

Region H Water Planning Group
Public Hearing for
2011 Initially Prepared Plan

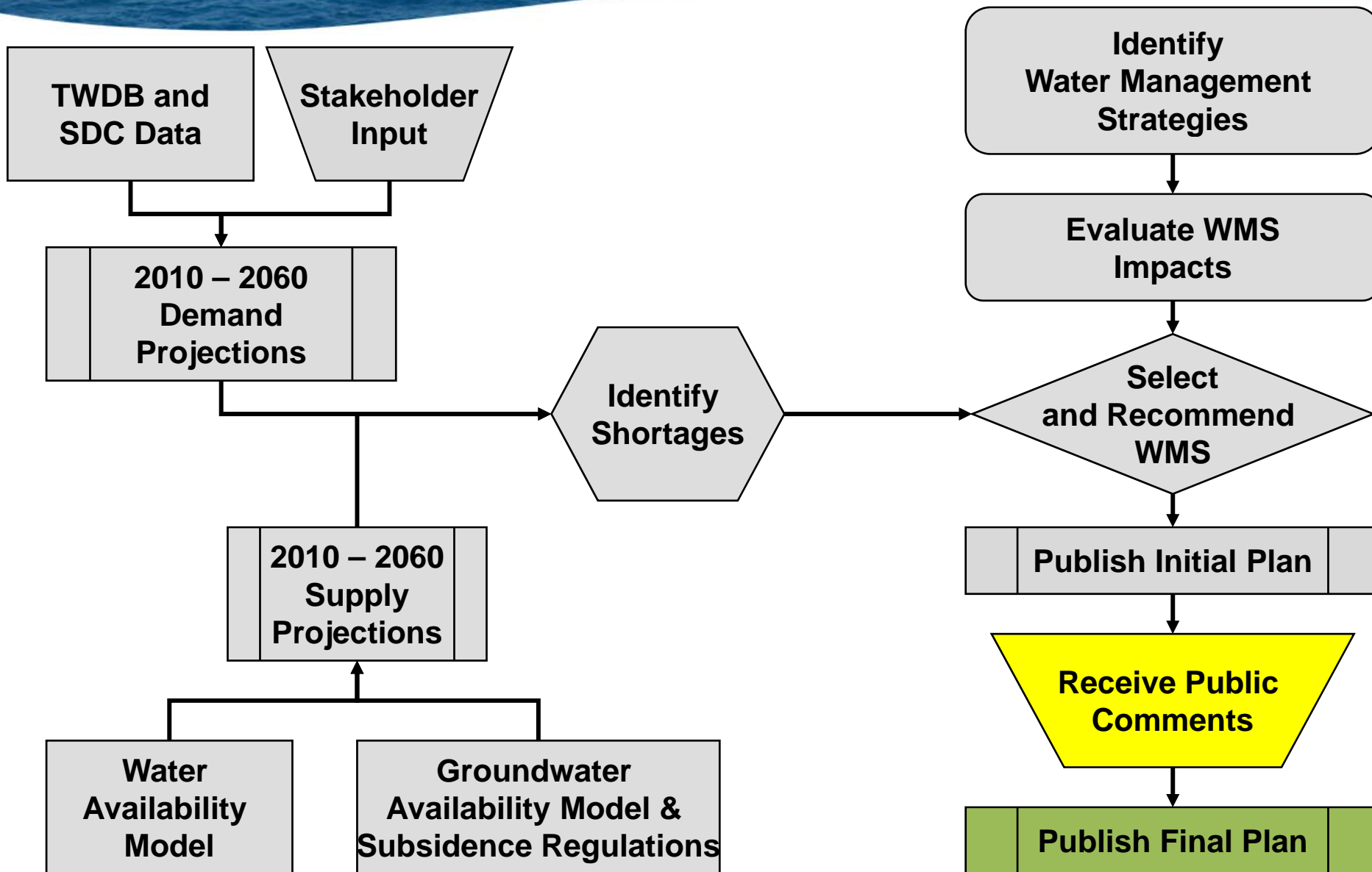
March 30, 2010

Houston-Galveston Area Council, Houston

Regional Water Plan Overview

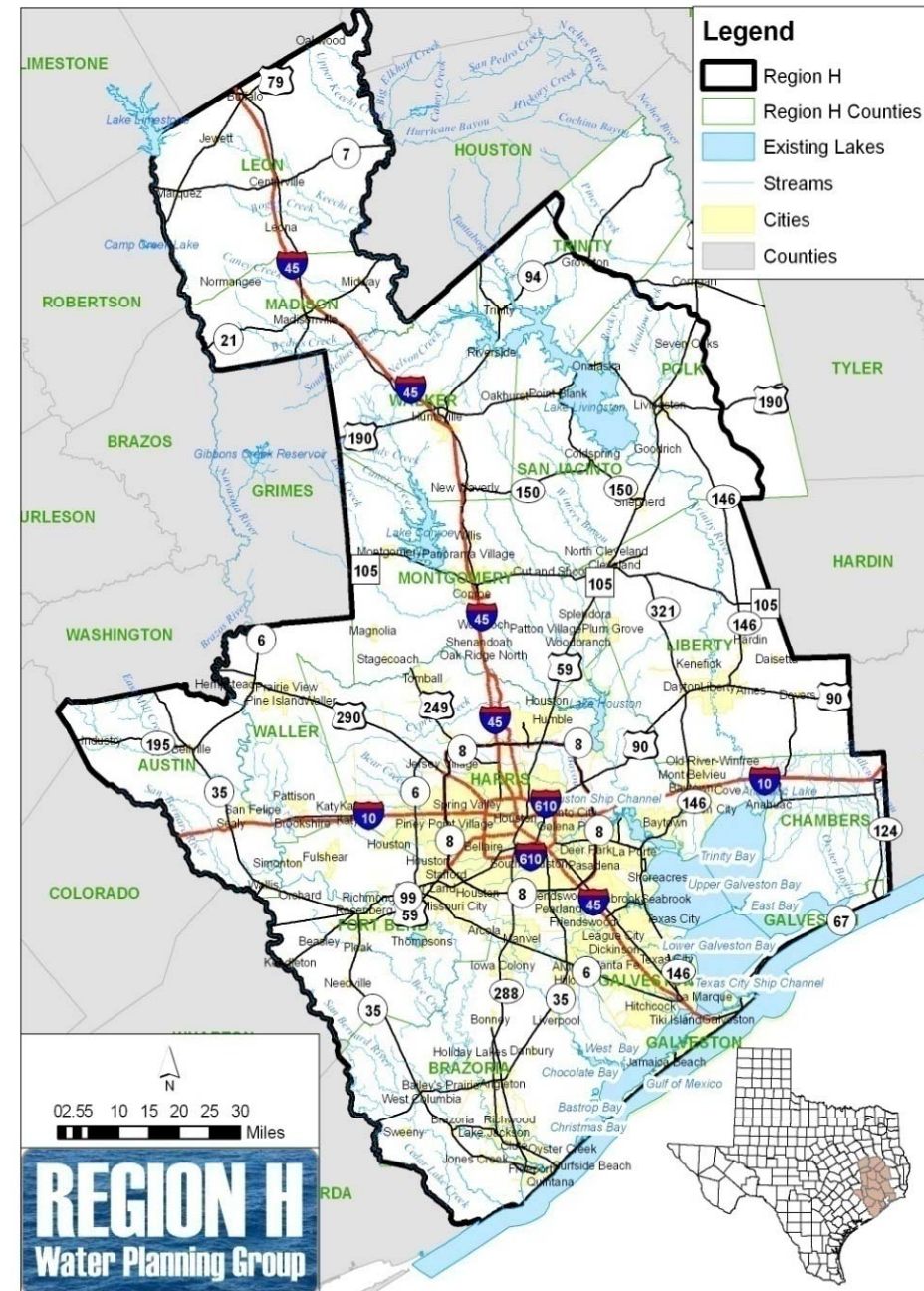
- Region H Overview
- Population and Water Demand Projections
- Water Supply Estimates
- Water Management Strategies
- Protection of Water Resources
- Unique Stream Segments & Reservoirs
- Administrative, Regulatory and Legislative Recommendations
