Summary of the 2021 Panhandle (A) Regional Water Plan[1]

Texas' regional water plans

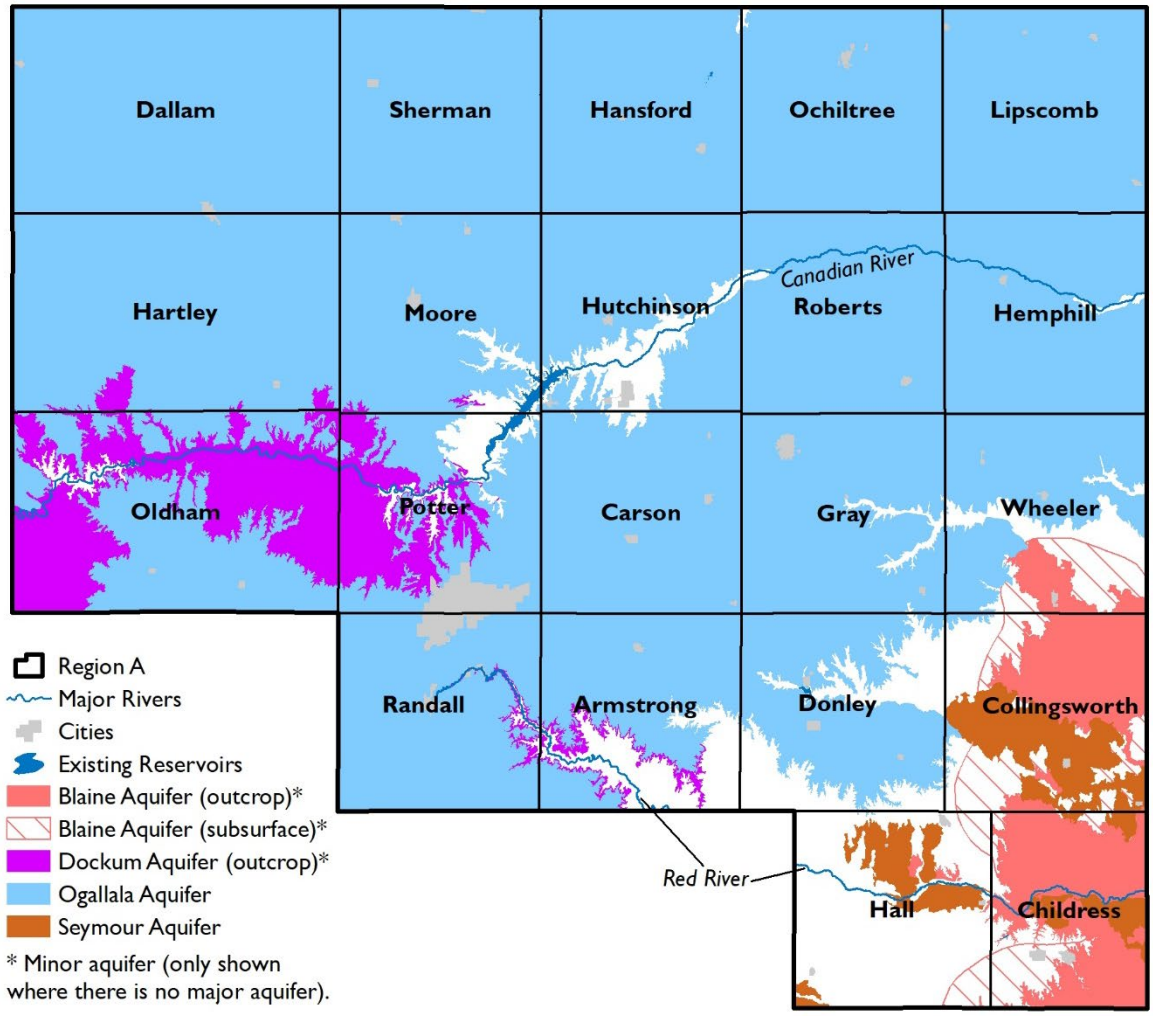
Regional water plans are funded by the Texas Legislature and developed every five years based on conditions that each region would face under a recurrence of a historical drought of record. The 16 regional water plans are developed by local representatives in a public, bottom-up process. The regional 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 Panhandle (A) Regional Water Planning Area includes 21 counties (Figure A.1). The region is split between portions of the Canadian and Red river basins. The major cities in the region include Amarillo, Pampa, Borger, and Dumas. Groundwater, primarily from the Ogallala Aquifer, is the region's main source of water, providing approximately 97 percent of the region's water supply in 2020. The economy of this region is grounded in agribusiness. The 2021 Panhandle (A) Regional Water Plan can be found on the TWDB website at http://www.twdb.texas.gov/waterplanning/rwp/plans/2021/#region-a.

