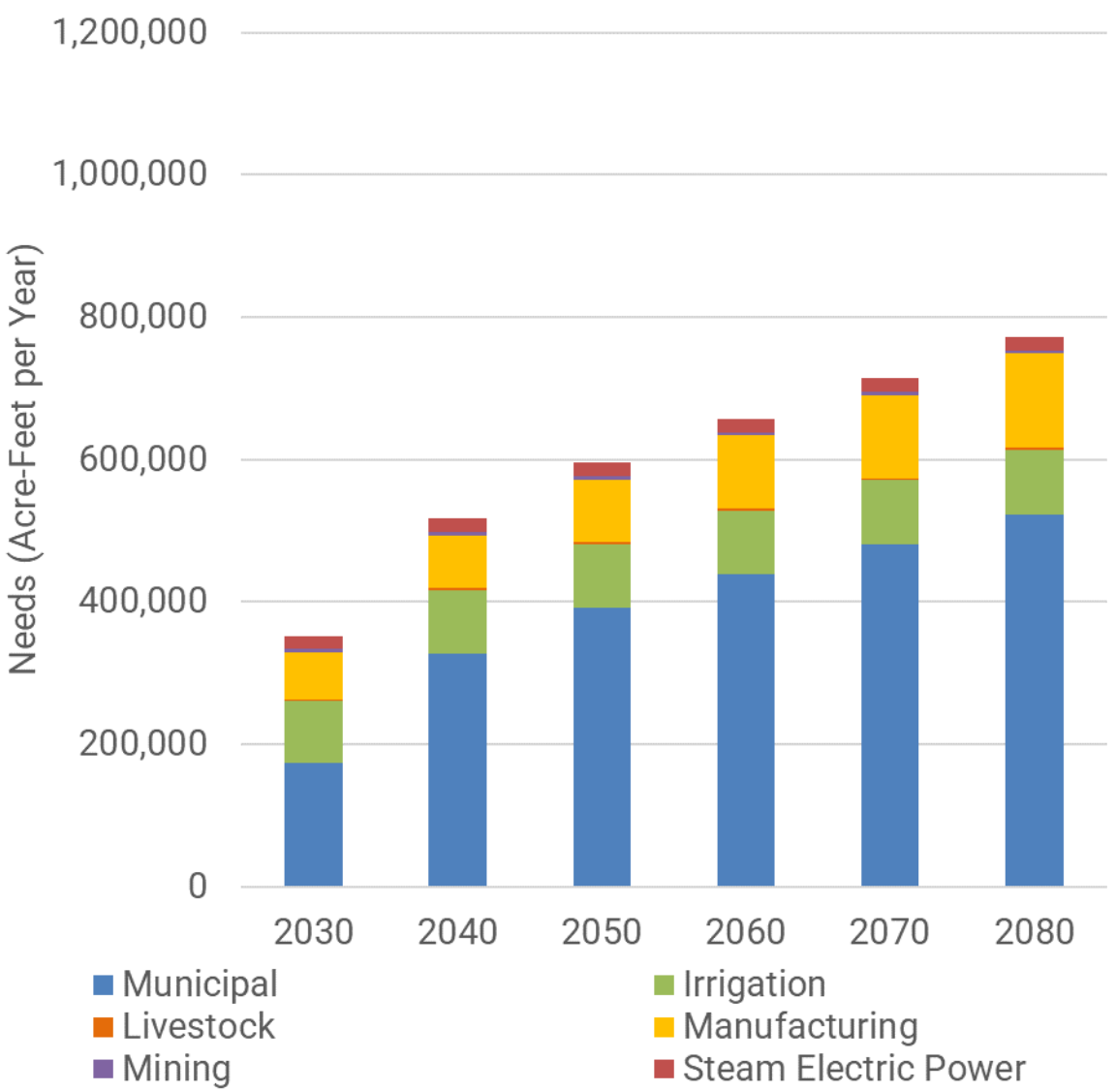
Water Demands



Sources and Existing Supply



