Summary of the 2021 Lower Colorado (K) Regional Water Plan[1]

Texas' regional water plans

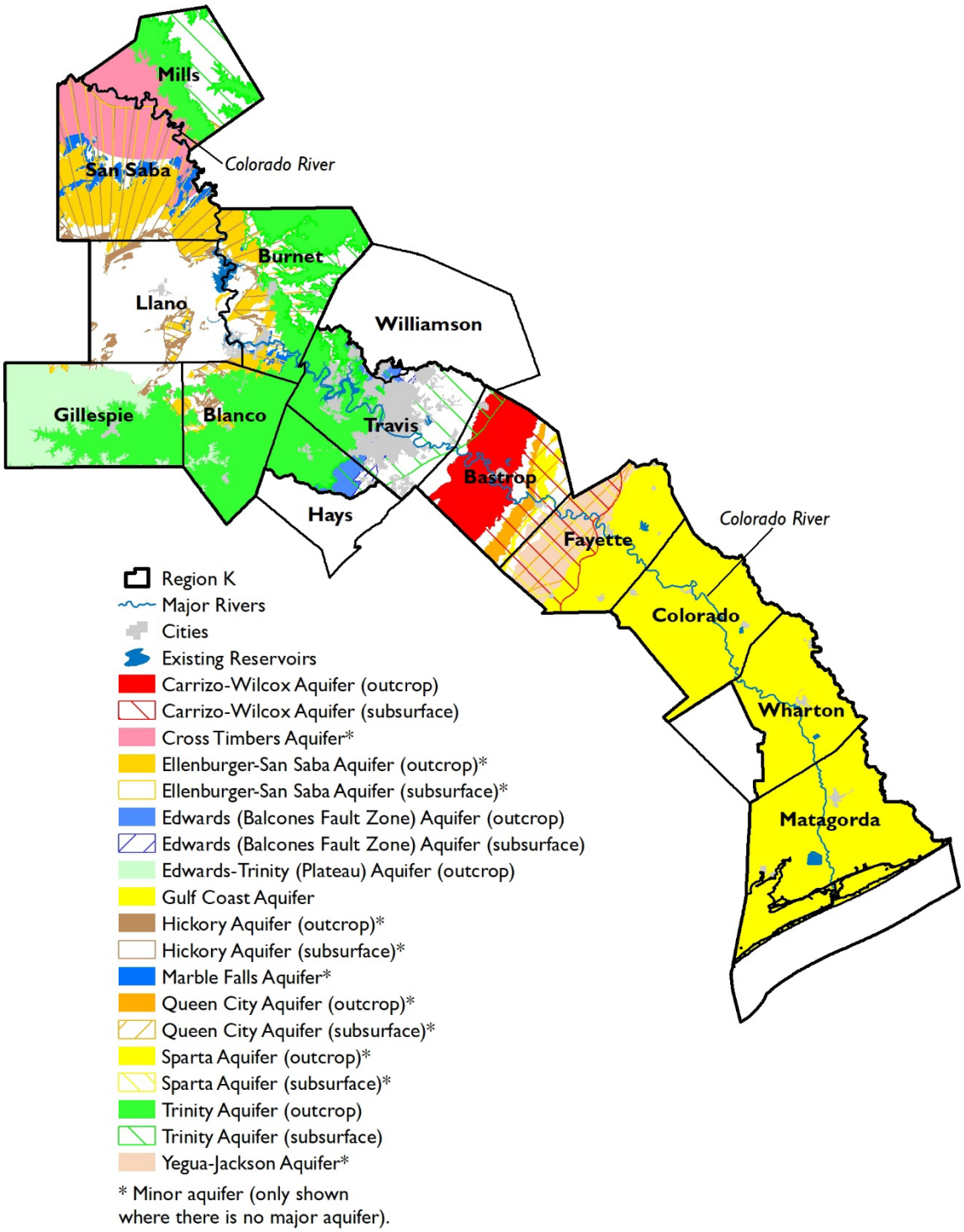
Regional water plans are funded by the Texas Legislature and developed every five years based on conditions that each region would face under a recurrence of a historical drought of record. The 16 regional water plans are developed by local representatives in a public, bottom-up process. The regional 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 Lower Colorado (K) Regional Water Planning Area includes all or parts of 14 counties (Figure K.1), portions of 6 river and coastal basins, and Matagorda Bay. Most of the region is located in the Colorado River Basin. Major cities in the region include Austin, Bay City, Pflugerville, and Fredericksburg. The largest economic sectors in the region include agriculture, government, tourism, manufacturing, and retail trade. The manufacturing sector is primarily concentrated in the technology and semiconductor industries in the Austin area. Oil, gas, petrochemical processing, and mineral production are found primarily in Wharton and Matagorda counties near the coast. The 2021 Lower Colorado (K) Regional Water Plan can be found on the TWDB website at http://www.twdb.texas.gov/waterplanning/rwp/plans/2021/#region-k.

