Summary of the 2016 Region H Regional Water Plan[1]

Texas' regional water plans

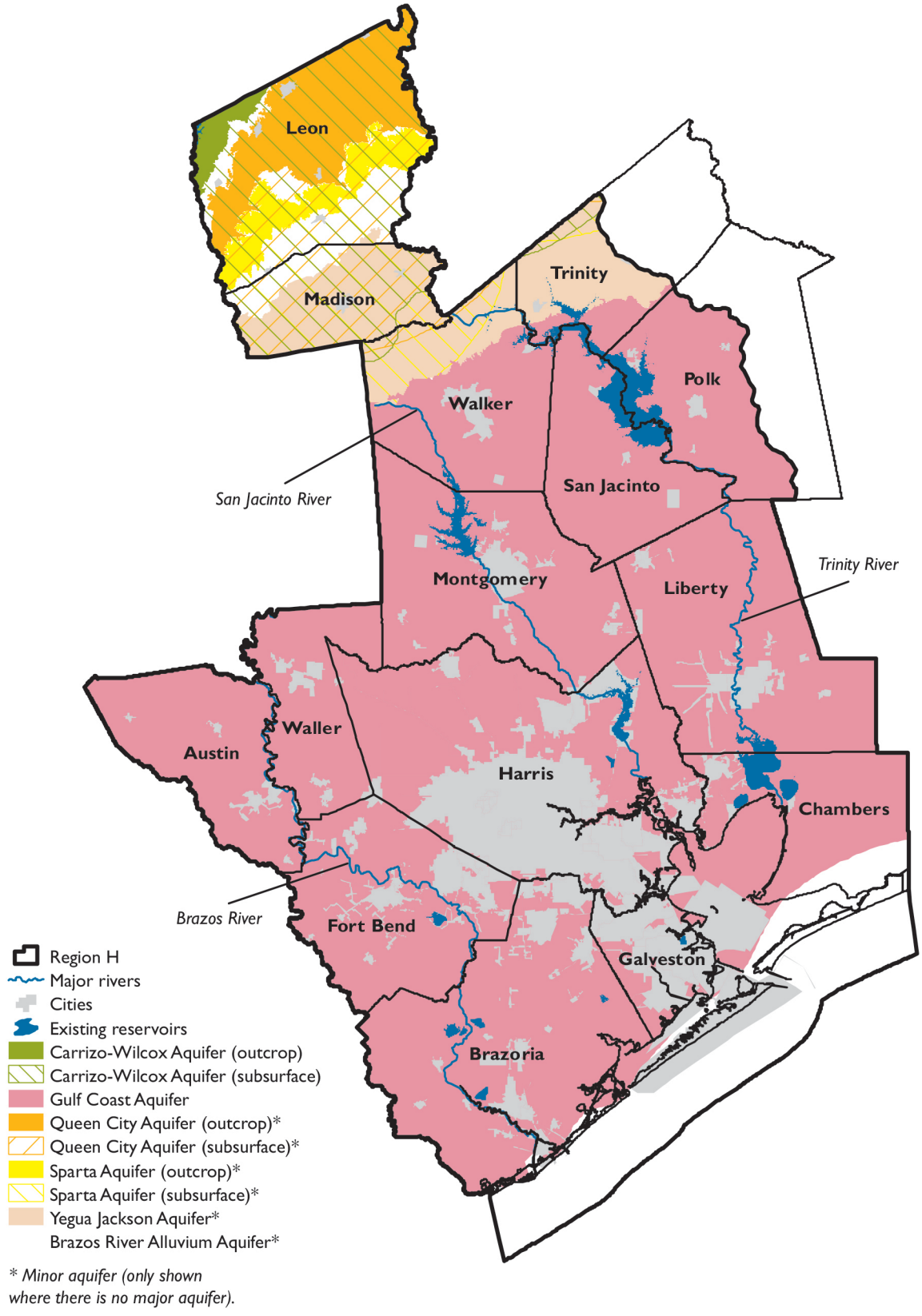
Regional water plans are funded by the Texas Legislature and developed every five years based on conditions that each region would face under a recurrence of a historical drought of record. The 16 regional water plans are developed by local representatives in a public, bottom-up process. The regional plans are reviewed and approved by the TWDB and become the basis for the state water plan. Regional and state water plans are developed to

- provide for the orderly development, management, and conservation of water resources,
- prepare for and respond to drought conditions, and
- make sufficient water available at a reasonable cost to ensure public health, safety, and welfare and further economic development while protecting the agricultural and natural resources of the entire state.