- Infrastructure Financing Survey and Recommendations
- Special Studies

Regional Water Planning Process



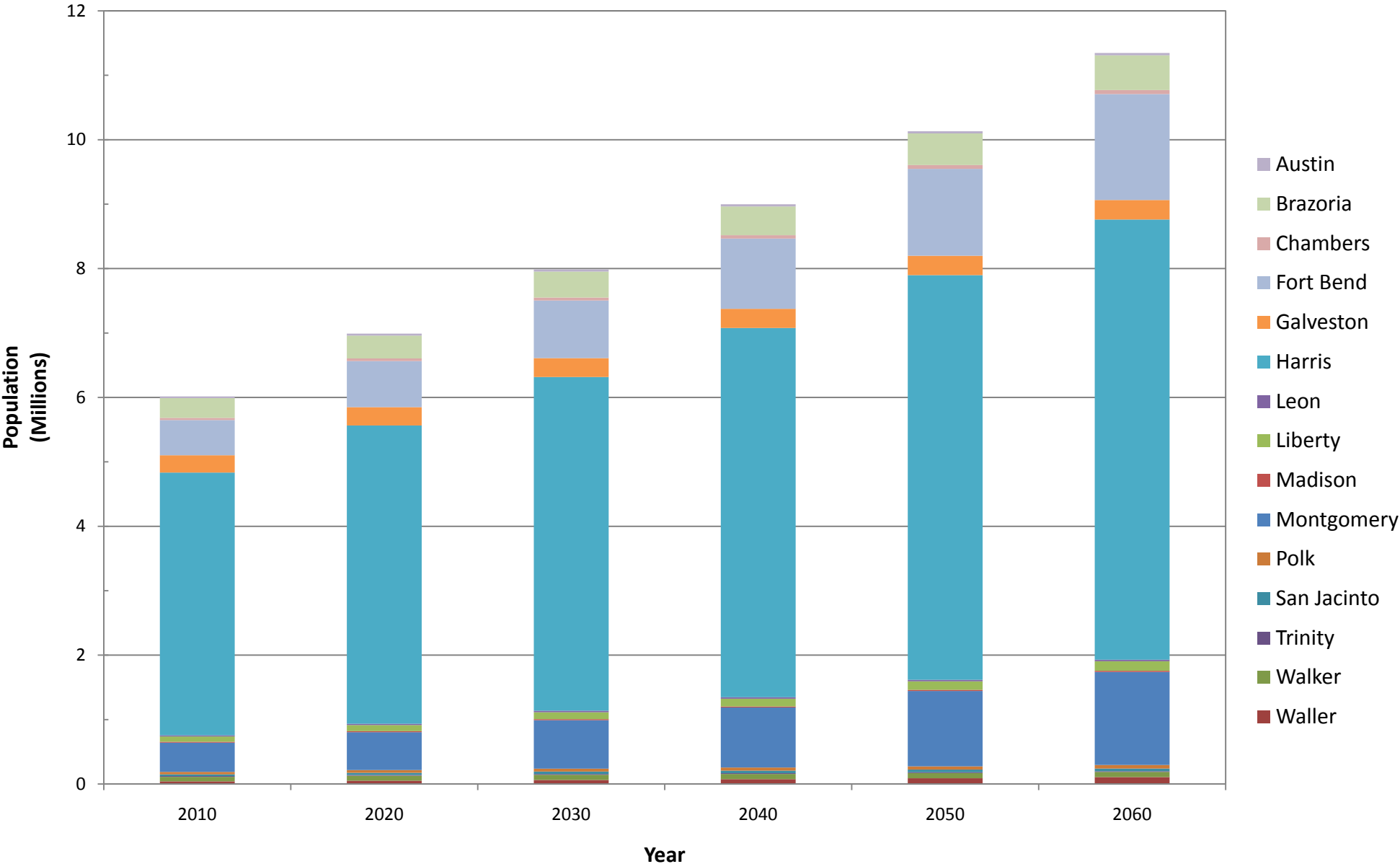
Regional Water Planning

- 16 Planning Regions
- Region H
 - 15 Counties
 - 3 River Basins
 - 4 Coastal Basins
 - 2 Major Aquifers
 - 4 Minor Aquifers
- 50-year water plan (2010-2060), updated every 5 years
 - Previous Plans: 2001 and 2006
- State Water Plan published one year after final regional plans