Future Needs and Path Forward



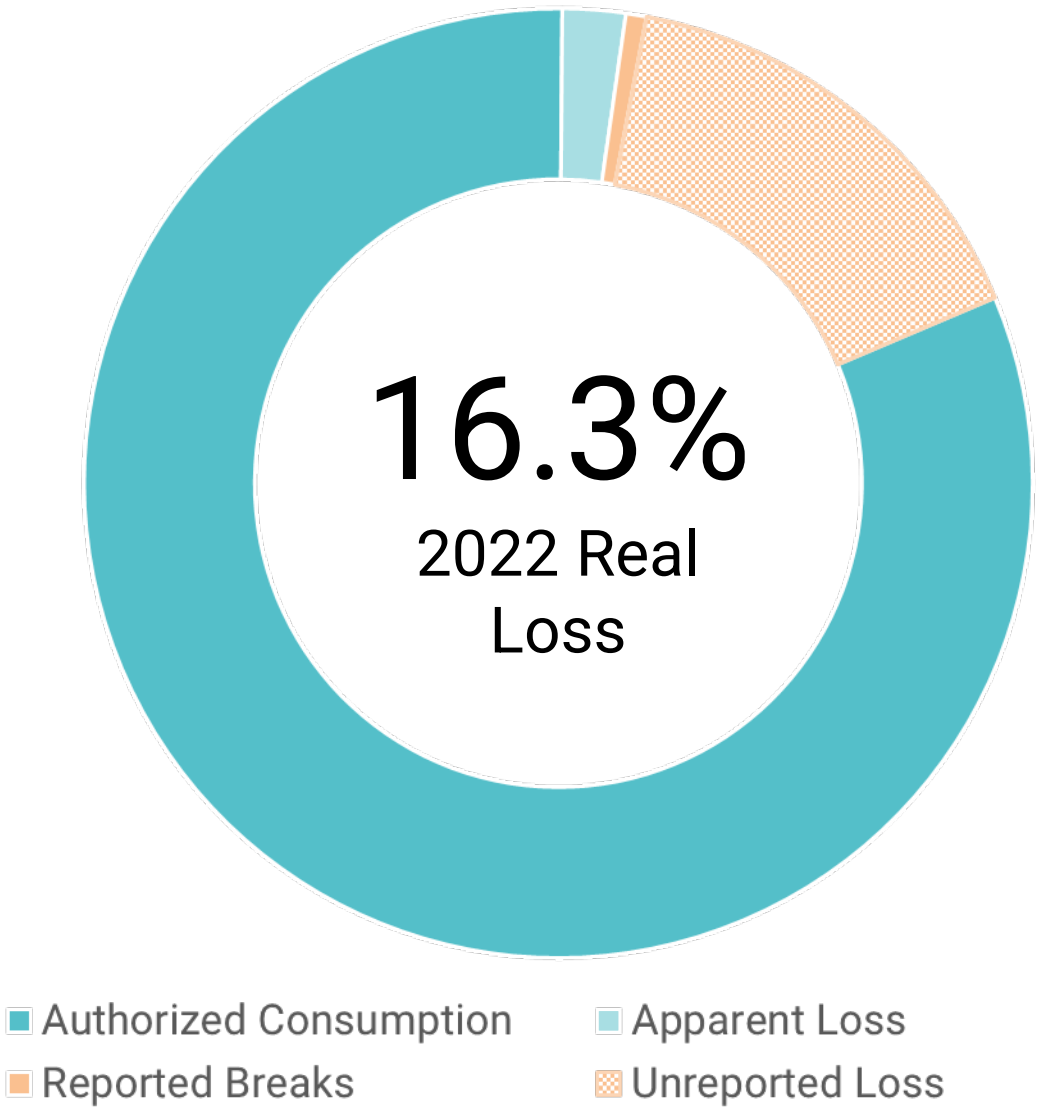
Identify potentially feasible strategies