[1] Planning numbers presented throughout this document and as compared to the 2022 Interactive State Water Plan may vary due to rounding.

Figure K.1 - Lower Colorado (K) regional water planning area



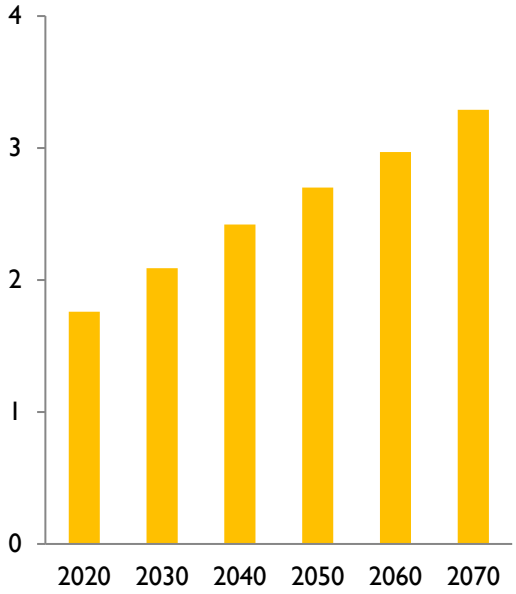
Plan highlights

- Additional supply needed in 2070—319,000 acre-feet per year
- Recommended water management strategy volume in 2070—565,000 acre-feet per year
- 162 recommended water management strategy projects with a total capital cost of $4.6 billion
- Conservation accounts for 36 percent of 2070 strategy volumes
- New major reservoirs account for 10 percent of 2070 strategy volumes; while reuse of water supplies and aquifer storage and recovery account for 21 percent and 4 percent of 2070 strategy volumes, respectively

Population and water demands

Approximately 6 percent of the state's 2020 population were projected to reside in the Lower Colorado (K) Region. Between 2020 and 2070, the region's population is projected to increase 87 percent (Table K.4, Figure K.2). By 2070, the total water demands for the region are projected to increase 17 percent (Table K.4).

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



Existing water supplies

The Lower Colorado (K) Region has a variety of surface water and groundwater supply sources, with nearly three-quarters of the existing water supply in the region associated with surface water (Table K.1, Figure K.3). By 2070 the total water supply is projected to increase 1 percent (Table K.4). This projected increase in supply is primarily a result of surface water development.

Needs

The Lower Colorado (K) Region does not have enough existing water supplies to meet demand for irrigation and steam-electric power categories in any decade through 2070, with the majority of needs associated with irrigation water user groups (Table K.4). In the event of drought, Region K is projected to have a total water supply need of 283,000 acre-feet in 2020 (Table K.4).

Recommended water management strategies and cost

The Lower Colorado (K) 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 K.4 and K.5, Tables K.2 and K.3). In all, the 322 strategies and 162 projects would provide 565,000 acre-feet of additional water supply by the year 2070 at a total capital cost of $4.6 billion.