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

Figure A.1 - Panhandle (A) regional water planning area



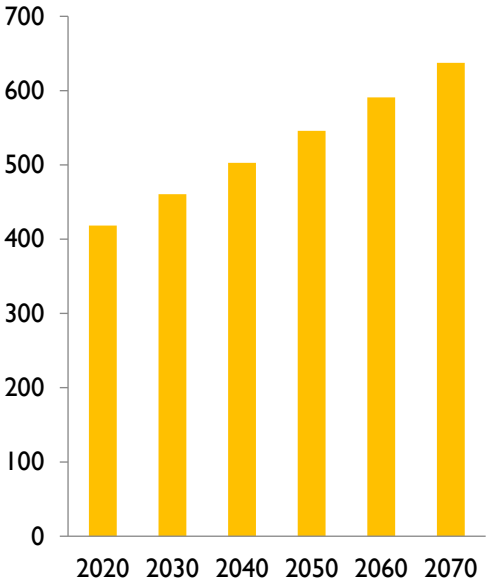
Plan highlights

- Additional supply needed in 2070—378,000 acre-feet per year
- Recommended water management strategy volume in 2070—658,000 acre-feet per year
- 65 recommended water management strategy projects with a total capital cost of $1.1 billion
- Conservation accounts for 87 percent of 2070 strategy volumes, with 86 percent associated with irrigation conservation
- Groundwater development accounts for 11 percent of 2070 strategy volumes

Population and water demands

Approximately 1 percent of the state's 2020 population were projected to reside in the Panhandle (A) Region. Between 2020 and 2070, the region's population is projected to increase 52 percent (Table A.4, Figure A.2). By 2070, the total water demands for the region are projected to decrease approximately 25 percent (Table A.4).

Figure A.2 - Projected population for 2020–2070 (in thousands)



Existing water supplies

The Panhandle (A) Region has surface water and groundwater supply sources, with nearly all of the existing water supply in the region associated with groundwater (Table A.1, Figure A.3). By 2070, the total water supply is projected to decline 39 percent (Table A.4). This projected decline in supply is primarily a result of reduced availability from the Ogallala Aquifer.

Needs

On a region-wide basis, the Panhandle (A) Region has water supply deficits from 2020 to 2070. The majority of needs are associated with irrigation water users (Table A.4). Large irrigation needs occurred in Dallam and Hartley counties, primarily due to limited groundwater supply for agriculture. In the event of drought, Region A is projected to have a total water supply need of 148,000 acre-feet in 2020 (Table A.4).

Recommended water management strategies and cost

The Panhandle (A) 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 A.4 and A.5, Tables A.2 and A.3). In all, the 114 strategies and 65 projects would provide 658,000 acre-feet of additional water supply by the year 2070 at a total capital cost of $1.1 billion.

Recommended water management strategies meet all identified needs in the plan except for approximately 81,000 acre-feet per year associated with irrigation use in 2020. Unmet irrigation needs decrease to approximately 42,000 acre-feet per year in 2070. An unmet need does not prevent an associated entity from pursuing development of additional water supply.

Conservation

Conservation strategies represent 87 percent of the total volume of water associated with all recommended strategies in 2070. Water conservation was recommended for every county-other water user group with a need, and every municipal and irrigation water user group in the region, regardless of whether the user had a need. Water loss audits and leak repair strategies were recommended for cities with at least 15 percent water loss and water supply corporations with at least 25 percent water loss.