Evaluate for overall characteristics

Assess suitability for each entity with need

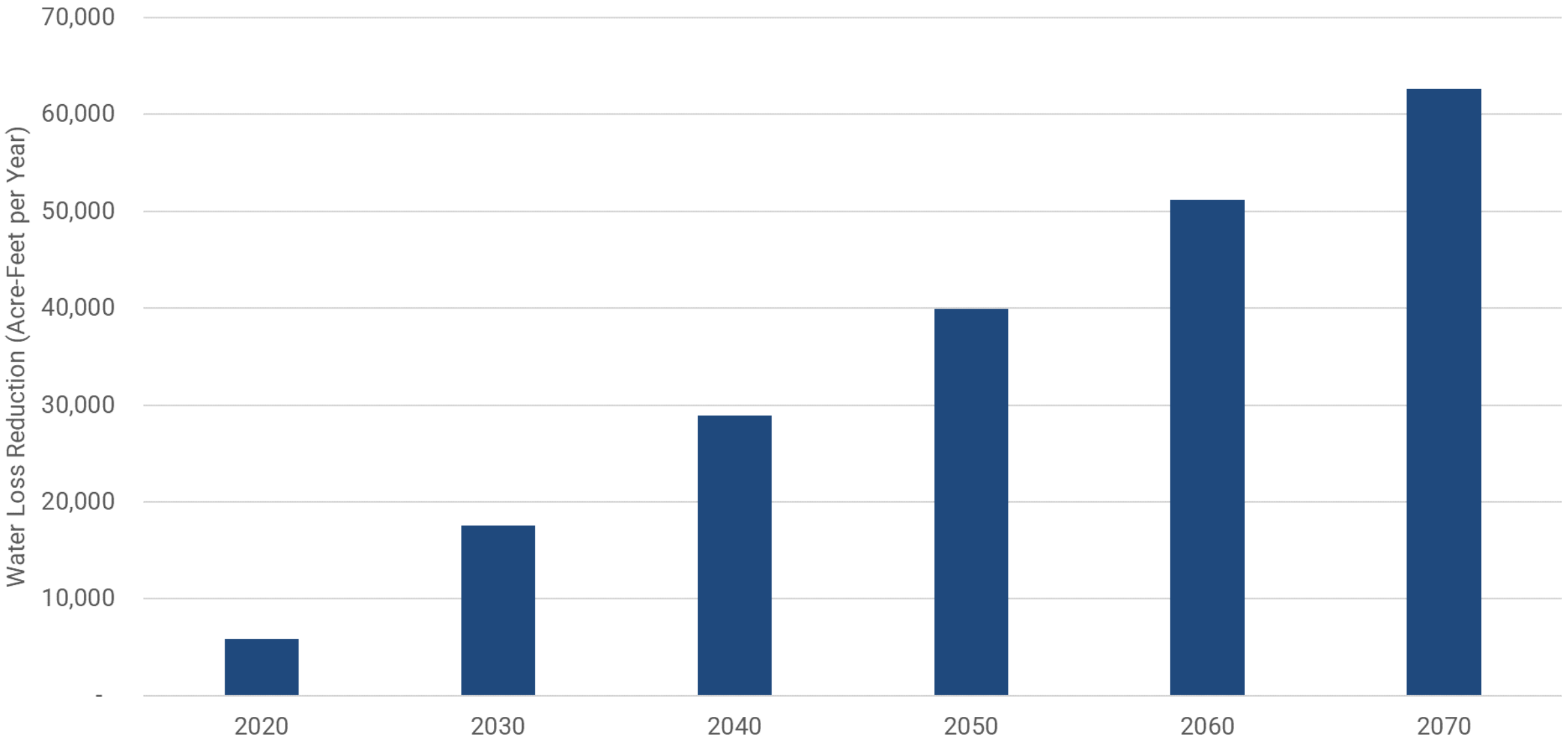
Filter and develop recommendations