Recommended water management strategies meet all identified needs in the plan except for approximately 81,000 acre-feet per year associated with irrigation, mining and steam-electric power uses in 2020. Unmet needs decrease to approximately 49,000 acre-feet per year in 2070 and are associated with irrigation and steam-electric power uses. An unmet need does not prevent an associated entity from pursuing development of additional water supply.

Conservation

Conservation strategies represent 36 percent of the total volume of water associated with all recommended strategies in 2070. Water conservation was recommended for municipal water user groups with water use greater than 140 gallons per capita per day regardless of whether a municipality had a water need. Conservation strategies were also recommended for several irrigation, mining, and steam-electric water users.

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

Water supply source	2020	2070
Surface water		
Colorado Run-of-River	367,000	367,000
Highland Lakes Lake/Reservoir System	275,000	273,000
STPNOC Lake/Reservoir	66,000	66,000
Remaining surface water (sources providing less than 2% each)	32,000	34,000
Surface water total	**740,000**	**741,000**
Groundwater		
Gulf Coast Aquifer System	193,000	193,000
Carrizo-Wilcox Aquifer	27,000	35,000
Trinity Aquifer	21,000	21,000
Remaining groundwater (sources providing less than 2% each)	51,000	51,000
Groundwater total	**292,000**	**299,000**
Reuse	**10,000**	**10,000**
Region total	**1,042,000**	**1,050,000**

Note: Total values in this table are presented as rounded actual total values rather than the sum of rounded values to provide consistent referencing of total values.

Figure K.3 - Share of existing water supplies by water source in 2020 (percent)

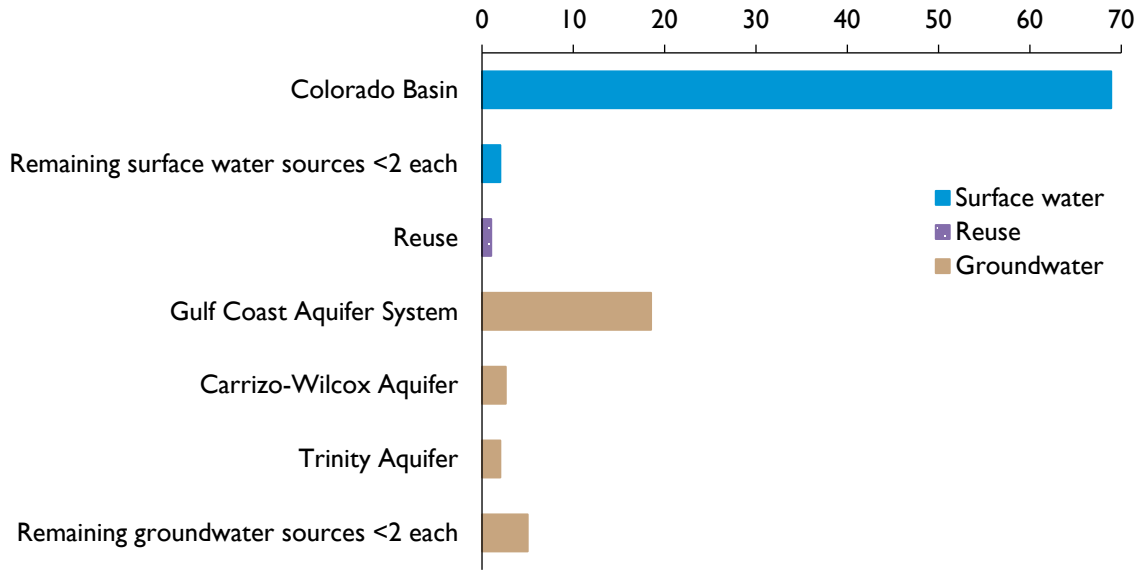


Table K.2 - Ten recommended water management strategy projects with largest capital cost