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

Water supply source	2020	2070
Surface water		
Surface water (sources providing less than 2% each)	34,000	33,000
Surface water total	**34,000**	**33,000**
Groundwater		
Ogallala Aquifer	1,213,000	897,000
Ogallala and Rita Blanca Aquifers	626,000	178,000
Seymour Aquifer	54,000	47,000
Remaining groundwater (sources providing less than 2% each)	47,000	46,000
Groundwater total	**1,941,000**	**1,169,000**
Reuse	**25,000**	**25,000**
Region total	**2,000,000**	**1,227,000**

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

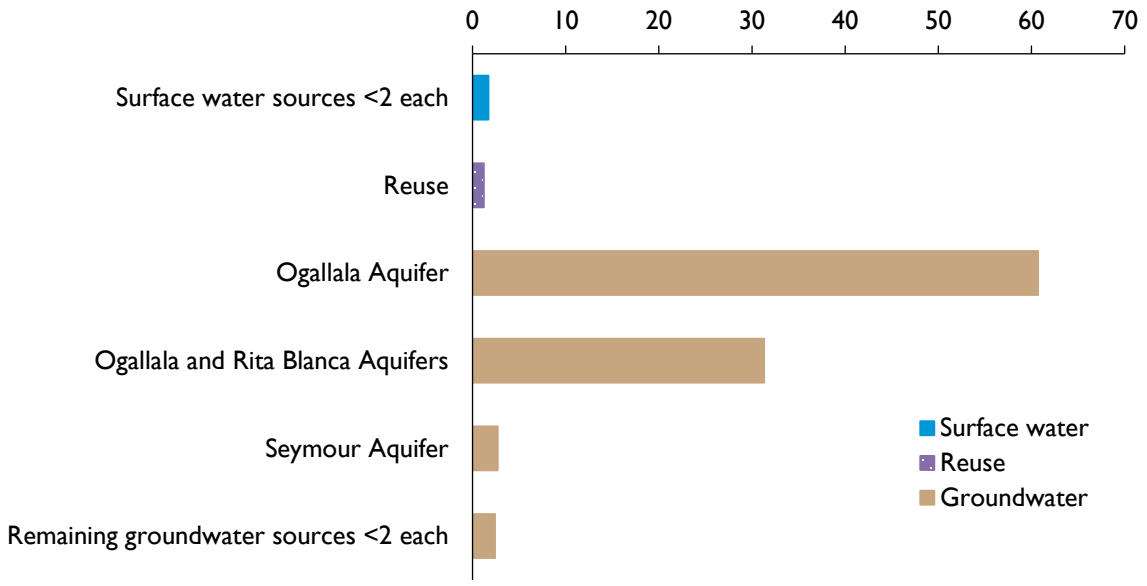


Table A.2 - Ten recommended water management strategy projects with largest capital cost

Recommended water management strategy project	Online Decade	Sponsor(s)	Associated capital cost
CRMWA II Shared Pipeline	2030	Canadian River Municipal Water Authority	$301,355,000
Water Audit and Leak Repair - Amarillo	2020	Amarillo	$170,849,900
CRMWA II CRMWA Pipeline	2030	Canadian River Municipal Water Authority	$100,489,000
Amarillo Well Field to CRMWA II Transmission Pipeline - Amarillo	2070	Amarillo	$92,956,000
Expansion of Roberts County Well Field (Ogallala Aquifer) in 2024 - CRMWA2	2030	Canadian River Municipal Water Authority	$66,679,000
Direct Potable Reuse - Amarillo	2040	Amarillo	$51,270,000
Advanced Metering Infrastructure - Amarillo	2020	Amarillo	$31,000,000
Replace Capacity of Roberts County Well Field (Ogallala Aquifer) In 2040 - CRMWA	2040	Water Authority	$30,900,000
Develop Potter/Carson County Well Field Phase I (Ogallala Aquifer) - Amarillo	2030	Amarillo	$29,600,000
Develop Potter/Carson County Well Field Phase II (Ogallala Aquifer) - Amarillo	2050	Amarillo	$29,600,000
Other recommended projects	*various*	*55 various*	*$242,943,986*
		Total capital cost	**$1,147,642,886**

Table A.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 - Sherman County	na	1	111,000
Irrigation Conservation - Hartley County	na	1	99,000
Irrigation Conservation - Dallam County	na	1	84,000
Irrigation Conservation - Hansford County	na	1	65,000
Irrigation Conservation - Moore County	na	1	61,000
Irrigation Conservation - Carson County	na	1	32,000
Irrigation Conservation - Ochiltree County	na	1	32,000
Develop Potter/Carson County Well Field (Ogallala Aquifer) - Amarillo	354,000	1	20,000
Irrigation Conservation - Hutchinson County	na	1	20,000
Develop Roberts County Well Field (Ogallala Aquifer) - Amarillo	354,000	1	11,000
Other recommended strategies	*na*	*104*	*123,000*
		Total annual water volume	**658,000**