- Revision to values in the 2006 Regional Water Plan
- Updated population and associated demand with data from various sources:
 - State Data Center
 - Texas Water Development Board
 - Individual communities and water authorities
- Approved by Region H in public meetings
 - May and July, 2009
- Approved by Texas Water Development Board in October, 2009

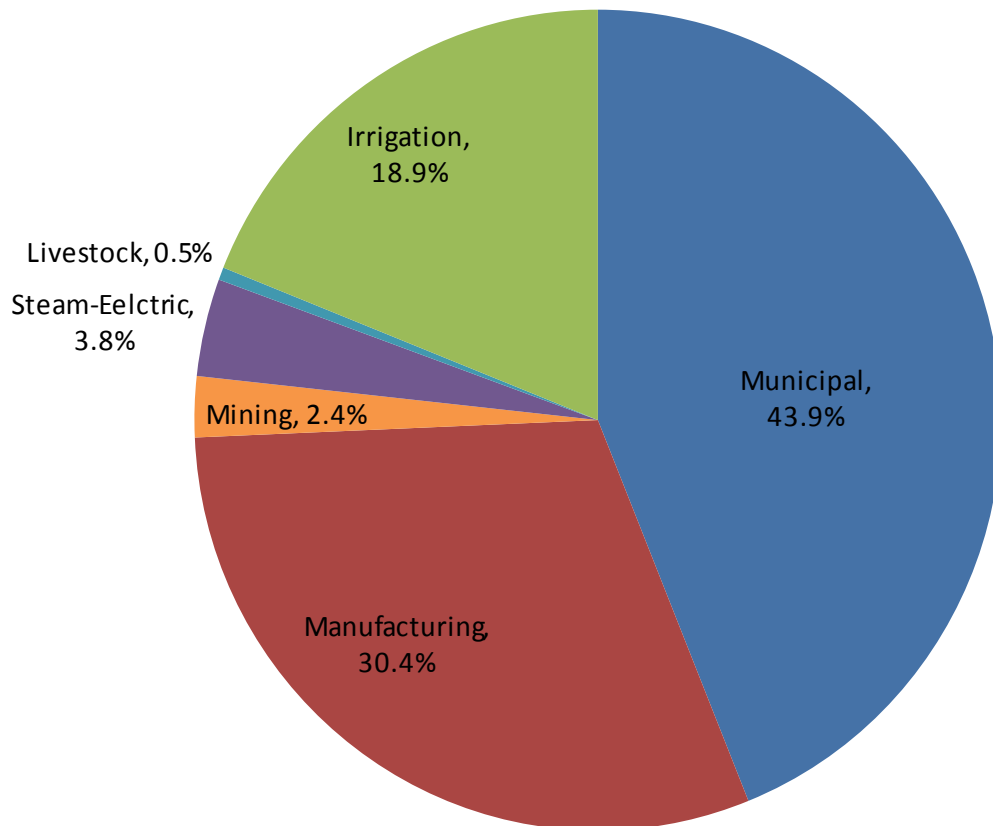
Population Growth



Demand Comparison – 2010 and 2060

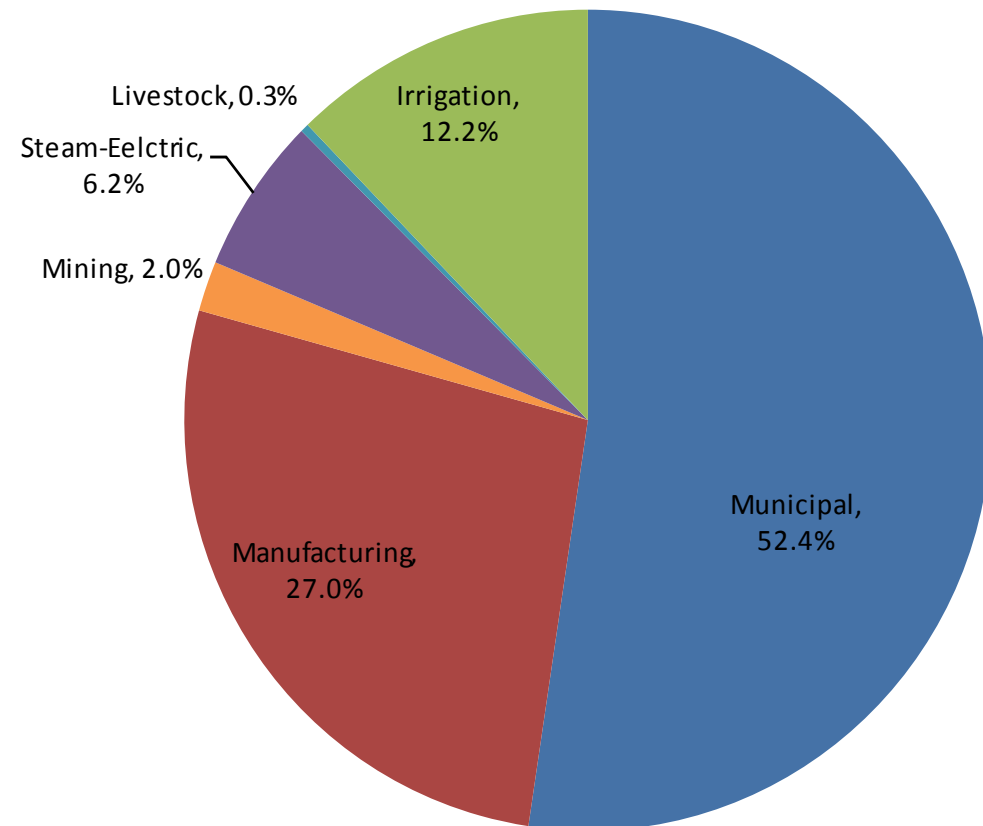
Year 2010 Demand

Total Demand of 2.38 Mil. Ac-Ft/Yr



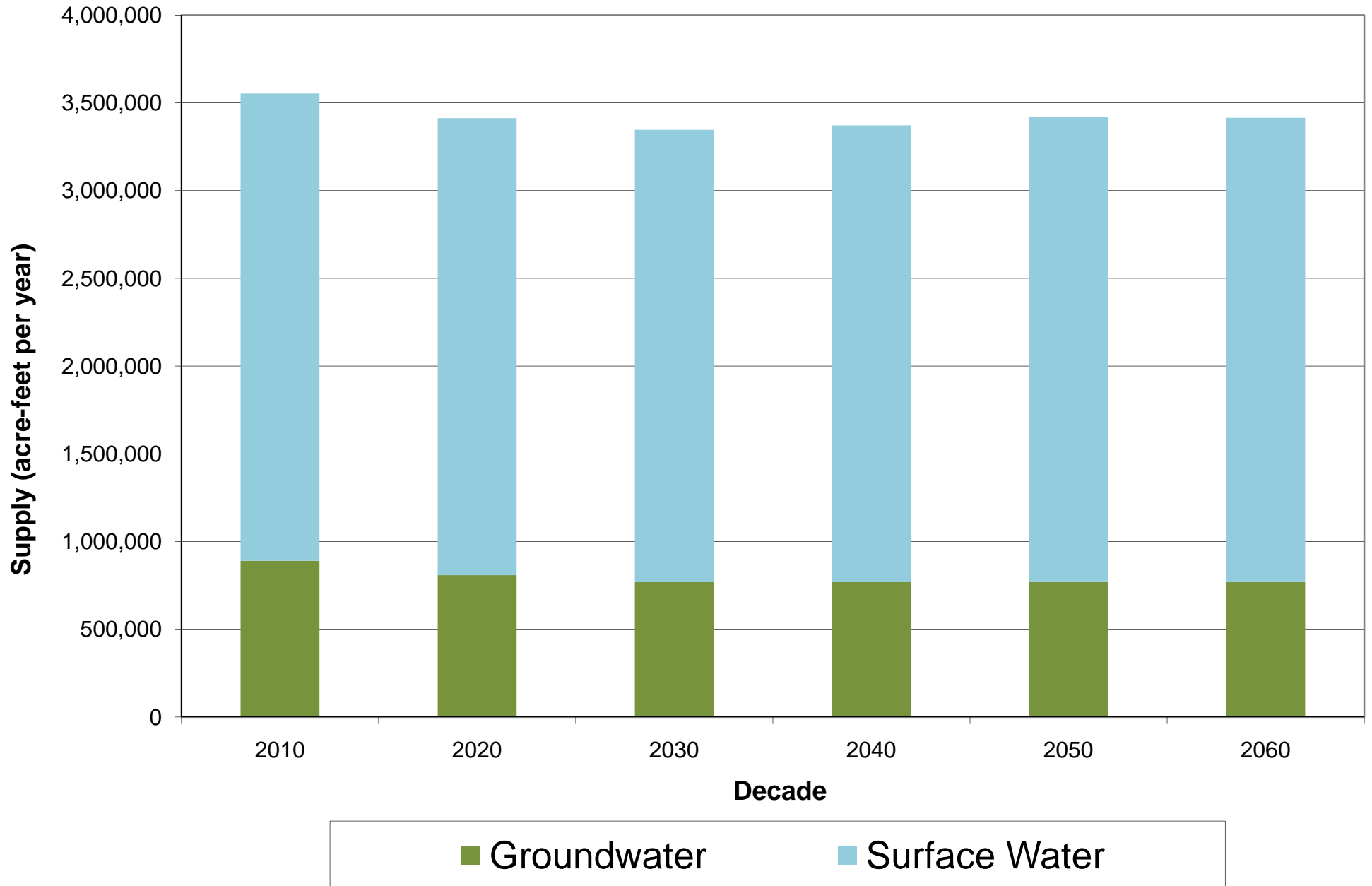
Year 2060 Demand

Total Demand of 3.53 Mil. Ac-Ft/Yr

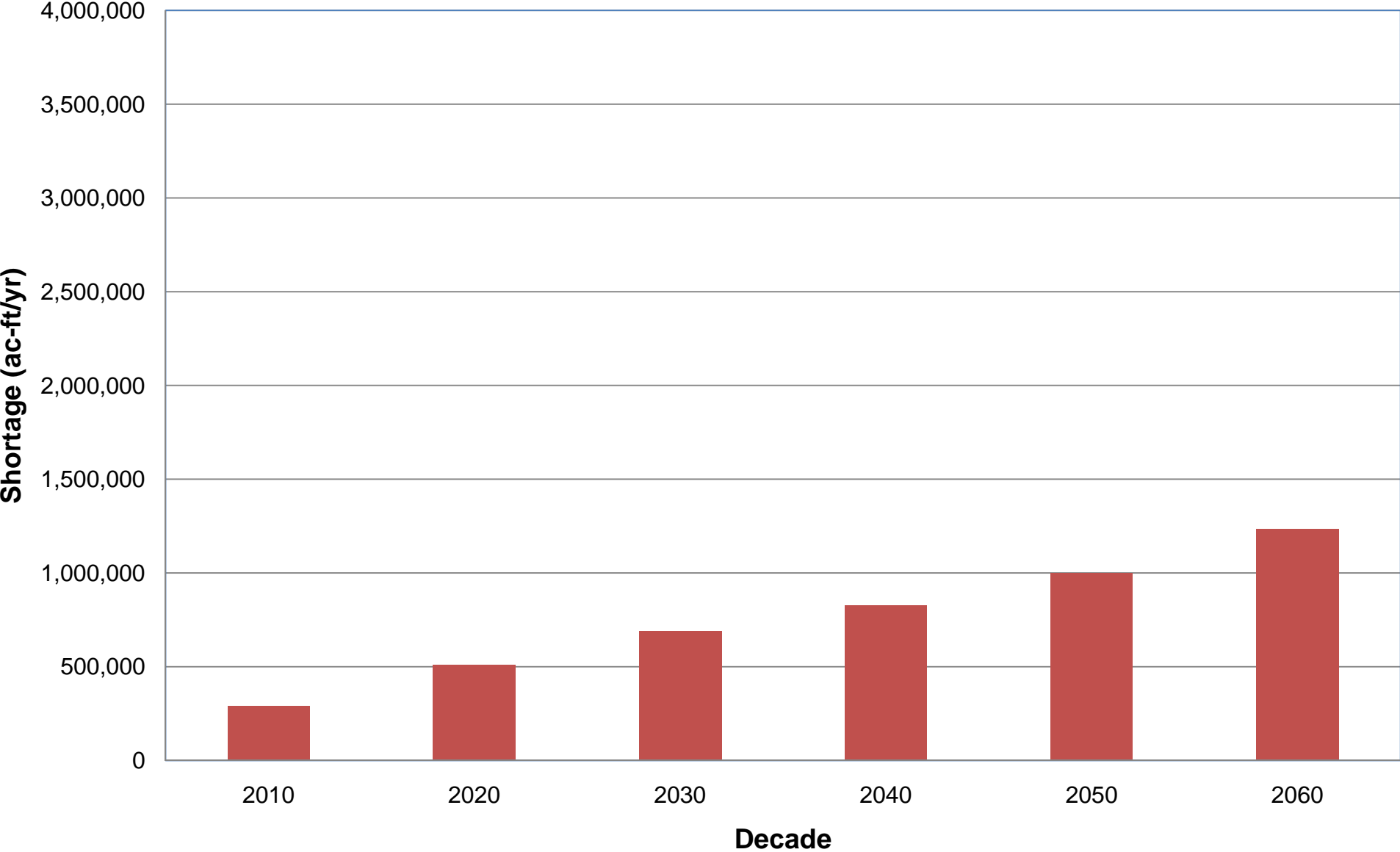


- **Supplies determined by**
 - Surface Water Availability Model (drought of record)