Recommended water management strategy project	Online Decade	Sponsor(s)	Associated capital cost
Austin Conservation	2020	Austin	$719,616,000
LCRA - Excess Flows Permit Off-Channel Reservoir	2030	Lower Colorado River Authority	$540,110,000
Austin - Aquifer Storage and Recovery	2040	Austin	$370,527,000
LCRA - Mid-Basin Off-Channel Reservoir	2030	Lower Colorado River Authority	$344,259,000
Austin - Off-Channel Reservoir and Evaporation Suppression	2070	Austin	$334,642,000
Austin - Direct Reuse	2020	Austin	$286,031,000
LCRA - Baylor Creek Reservoir	2040	Lower Colorado River Authority	$219,883,000
New Surface Water Infrastructure - Bastrop Regional Project	2050	Bastrop; Aqua WSC; Bastrop County WCID 2	$168,347,000
Austin - Brackish Groundwater Desalination	2070	Austin	$167,689,000
LCRA - Aquifer Storage and Recovery	2040	Lower Colorado River Authority	$146,592,000
Other recommended projects	*various*	*152 various*	*$1,295,504,208*
		Total capital cost*	**$4,593,200,208**

** Capital costs associated with a Fayette County manufacturing project have been corrected. Total capital costs may vary from those presented in the 2021 Region K Regional Water Plan.*

Table K.3 - Ten recommended water management strategies with largest supply volume assigned to water user groups

Recommended water management strategy name	2070 projected population served by strategy*	Number of water user groups served	Strategy volume in acre-feet per year in 2070
Irrigation Conservation	na	6	119,000
Drought Management	3,290,000	118	83,000
Austin - Conservation	1,702,000	1	41,000
Municipal Conservation	995,000	65	40,000
Austin Return Flows	na	5	32,000
Austin - Off-Channel Reservoir and Evaporation Suppression	1,702,000	1	26,000
Austin - Centralized Direct Non-Potable Reuse	1,702,000	2	25,000
LCRA - Import Return Flows from Williamson County	319,000	4	25,000
Expanded Use of Local Groundwater	556,000	22	24,000
Austin - Indirect Potable Reuse through Lady Bird Lake	1,702,000	1	20,000
Other recommended strategies	*na*	*97*	*131,000*
		Total annual water volume	**565,000**

Note: Total values in this table are presented as rounded actual total values rather than the sum of rounded values to provide consistent referencing of total values.

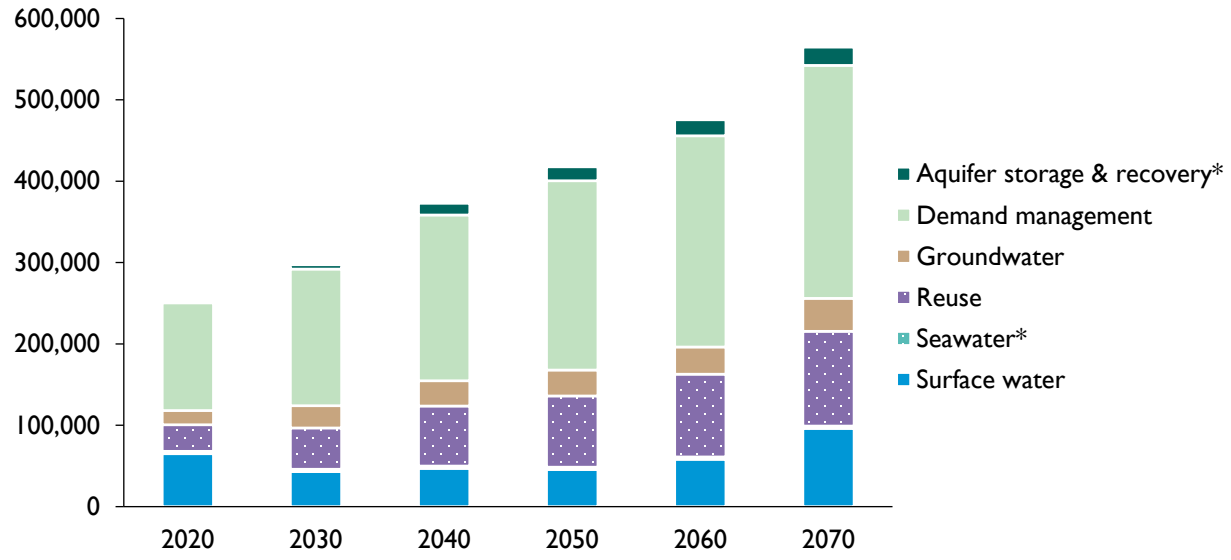
** Multiple strategies may serve portions of the same population*