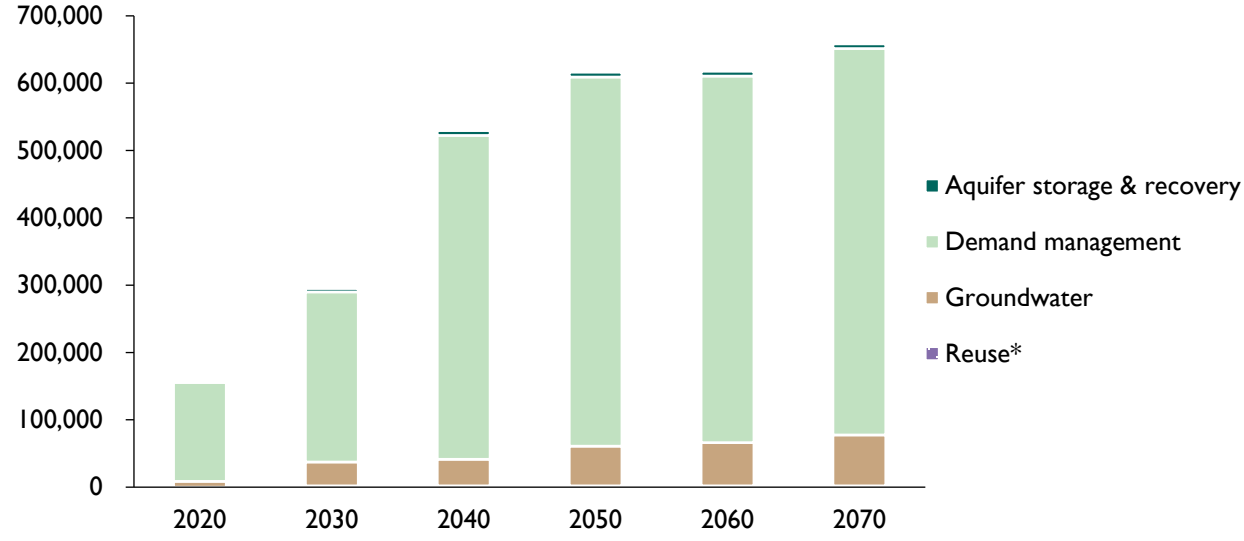
** Multiple strategies may serve portions of the same population*

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

	Decade	2020	2030	2040	2050	2060	2070	Change
	Population	**418,000**	**460,000**	**503,000**	**546,000**	**591,000**	**637,000**	***52%***
Existing supplies	Surface water	34,000	34,000	34,000	34,000	33,000	33,000	***-3%***
	Groundwater	1,941,000	1,696,000	1,535,000	1,344,000	1,166,000	1,169,000	***-40%***
	Reuse	25,000	25,000	25,000	25,000	25,000	25,000	***0%***
	Total water supplies	**2,000,000**	**1,756,000**	**1,594,000**	**1,403,000**	**1,225,000**	**1,227,000**	***-39%***
Demands	Municipal	83,000	89,000	96,000	104,000	112,000	121,000	***46%***
	County-other	9,000	10,000	11,000	12,000	12,000	13,000	***44%***
	Manufacturing	49,000	53,000	53,000	53,000	53,000	53,000	***8%***
	Mining	11,000	10,000	7,000	4,000	3,000	3,000	***-73%***
	Irrigation	1,919,000	1,914,000	1,764,000	1,549,000	1,336,000	1,336,000	***-30%***
	Steam-electric	19,000	19,000	19,000	19,000	19,000	19,000	***0%***
	Livestock	40,000	43,000	46,000	48,000	51,000	54,000	***35%***
	Total water demand	**2,131,000**	**2,138,000**	**1,995,000**	**1,789,000**	**1,586,000**	**1,598,000**	***-25%***
Needs	Municipal	1,000	10,000	22,000	36,000	49,000	58,000	***5700%***
	County-other	0	<500	<500	<500	<500	<500	***0%***
	Manufacturing	1,000	3,000	4,000	7,000	9,000	10,000	***900%***
	Irrigation	146,000	382,000	385,000	352,000	310,000	311,000	***113%***
	Total water needs	**148,000**	**394,000**	**411,000**	**394,000**	**369,000**	**378,000**	***155%***
Strategy supplies	Municipal	13,000	46,000	51,000	66,000	71,000	83,000	***538%***
	County-other	<500	<500	<500	<500	<500	<500	***0%***
	Manufacturing	1,000	3,000	4,000	8,000	9,000	10,000	***900%***
	Irrigation	141,000	247,000	475,000	541,000	537,000	565,000	***301%***
	Total strategy supplies	**155,000**	**295,000**	**529,000**	**616,000**	**618,000**	**658,000**	***325%***