The Region H Regional Water Planning Area includes all or parts of 15 counties (Figure H.1) and portions of the Trinity, San Jacinto, Brazos, Neches, and Colorado river basins. The Houston metropolitan area is located within this region. The largest economic sector in Region H is the petrochemical industry, which accounts for two-thirds of the petrochemical production in the United States. Other major economic sectors in the region include medical services, tourism, government, agriculture, fisheries, and transportation, with the Port of Houston being the nation's second largest port. The 2016 Region H Regional Water Plan can be found on the TWDB Web site at http://www.twdb.texas.gov/waterplanning/rwp/plans/2016/#region-h

[1] Planning numbers presented throughout this document and as compared to the 2017 Interactive State Water Plan may vary due to rounding.

Figure H.1 - Region H regional water planning area



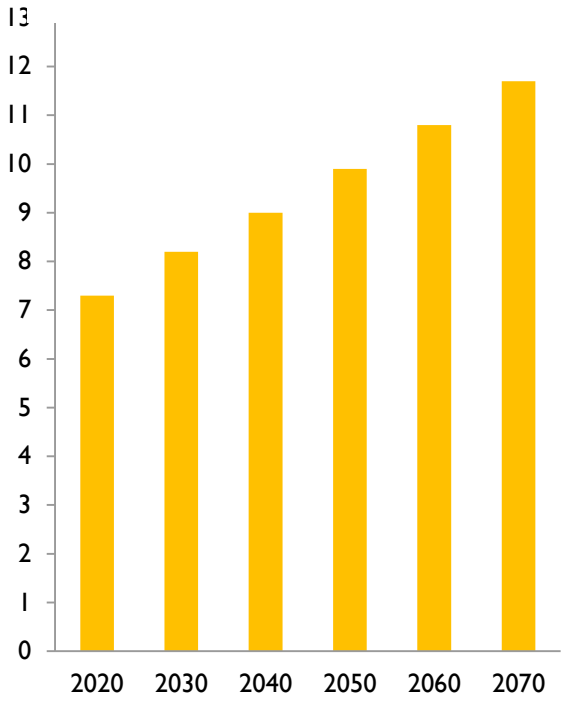
Plan highlights

- Additional supply needed in 2070—1,162,000 acre-feet per year
- Recommended water management strategy volume in 2070—1,791,000 acre-feet per year
- 717 recommended water management strategy projects with a total capital cost of $10.9 billion
- Conservation accounts for 17 percent of 2070 strategy volumes
- Reuse accounts for 25 percent of 2070 strategy volumes
- Two new major reservoirs recommended (Allens Creek and DOW Off-Channel Reservoir)

Population and water demands

Approximately 25 percent of the state's 2020 population will reside in Region H. Between 2020 and 2070, the region's population is projected to increase 60 percent (Table H.4, Figure H.2). By 2070, the total water demands for the region are projected to increase 37 percent (Table H.4).

Figure H.2 - Projected population for 2020–2070 (in millions)



Existing water supplies

More than three-quarters of the existing water supply in Region H is associated with surface water (Table H.1, Figure H.3). By 2070 the total water supply is projected to decline 1 percent primarily as a result of regulatory limits aimed at reducing groundwater pumping from the Gulf Coast Aquifer to limit land surface subsidence (Table H.4).

Needs

Although on a region-wide basis it might appear that the Region H Region has enough water supplies to meet demands through 2020, with deficits from 2030 and 2070, the total water supply volume is not accessible to all water users throughout the region (Table H.4). In the event of drought, Region H is projected to have a total water supply need of 347,000 acre-feet in 2020 (Table H.4). A relatively small percentage of municipal needs remain unmet in the region, however an unmet need does not prevent an associated entity from pursuing development of additional water supply.

Recommended water management strategies and cost

The Region H Planning Group recommended a variety of water management strategies and projects that would overall provide more water than is required to meet future needs (Figures H.4 and H.5, Tables H.2 and H.3). In all, the 621strategies and 717 projects would provide 1,791,000 acre-feet of additional water supply by the year 2070 at a total capital cost of $10.9 billion.