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

	Decade	2020	2030	2040	2050	2060	2070	Change
	Population	**1,763,000**	**2,095,000**	**2,417,000**	**2,697,000**	**2,971,000**	**3,290,000**	***87%***
Existing supplies	Surface water	740,000	740,000	740,000	739,000	740,000	741,000	***0%***
	Groundwater	292,000	294,000	297,000	301,000	300,000	299,000	***2%***
	Reuse	10,000	10,000	10,000	10,000	10,000	10,000	***0%***
	Total water supplies	**1,042,000**	**1,044,000**	**1,047,000**	**1,050,000**	**1,050,000**	**1,050,000**	***1%***
Demands	Municipal	299,000	351,000	404,000	450,000	495,000	546,000	***83%***
	County-other	17,000	17,000	18,000	20,000	21,000	23,000	***35%***
	Manufacturing	20,000	22,000	22,000	22,000	22,000	22,000	***10%***
	Mining	21,000	26,000	28,000	27,000	23,000	25,000	***19%***
	Irrigation	582,000	568,000	553,000	539,000	525,000	512,000	***-12%***
	Steam-electric	166,000	166,000	166,000	166,000	166,000	166,000	***0%***
	Livestock	12,000	12,000	12,000	12,000	12,000	12,000	***0%***
	Total water demand	**1,117,000**	**1,163,000**	**1,204,000**	**1,237,000**	**1,265,000**	**1,308,000**	***17%***
Needs	Municipal	4,000	13,000	33,000	49,000	71,000	103,000	***2475%***
	County-other	1,000	1,000	1,000	1,000	1,000	2,000	***100%***
	Manufacturing	0	<500	<500	<500	<500	<500	***0%***
	Mining	3,000	7,000	8,000	8,000	5,000	7,000	***133%***
	Irrigation	254,000	240,000	226,000	212,000	199,000	186,000	***-27%***
	Steam-electric	21,000	21,000	21,000	21,000	21,000	21,000	***0%***
	Total water needs	**283,000**	**281,000**	**289,000**	**291,000**	**297,000**	**319,000**	***13%***
Strategy supplies	Municipal	46,000	101,000	171,000	215,000	263,000	340,000	***639%***
	County-other	3,000	10,000	13,000	13,000	13,000	14,000	***367%***
	Manufacturing	0	<500	<500	<500	<500	<500	***0%***
	Mining	3,000	5,000	6,000	6,000	6,000	7,000	***133%***
	Irrigation	180,000	156,000	159,000	158,000	169,000	179,000	***-1%***
	Steam-electric	19,000	25,000	25,000	25,000	25,000	25,000	***32%***
	Total strategy supplies	**251,000**	**297,000**	**373,000**	**418,000**	**476,000**	**565,000**	***125%***