Don't Know What You've Got Till It's Gone



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

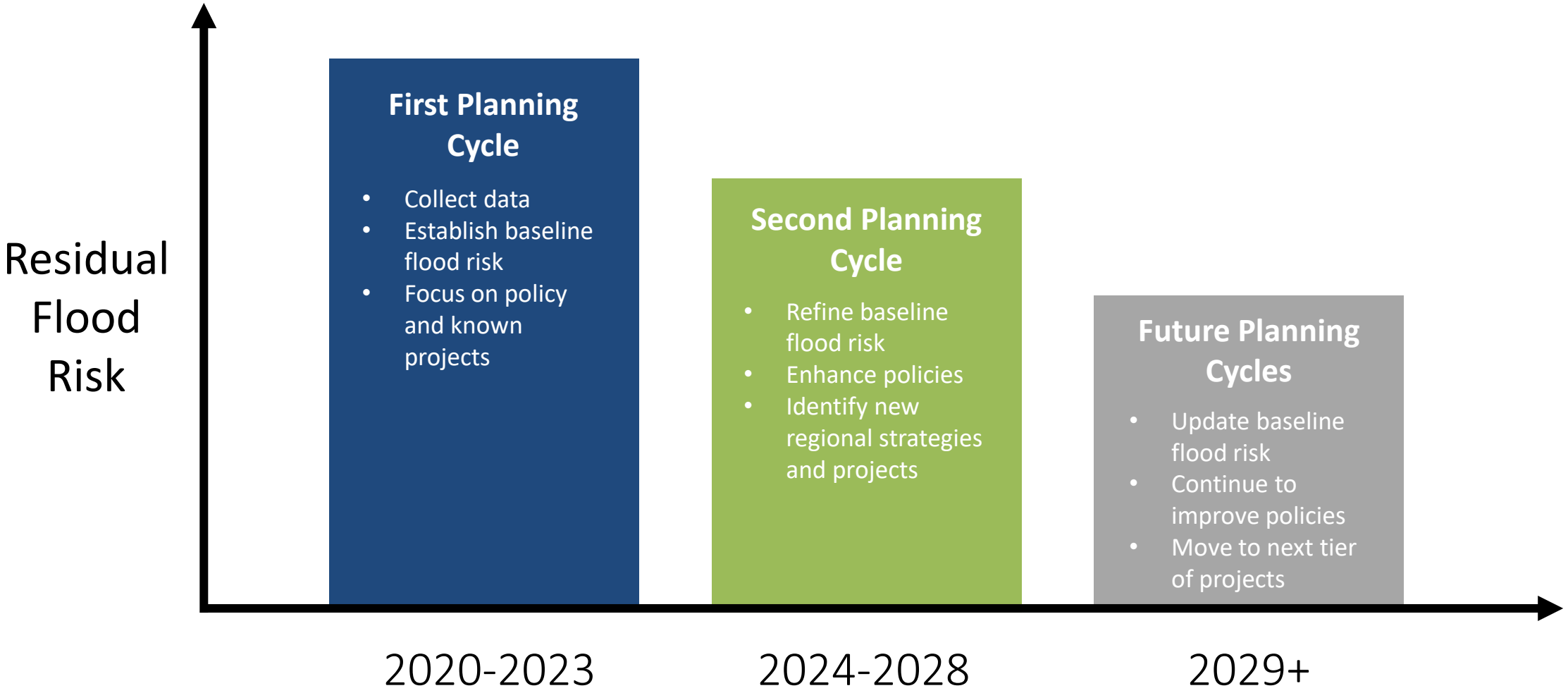
Don't Know What You've Got Till It's Gone