Conservation

Conservation strategies represent 17 percent of the total volume of water associated with all recommended strategies in 2070. Water conservation was recommended for every municipal water user group, regardless of whether they had a need.

Table H.1 - Existing water supplies for 2020 and 2070 (acre-feet per year)

Water supply source	2020	2070
Surface water		
Livingston-Wallisville Lake/Reservoir System	919,000	926,000
Brazos Run-Of-River	335,000	350,000
Houston Lake/Reservoir	141,000	140,000
Brazos River Authority Main Stem Lake/Reservoir System	140,000	140,000
Trinity Run-Of-River	136,000	136,000
Sam Rayburn-Steinhagen Lake/Reservoir System	68,000	71,000
Remaining surface water sources providing less than 2% each	158,000	158,000
Surface water subtotal:	**1,897,000**	**1,921,000**
Groundwater		
Gulf Coast Aquifer	575,000	527,000
Remaining groundwater sources providing less than 2% each	14,000	13,000
Groundwater subtotal:	**589,000**	**540,000**
Reuse	**21,000**	**21,000**
Region total	**2,507,000**	**2,482,000**

Figure H.3 - Share of existing water supplies by water source in 2020

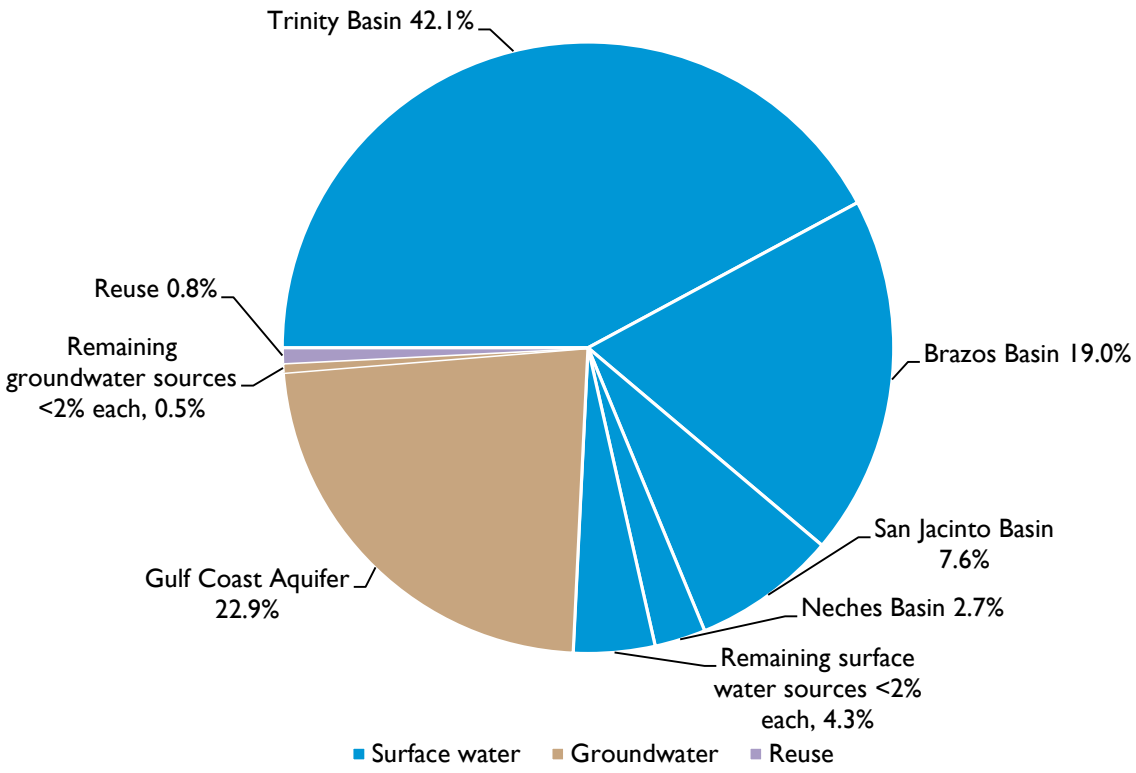


Table H.2 - Ten recommended water management strategy projects with largest capital cost