 - Groundwater Availability Model or local regulations
- **Total Existing Supplies**
 - 3,561,017 acre-feet per year
 - 75% surface water
 - 25% groundwater
- **2060 Available Supplies**
 - 3,415,860 acre-feet per year
 - Groundwater use reduced by regulation
 - Reservoir storage reduced by sedimentation

Existing and Projected Water Supplies



Projected Supply Deficit



Selected Management Strategies

- **Conservation Strategies**
 - Industrial
 - Irrigation
 - Municipal
- **Contractual Strategies**
 - Contracts to water users (WUGs)
 - Contracts among water providers (WWPs)
- **Groundwater Strategies**
 - Expanded Use of Groundwater
 - Interim Groundwater Use
 - New Groundwater Wells for Livestock

- Groundwater Reduction Plans
 - City of Houston
 - North Harris County Regional Water Authority
 - Others
- Reservoir Strategies
 - Allen's Creek Reservoir
 - Gulf Coast Water Authority Off-Channel Reservoir
 - Millican Reservoir
- Permit Strategies
 - Brazos River Authority System Operations
 - Houston Bayous Permit

- Reuse Strategies

- Houston Indirect Wastewater Reuse
- Wastewater Reclamation for Industry
- Wastewater Reclamation for Municipal Irrigation
- Others

- Infrastructure Strategies

- Luce Bayou Transfer
- COH, NHCRWA, WHCRWA, CHCRWA, and NFBWA Transmission and Distribution Systems
- CLCND West Chambers County System
- Others

Selected Management Strategies

- Other Strategies
 - Brazoria County Interruptible Supplies
 - Brazos Saltwater Barrier