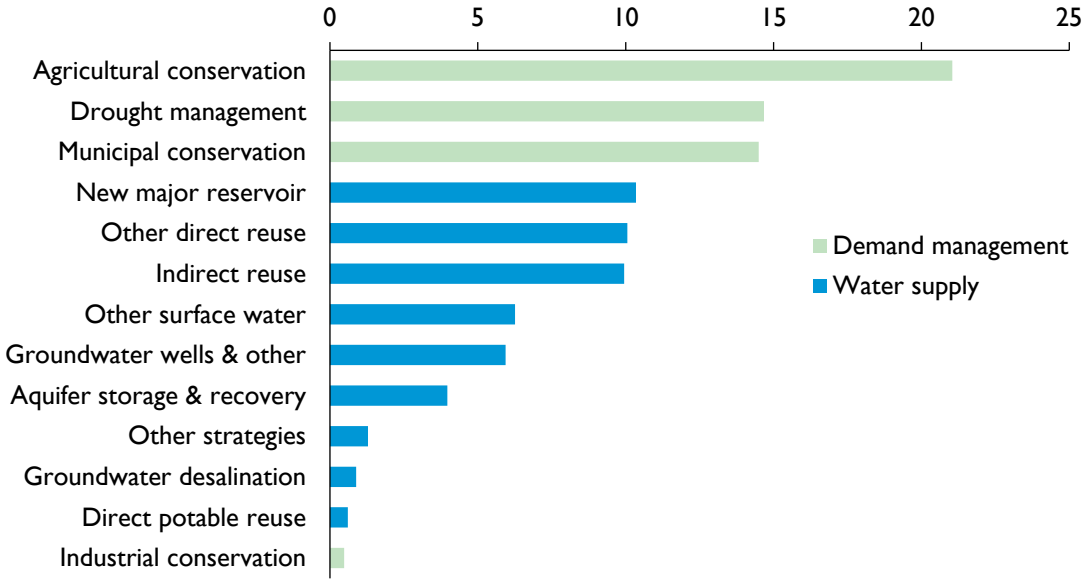
Note: Total values in this table are presented as rounded actual total values rather than the sum of rounded values to provide consistent referencing of total values. Calculated percent change is based on rounded values.

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



** Strategy volume at a scale not represented in the figure in at least one decade*

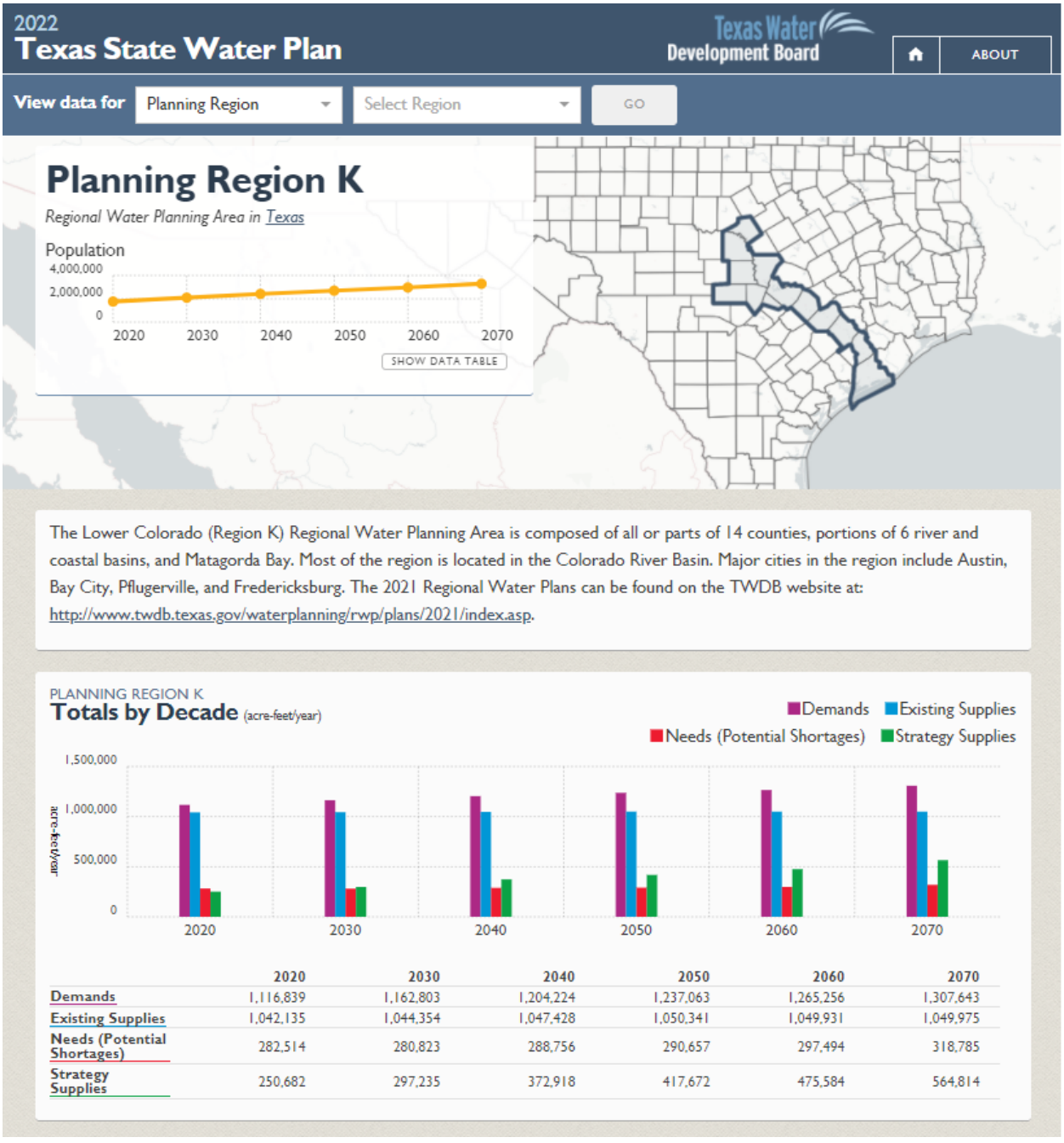
Figure K.5 - Share of recommended water management strategies by strategy type in 2070 (percent)