Recommended water management strategy project	Online decade	Sponsor(s)	Associated capital cost
COH Northeast Water Purification Plant Expansion	2030	Central Harris County Regional Water Authority	$18,716,000
COH Northeast Water Purification Plant Expansion	2030	Houston	$192,838,000
COH Northeast Water Purification Plant Expansion	2030	North Fort Bend Water Authority	$266,358,000
COH Northeast Water Purification Plant Expansion	2030	North Harris County Regional Water Authority	$462,851,000
COH Northeast Water Purification Plant Expansion	2030	West Harris County Regional Water Authority	$322,850,000
Water Loss Reduction, Houston	2020	Houston	$701,969,000
WHCRWA/NFBRWA Transmission Line	2030	North Fort Bend Water Authority	$292,026,000
WHCRWA/NFBRWA Transmission Line	2030	West Harris County Regional Water Authority	$350,960,000
NHCRWA Distribution Expansion - 2025 Phase	2030	North Harris County Regional Water Authority	$537,692,000
WUG Infrastructure Expansion - County-Other, Montgomery County - Phase 2	2050	County-Other, Montgomery	$390,978,000
East Texas Transfer	2040	Houston	$388,064,000
East Texas Transfer	2040	Lower Neches Valley Authority	na
East Texas Transfer	2040	Sabine River Authority	na
NHCRWA Distribution Expansion - 2035 Phase	2040	North Harris County Regional Water Authority	$373,353,000
Luce Bayou Transfer	2020	Houston	$360,005,000
Allens Creek Reservoir	2030	Brazos River Authority	$94,868,000
Allens Creek Reservoir	2030	Houston	$221,359,000
SJRA Groundwater Reduction Plan - 2035 Phase	2040	San Jacinto River Authority	$291,558,000
Other recommended projects	*various*	*707 various*	*$5,612,257,000*
		Total capital cost	**$10,878,702,000**

Table H.3 - Ten recommended water management strategies with largest supply volume

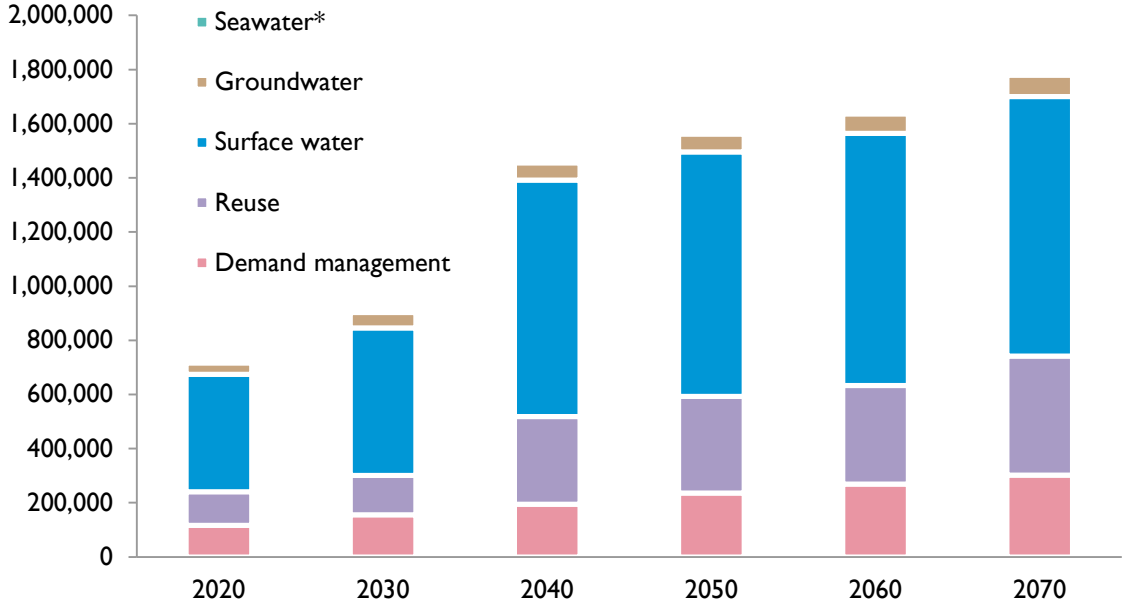
Recommended water management strategy name	Population served by strategy*	Number of water user groups served	Supply in acre-feet per year in 2070
East Texas Transfer	2,851,000	1	250,000
City of Houston GRP	2,851,000	1	98,000
New/Expanded Contract with BRA	116,000	6	82,000
Dow Reservoir And Pump Station Expansion	274,000	9	80,000
Brazos Saltwater Barrier	na	1	69,000
NHCRWA GRP - COH Reuse	914,000	1	68,000
COH Reuse	2,851,000	1	67,000
NHCRWA GRP - Surface Water	952,000	3	57,000
Transfer To Region H (Sam Rayburn)	na	2	55,000
WHCRWA GRP - COH Reuse	690,000	1	51,000
Other recommended strategies		*600*	*895,000*
		Total annual water volume	**1,772,000**