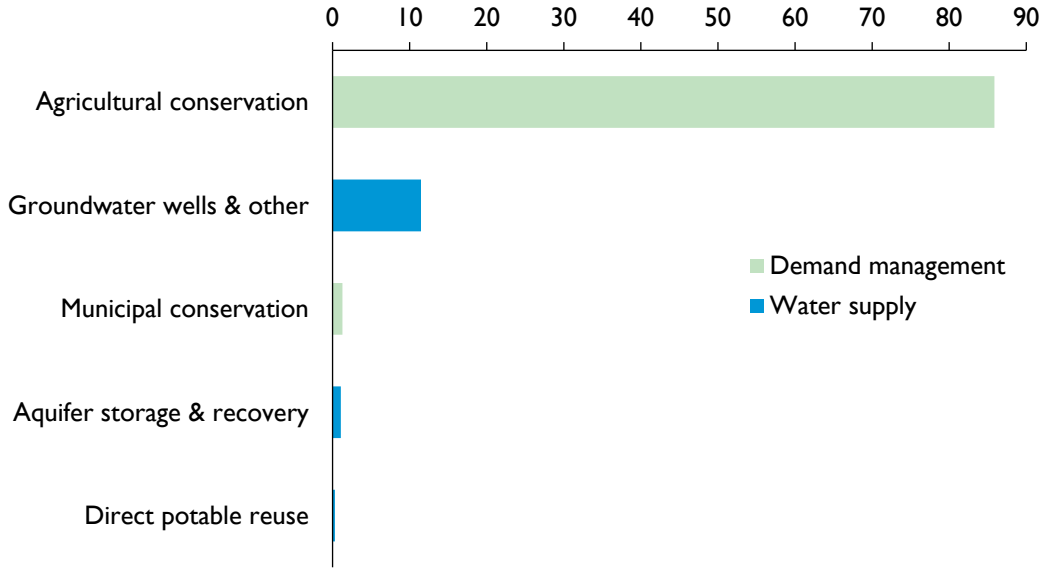
Note: Total values in this table are presented as rounded actual total values rather than the sum of rounded values to provide consistent referencing of total values. Calculated percent change is based on rounded values.