Lower Colorado (K) voting planning group members (2017–2021)

John E. Burke, water utilities (Chair); Brent Bachelor, agriculture; Jim Barho, environment; Daniel Berglund, small business; Jim Brasher, groundwater management areas; David Caldwell, groundwater management areas; Jo Don Dockery, counties; John T. Dupnik, groundwater management areas; Ronald G. Fieseler, groundwater management areas; Robin Gary, groundwater management areas; Ronald Gertson, small business; Lauri Gillam, municipalities; Karen Haschke, public; John Hoffman, electric generating utilities; Barbara Johnson, industries; Donna Klaeger, counties; Brenton Lewis, municipalities; David Lindsay, recreation; Jason Ludwig, electric generating utilities; Bill Luedecke, groundwater management areas; Teresa Lutes, municipalities; Jim Luther, counties; Ann McElroy, environment; Charles Olfers, agriculture; Doug Powell, recreation; Mike Reagor, municipalities; Alicia Reinmund-Martinez, groundwater management areas; W.A. Roeder, agriculture; Rob Ruggiero, small business; Charlie Shell, groundwater management areas; Haskell Simon, agriculture; Paul Sliva, agriculture; Mitchell Sodek, groundwater management areas; James Sultemeier, counties; Byron Theodosis, counties; Jim Totten, groundwater management areas; David Van Dresar, water districts; Jennifer Walker, environment; David Wheelock, river authorities; and William F. Wilson, groundwater management areas.

For more information on Texas or specific regions, counties, or cities, please visit the 2022 Interactive State Water Plan website: **2022.texasstatewaterplan.org**.



	2020	2030	2040	2050	2060	2070
Demands	1,116,839	1,162,803	1,204,224	1,237,063	1,265,256	1,307,643
Existing Supplies	1,042,135	1,044,354	1,047,428	1,050,341	1,049,931	1,049,975
Needs (Potential Shortages)	282,514	280,823	288,756	290,657	297,494	318,785
Strategy Supplies	250,682	297,235	372,918	417,672	475,584	564,814

Texas Water Development Board
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