State and Regional Flood Planning

https://www.twdb.texas.gov/flood/planning/regions/index.asp

An Evolving Process



Benefits of Planning Ahead

33.8 billion

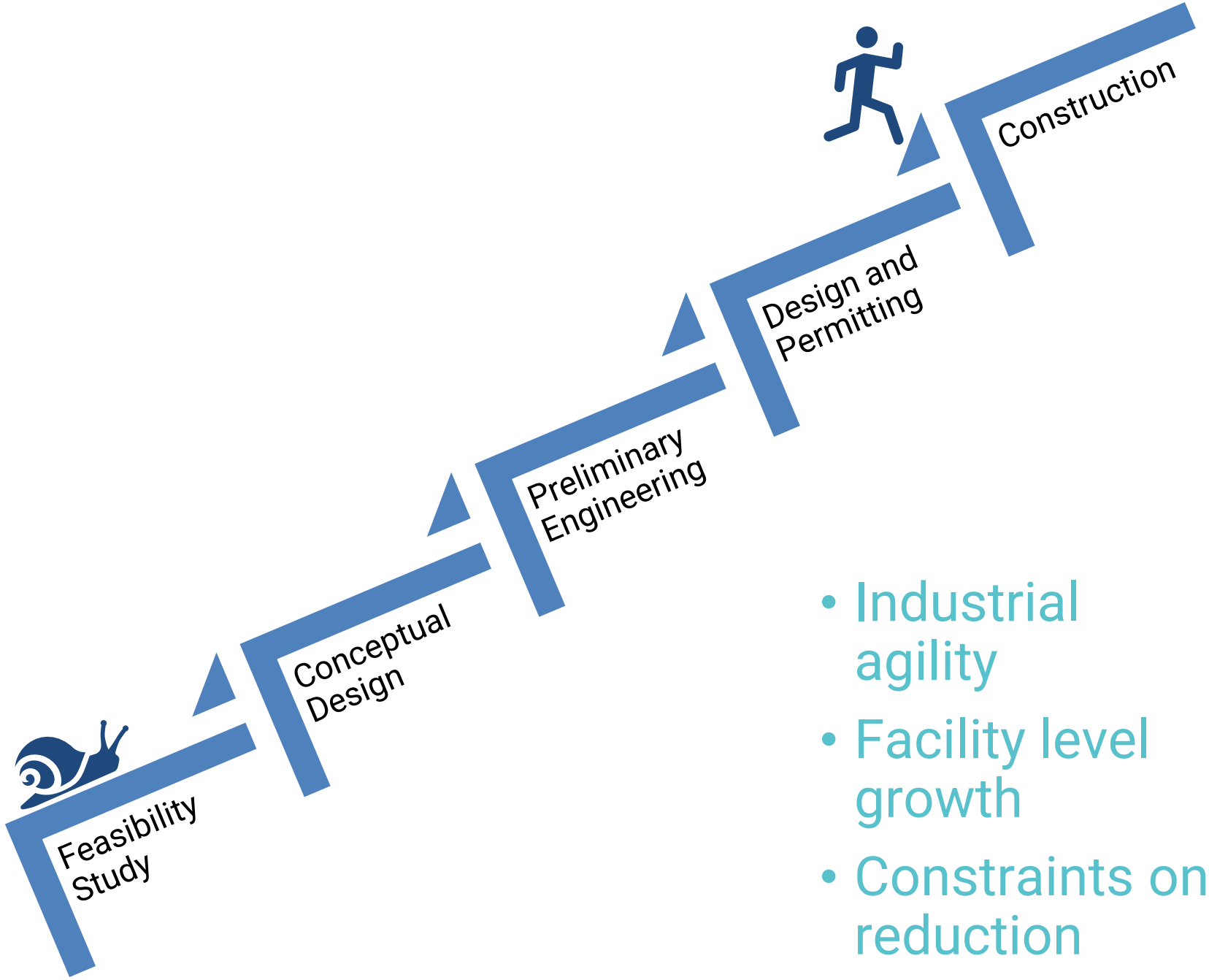
113,944

506,841