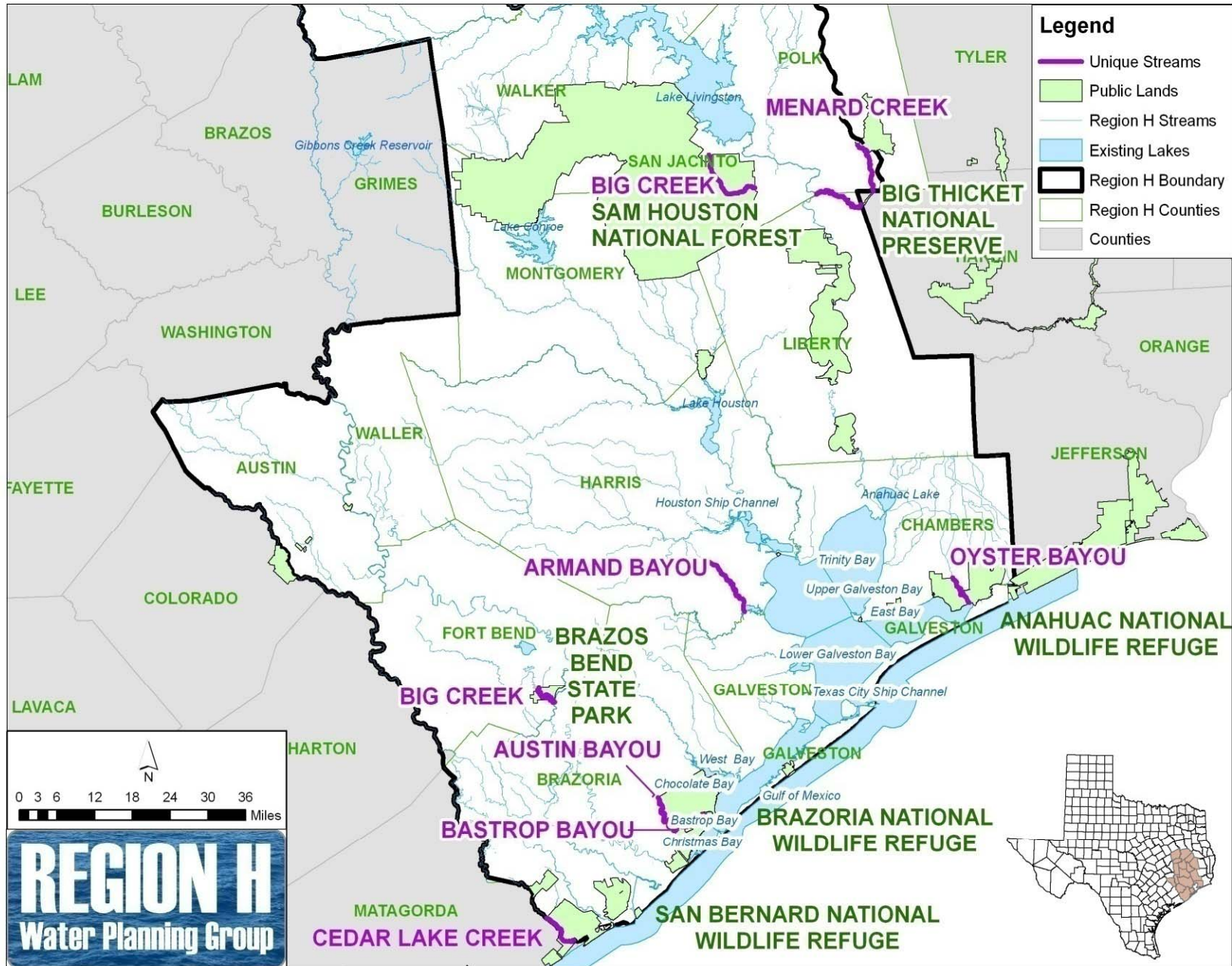
Major Water Management Strategies

Major WMS	Sponsor	Selected Strategy	Projected Start Decade	2010	2020	2030	2040	2050	2060
				Total Allocated (ac-ft/yr)					
Reservoirs									
Allens Creek Reservoir	BRA / Houston	Y	2020	-	76,441	93,688	97,954	99,580	99,650
GCWA Off-Channel Reservoir	GCWA	Y	2030	-	-	39,500	39,500	39,500	39,500
Millican Reservoir (Panther Creek Dam)	BRA	Y	2040	-	-	-	11,627	58,351	120,994
Contractual Strategies									
TRA to Houston Contract	TRA / Houston	Y	2030	-	-	116,738	123,524	123,524	123,524
TRA to SJRA contract	TRA / SJRA	Y	2040	-	-	-	7,935	39,096	76,476
Reclamation/Reuse									
Houston Indirect Wastewater Reuse	Houston	Y	2040	-	-	-	66,420	114,679	128,801
NHCRWA Indirect Wastewater Reuse	NHCRWA	Y	2040	-	-	-	7,300	16,300	16,300
Wastewater Reclamation for Industry	Houston, Manufacturing	Y	2060	-	-	-	-	-	67,200
Permit Strategies / Other									
Brazoria Interruptible Supplies for Irrigation	GCWA	Y	2010	104,977	86,759	64,000	64,000	64,000	64,000
BRA System Operations Permit	BRA	Y	2020	-	6,621	18,870	25,350	25,350	25,350
Interim Strategies	NA	Y	2010	45,512	-	-	-	-	-
Total				150,489	169,821	332,796	443,610	580,380	761,795

- **Water Conservation**
 - Recommended as the first strategy
 - Applied to meet projected shortages
- **Strategy Selection Process**
 - Yield and environmental impacts were considered with the unit cost of water
- **Existing Supplies**
 - Utilized prior to recommending new water supply projects
- **Reuse**
 - Included in Fort Bend, Harris County and Montgomery
 - Recommended in lieu of additional imports/reservoirs

- Eight stream segments were selected in 2006 and adopted by Texas Legislature:
 - Armand Bayou
 - Austin Bayou
 - Bastrop Bayou
 - Big Creek (Fort Bend)
 - Big Creek (San Jacinto)
 - Cedar Lake Creek
 - Menard Creek
 - Oyster Bayou
- 2011 Regional Water Plan retains the designations for these sites