** Multiple strategies may serve portions of the same population*

Table H.4 - Population, existing water supplies, demands, needs, and strategies 2020–2070 (acre-feet per year)

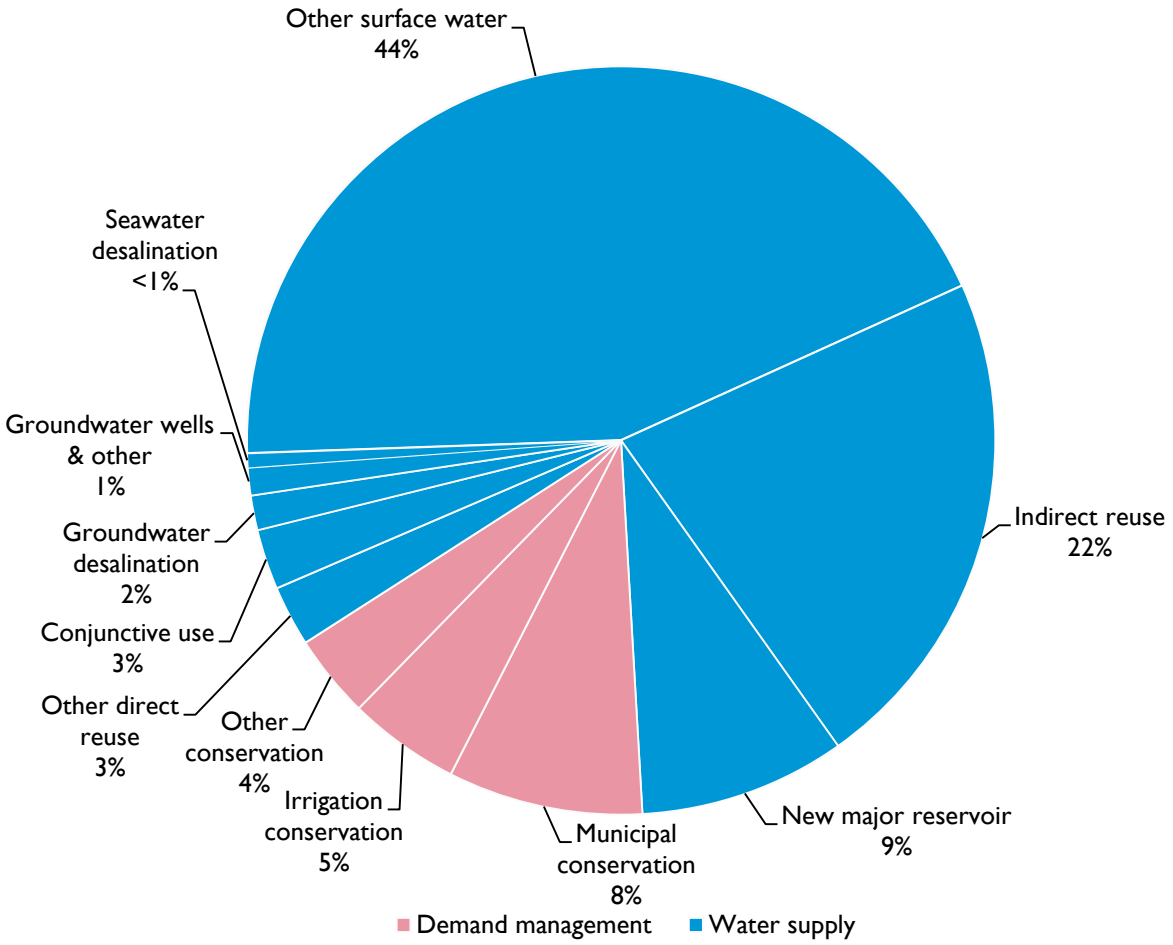
	Decade	2020	2030	2040	2050	2060	2070	change
	Population	**7,325,000**	**8,208,000**	**9,025,000**	**9,868,000**	**10,766,000**	**11,743,000**	***60%***
Existing supplies	Surface water	1,897,000	1,903,000	1,909,000	1,913,000	1,917,000	1,921,000	***1%***
	Groundwater	588,000	524,000	529,000	534,000	537,000	540,000	***-8%***
	Reuse	21,000	21,000	21,000	21,000	21,000	21,000	***0%***
	Total water supplies	**2,506,000**	**2,448,000**	**2,459,000**	**2,467,000**	**2,475,000**	**2,482,000**	***-1%***
Demands	Municipal	1,121,000	1,209,000	1,292,000	1,374,000	1,456,000	1,537,000	***37%***
	County-other	136,000	169,000	199,000	239,000	292,000	356,000	***162%***
	Manufacturing	753,000	800,000	844,000	883,000	896,000	910,000	***21%***
	Mining	15,000	16,000	15,000	15,000	14,000	14,000	***-7%***
	Irrigation	346,000	346,000	346,000	346,000	346,000	346,000	***0%***
	Steam-electric	104,000	121,000	143,000	169,000	200,000	239,000	***130%***
	Livestock	13,000	13,000	13,000	13,000	13,000	13,000	***0%***