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



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

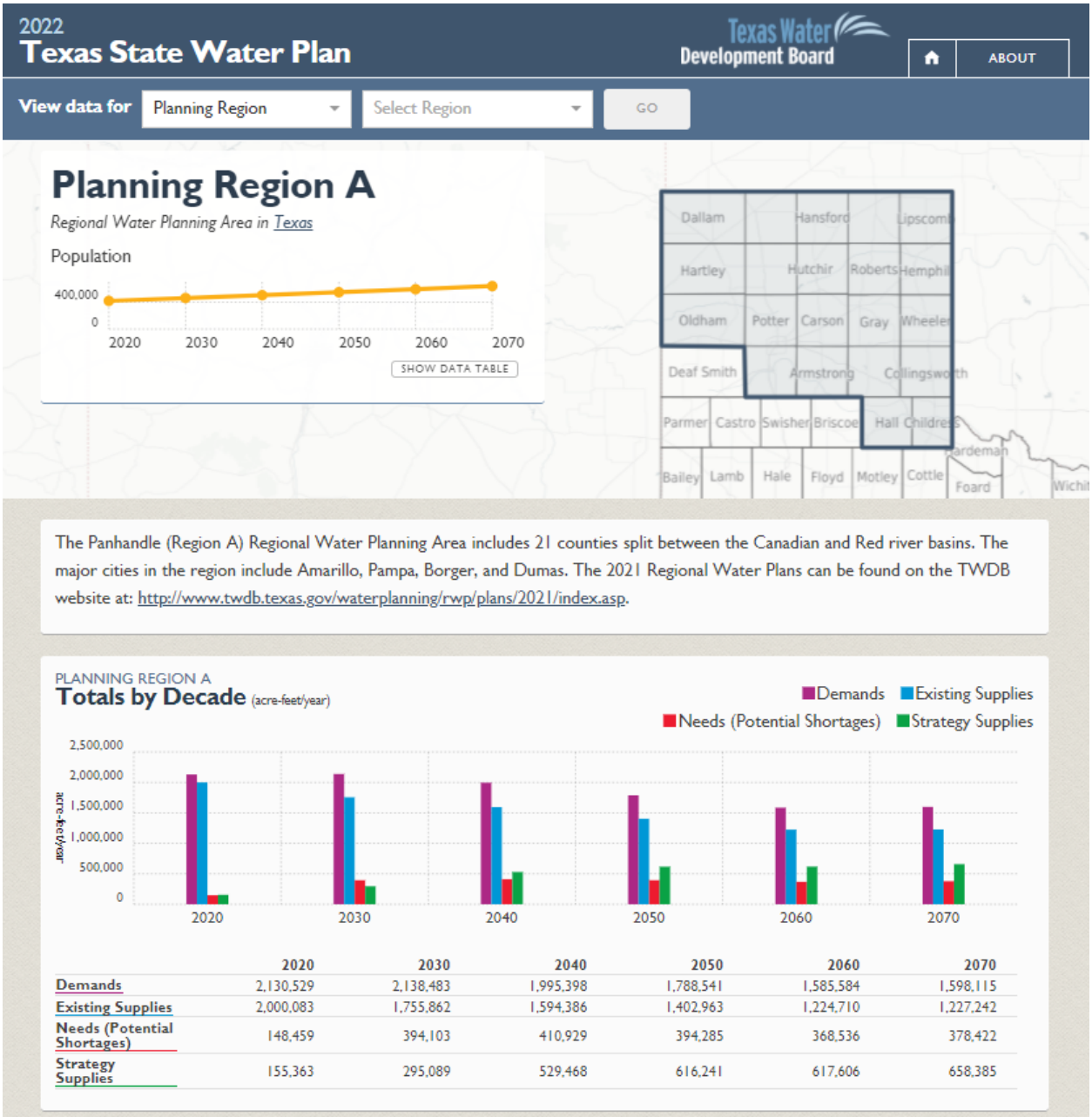
Figure A.5 - Share of recommended water management strategies by strategy type in 2070 (percent)



Panhandle (A) voting planning group members (2017–2021)

C.E. Williams, water districts (Chair); Don Allred, public; Emmett Autrey, municipalities; Brent Auvermann, Ph.D, higher education; Joe Baumgardner, agriculture; Nolan Clark, environment; Vernon Cook, counties; Dean Cooke, water utilities; Jim Derington, river authorities; Rick Gibson, environment; Rusty Gilmore, small business; Glen Green, electric generating utilities; Janet Guthrie, water districts; William Hallerberg, industries; Floyd Hartman, municipalities; Bobbie Kidd, water districts; Tonya Kleuskens, environment; Danny Krienke, groundwater management areas; David Landis, municipalities; Roy (Hank) Messer, industries; Dillon Pool, environment; Donna Raef Kizziar, environment; Kent Satterwhite, river authorities; Lynn Smith, groundwater management areas; Beverly Stephens, industries; John M. Sweeten, higher education; Janet Tregellas, agriculture; Steve Walthour, water districts; and Ben Weinheimer, agriculture.

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	2,130,529	2,138,483	1,995,398	1,788,541	1,585,584	1,598,115
Existing Supplies	2,000,083	1,755,862	1,594,386	1,402,963	1,224,710	1,227,242
Needs (Potential Shortages)	148,459	394,103	410,929	394,285	368,536	378,422
Strategy Supplies	155,363	295,089	529,468	616,241	617,606	658,385

Texas Water Development Board
1700 North Congress Avenue,
Austin, Texas 78701
512-463-7847
www.twdb.texas.gov