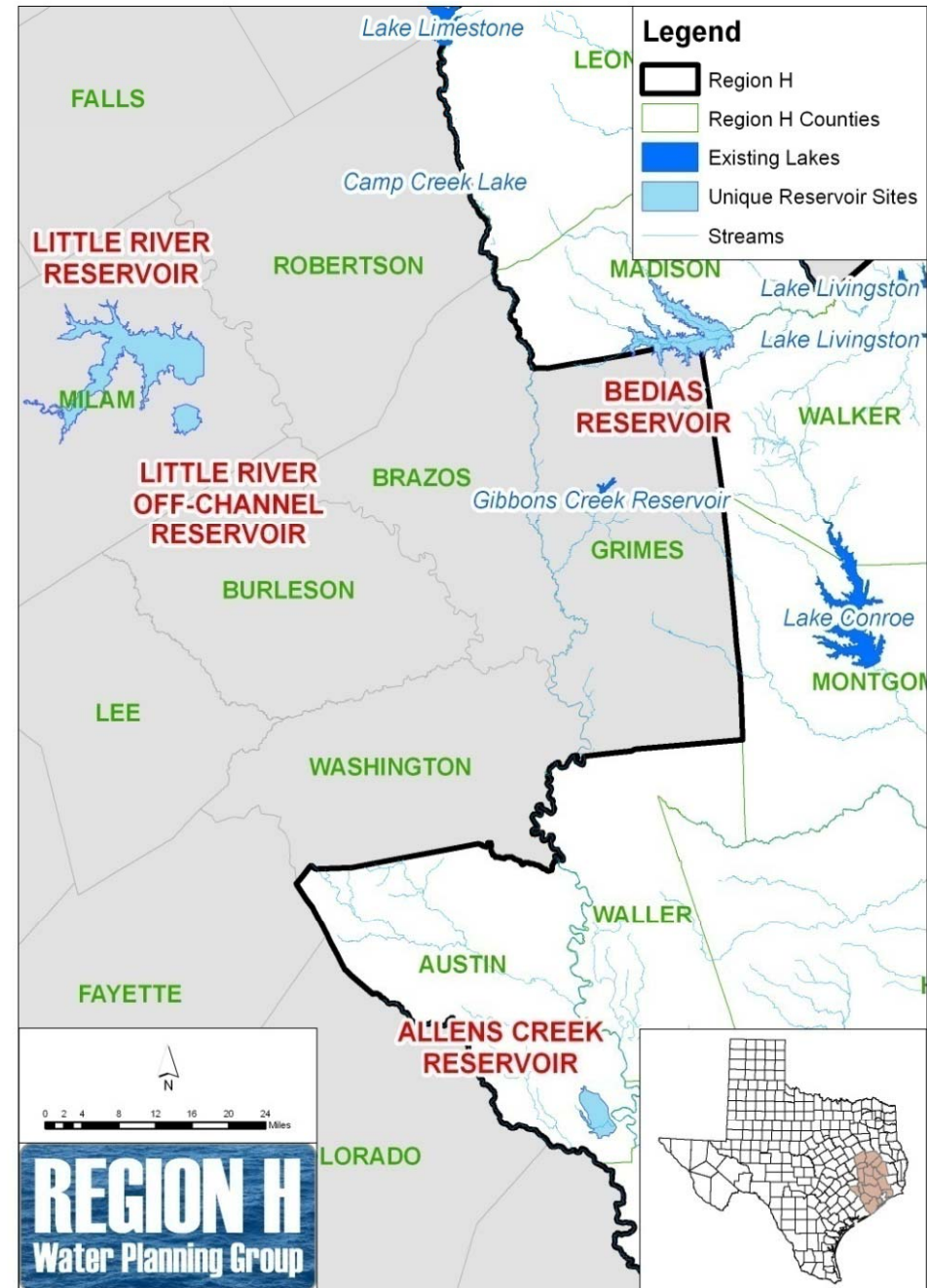
Unique Stream Segments



- 2011 Regional Water Plan includes five Unique Reservoir Sites
 - Four already designated
 - Allens Creek Reservoir – *2011 Selected Strategy*
 - Little River Reservoir
 - Little River Off-Channel Reservoir
 - Bendas Reservoir
 - One recommended for designation
 - Millican Reservoir – *2011 Selected Strategy*

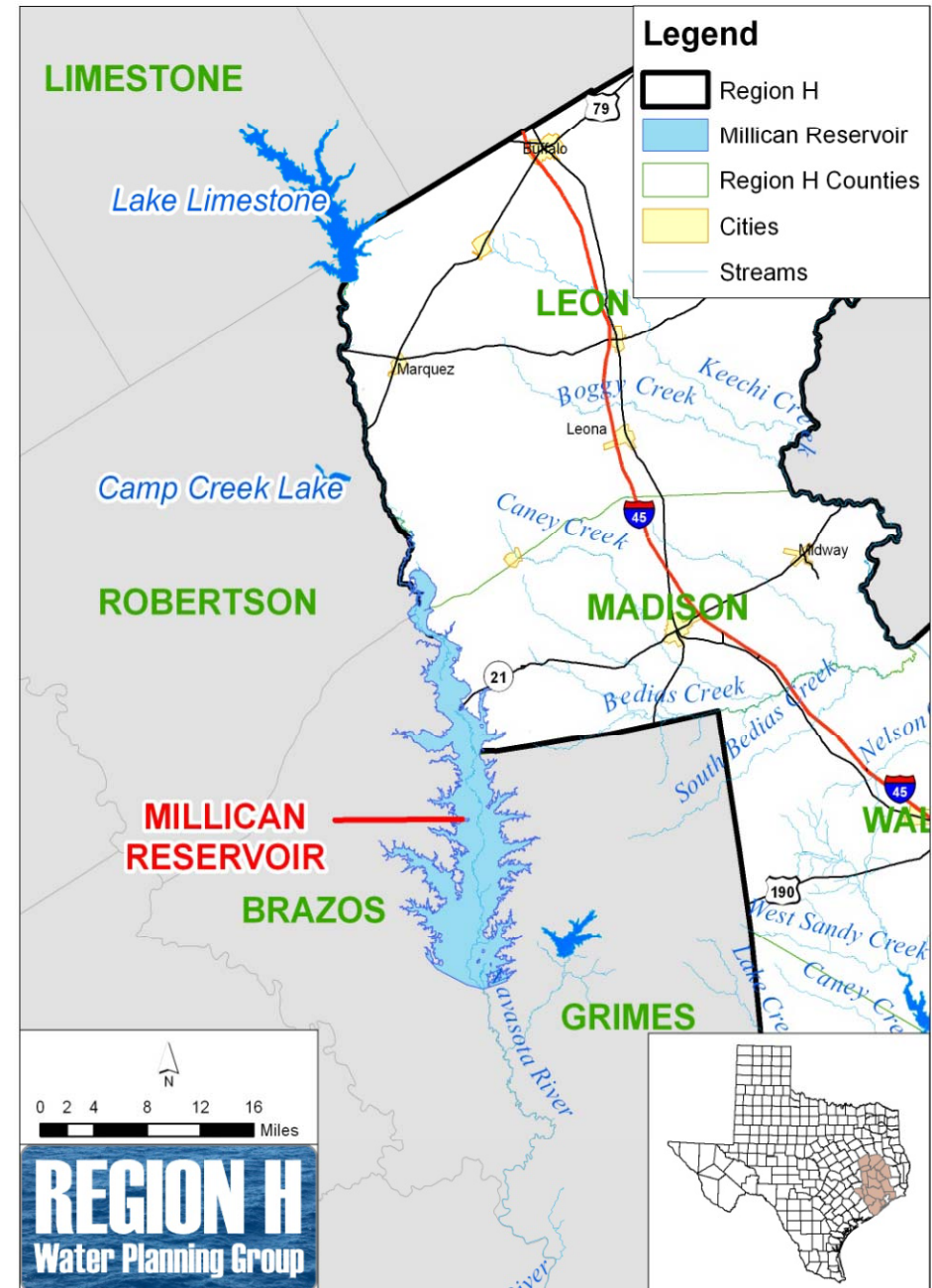
Designated Sites

- Allens Creek Reservoir
 - Strategy in 2001, 2006, and **2011** RWPs
 - Austin County
- Little River Reservoir
 - Strategy in 2001 RWP
 - Milam County
- Little River Off-Channel Reservoir
 - Strategy in 2006 RWP
 - Milam County
- Bedias Reservoir
 - Strategy in 2001 RWP
 - Grimes, Madison, and Walker Counties



Millican Reservoir

- Not yet designated by Texas Legislature
- Recommended in 2011 Region H Plan
- Location:
 - Primarily Brazos, Grimes, and Madison Counties
 - Located on Navasota River
- Yield: 194,500 afy
- Capital Cost:
 - \$1,159,907,000