	Total water demand	**2,489,000**	**2,675,000**	**2,853,000**	**3,039,000**	**3,218,000**	**3,415,000**	***37%***
Needs	Municipal	113,000	256,000	340,000	408,000	474,000	542,000	***380%***
	County-other	29,000	55,000	81,000	116,000	162,000	219,000	***655%***
	Manufacturing	88,000	123,000	151,000	187,000	200,000	213,000	***142%***
	Mining	5,000	6,000	5,000	5,000	5,000	6,000	***20%***
	Irrigation	108,000	108,000	111,000	113,000	115,000	117,000	***8%***
	Steam-electric	2,000	5,000	9,000	15,000	24,000	61,000	***2950%***
	Livestock	2,000	3,000	3,000	3,000	3,000	3,000	***50%***
	Total water needs	**347,000**	**555,000**	**699,000**	**846,000**	**984,000**	**1,162,000**	***235%***
Strategy supplies	Municipal	324,000	472,000	922,000	970,000	998,000	1,057,000	***226%***
	County-other	53,000	71,000	97,000	128,000	163,000	206,000	***289%***
	Manufacturing	232,000	249,000	277,000	296,000	303,000	310,000	***34%***
	Mining	5,000	6,000	6,000	7,000	7,000	7,000	***40%***
	Irrigation	97,000	97,000	152,000	152,000	152,000	152,000	***57%***
	Steam-electric	5,000	8,000	13,000	18,000	25,000	59,000	***1080%***
	Livestock	1,000	1,000	1,000	1,000	1,000	1,000	***0%***
	Total strategy supplies	**716,000**	**904,000**	**1,468,000**	**1,572,000**	**1,648,000**	**1,791,000**	***150%***