22

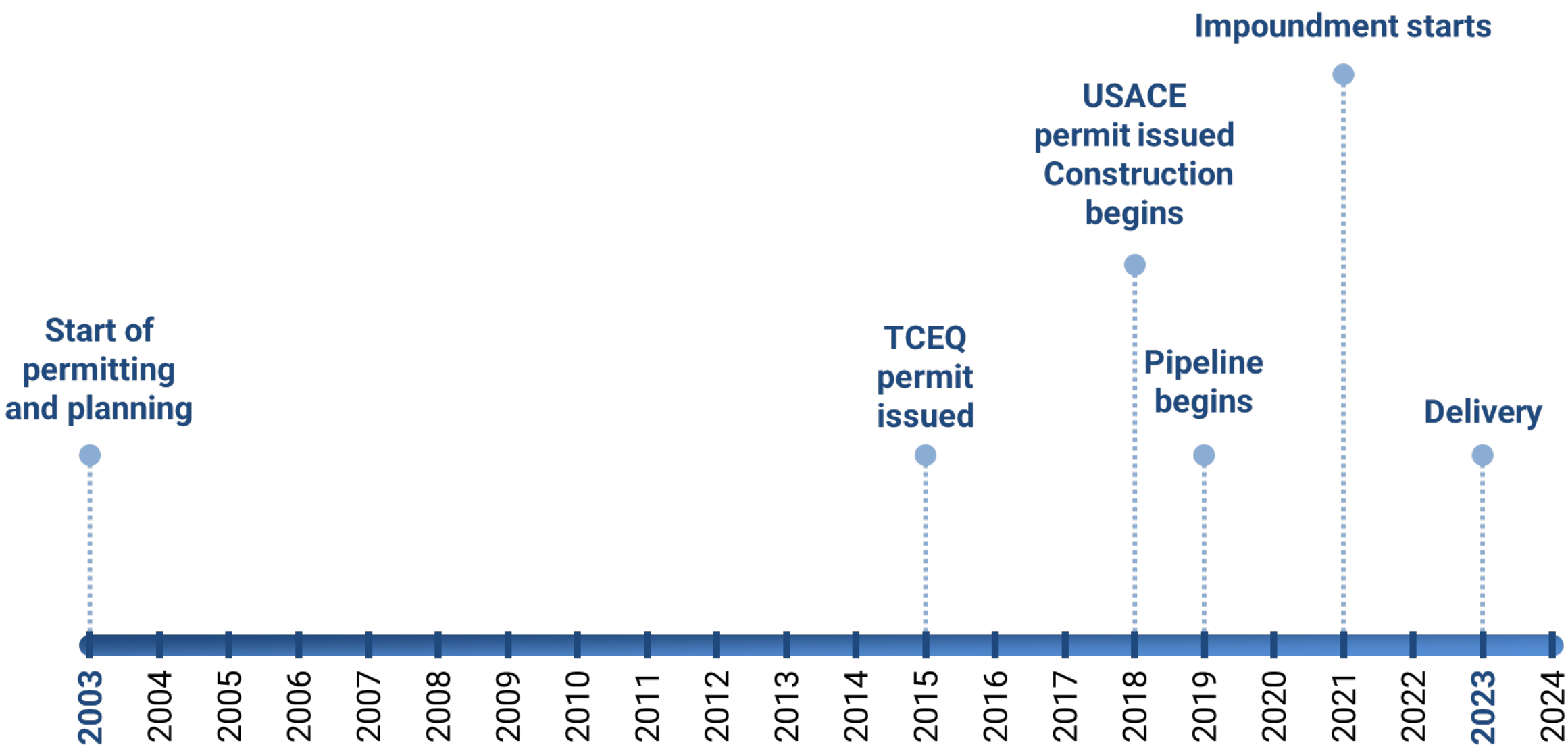
https://sanjacintofloodplanning.org/

Challenge and Opportunity

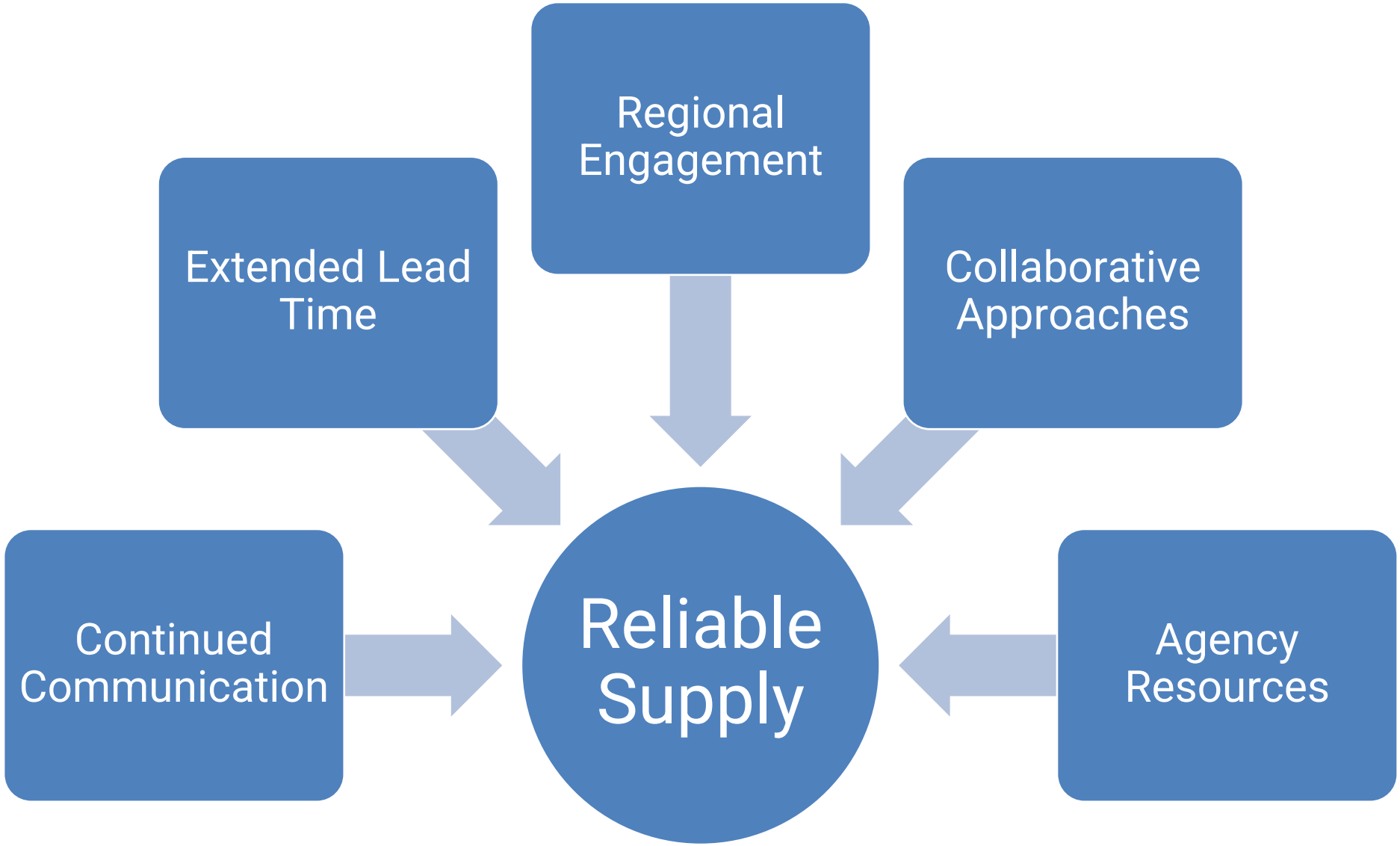


- Industrial agility
- Facility level growth
- Constraints on reduction

Case Study: Bois d'Arc Lake



Building on Existing Success



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INTEGRATED WATER RESOURCE PLANNING

FREESE AND NICHOLS

REGION H
Water Planning Group

regionhwater.org