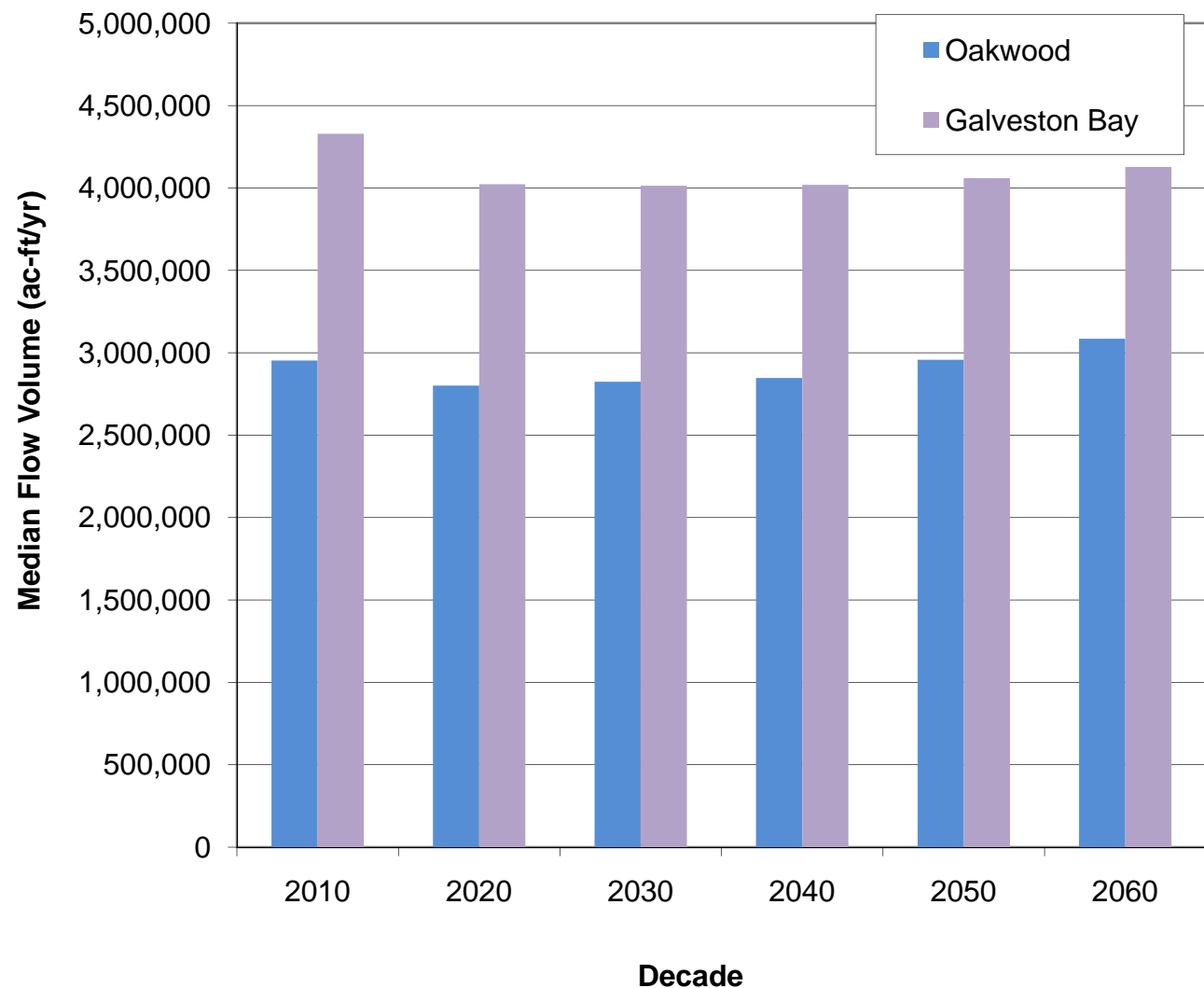
- Retained 15 Recommendations from 2006 Plan
 - 3 Administrative and Regulatory Recommendations
 - 12 Legislative Recommendations
- One New Legislative Recommendation
 - *Direct the State Demographer's Office to explore the potential changes in population distribution made possible by rapid advancements in information technology.*

Infrastructure Funding Requirements

- Capital Costs for the 2011 Region H Water Plan
 - Estimated at \$12.9 Billion (2008 Dollars)
- Water Infrastructure Financing (WIF) Survey
 - 2011 Survey will utilize TWDB Web based tool
 - Objectives:
 - Determine number of entities with finance needs
 - Identify infrastructure costs that cannot be financed locally
 - Summarize each WIF project and location in Plan

Impacts of 2006 Strategies to Galveston Bay

- Modeled Impacts Over Time (2010 – 2060)
- Considered Upstream Impacts
- Near-term reductions in flow offset by higher return flows in long-term
- Mitigate increased water usage in later decades



Water Conservation

– Conservation Survey

- Included municipal, industrial and commercial conservation
- Additional conservation plans obtained from TWDB

– Conservation Management Strategies

- No change to Irrigation conservation strategies from 2006 RWP
- WUG specific strategies where applicable
- 3-tiered municipal strategy based on WUG size for other municipal WUGs
- Conservation used to address over 200 WUG shortages

Public Comment on the IPP

- IPP Available:
 - <http://www.regionhwater.org>
 - County Clerk's Office in each county
 - Depository library in each county
- Public Hearings
 - Tuesday, March 30th @ 6:30 PM – Houston
 - Houston-Galveston Area Council
 - Thursday April 1st @ 6:30 PM– Madisonville
 - Truman Kimbro Convention Center
 - Wednesday, April 7th @ 10:00 AM – Conroe
 - Lone Star Convention and Expo Center

Public Comment on the IPP

- Taking comments through:
 - *5:00 PM June 8, 2010*
- Please submit comments to:
 - Hon. Mark Evans
Chair, Region H Water Planning Group
c/o San Jacinto River Authority
P.O. Box 329
Conroe, TX 77305-0329
 - J. Kevin Ward
Executive Administrator
Texas Water Development Board
P.O. Box 13231
Austin, TX 78711-3231

Questions and Comments