Figure H.4 - Volume of recommended water management strategies by water resource (thousands of acre-feet per year)



** Strategy volume at a scale not represented in the figure*

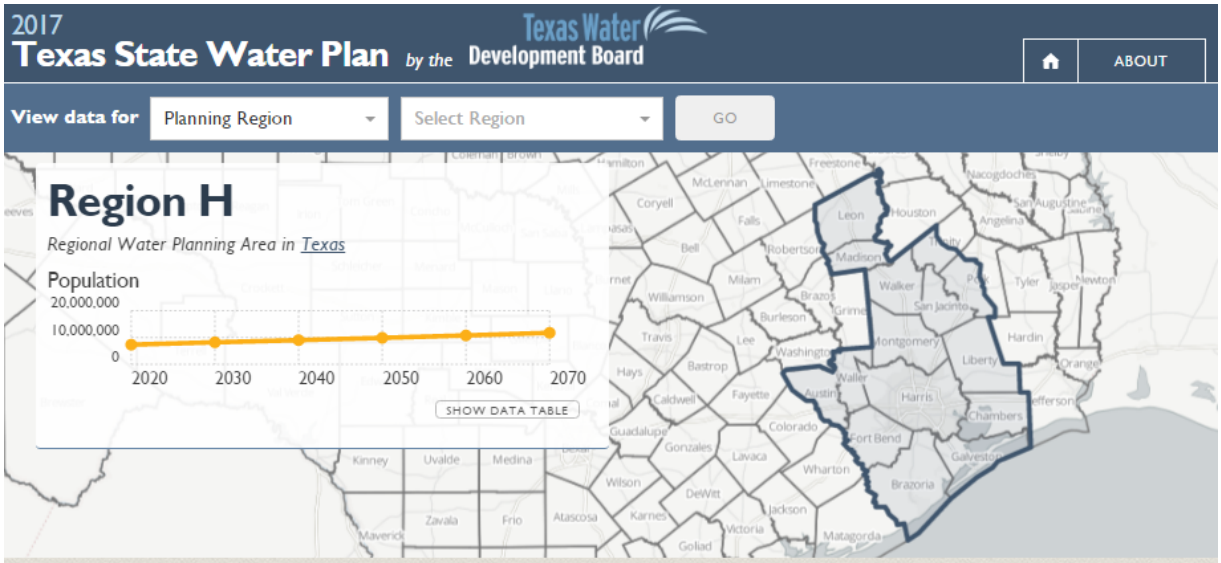
Figure H.5 - Share of recommended water management strategies by strategy type in 2070



Region H voting planning group members (2012 – 2016)

Mark Evans, counties (Chair); David Bailey, groundwater management areas John R. Bartos, environment; John Blount, counties; Robert Bruner, agriculture; Jun Chang, municipalities; David Collinsworth, river authorities; James Comin, industry; Reed Eichelberger, river authorities; Gene Fisseler, electric generating utilities; Robert Hebert, small business; Art Henson, counties; John Hofmann, river authorities; Jace Houston, river authorities; John Howard, small business; Robert Istre, municipalities; Kathy Turner Jones, groundwater management areas; Gená Leathers, industry; Glynna Leiper, industry; Ted Long, electric-generating utilities; Glenn Lord, industry; Marvin Marcell, water districts; Carl Masterson, public; James Morrison, water utilities; Ron J. Neighbors, water districts; Jimmie Schindewolf, water districts; William Teer, water utilities; Steve Tyler, small business; Danny Vance, river authorities; Harold C. Wallace, water utilities; Kevin Ward, river authorities; George "Pudge" Willcox, agriculture

For more information on Texas or specific regions, counties, or cities, please visit the 2017 Interactive State Water Plan website: **texasstatewaterplan.org**



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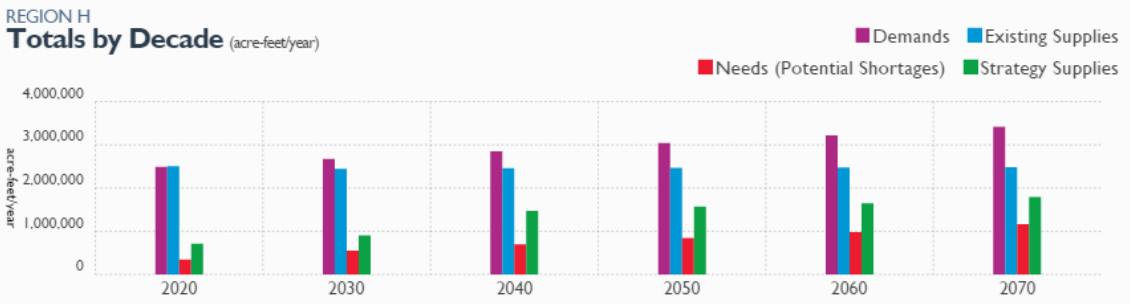

	2020	2030	2040	2050	2060	2070
Demands	2,488,883	2,674,720	2,853,311	3,038,675	3,217,833	3,415,333
Existing Supplies	2,505,969	2,447,689	2,458,865	2,467,294	2,475,087	2,482,310
Needs (Potential Shortages)	347,034	554,592	699,392	846,420	983,955	1,161,764
Strategy Supplies	715,982	903,595	1,467,735	1,572,102	1,648,100	1,790,943

Texas Water Development Board

Texas Water Development Board
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