Summary of the 2021 Region F Regional Water Plan[1]

Texas' regional water plans

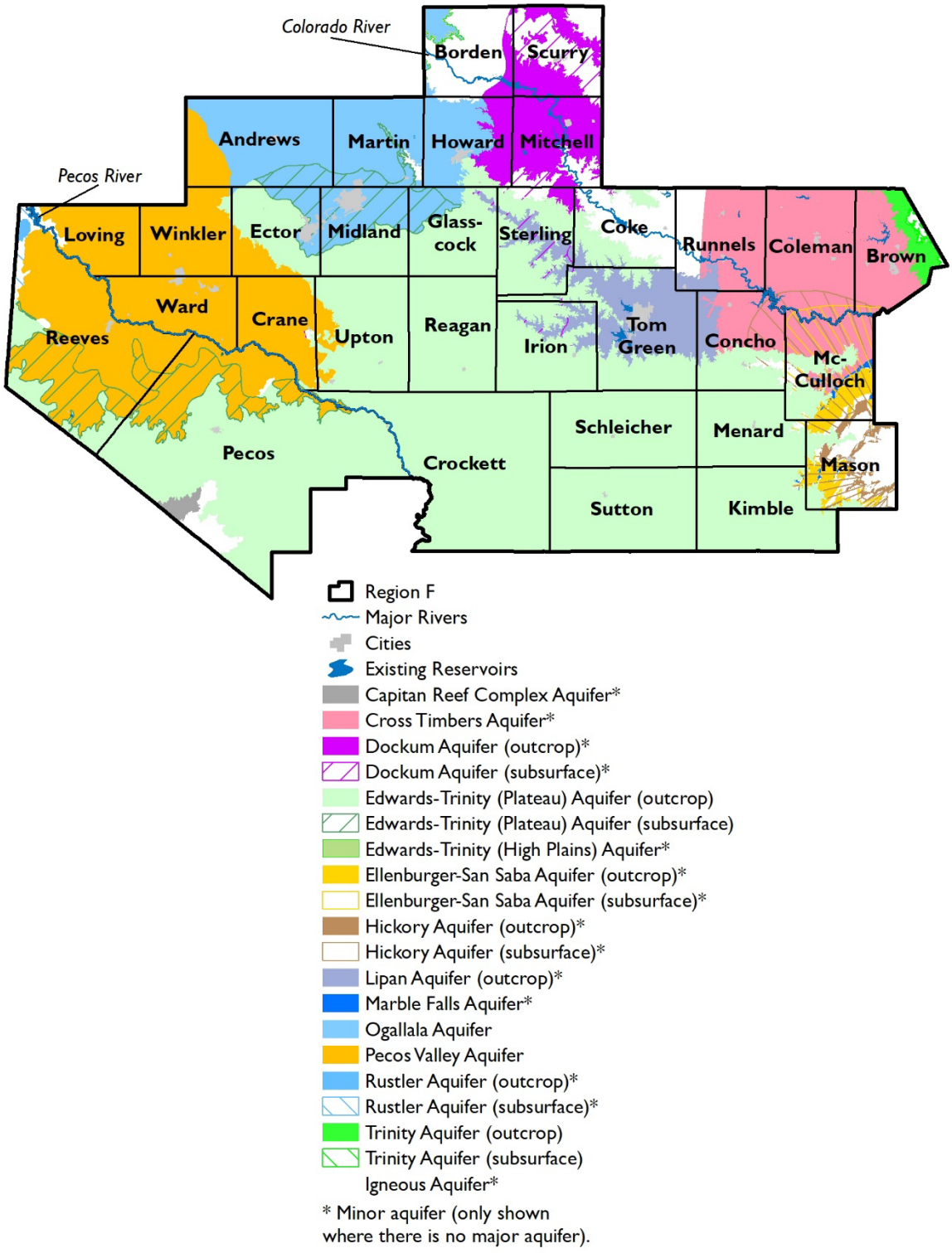
Regional water plans are funded by the Texas Legislature and developed every five years based on conditions that each region would face under a recurrence of a historical drought of record. The 16 regional water plans are developed by local representatives in a public, bottom-up process. The regional 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 F Regional Water Planning Area encompasses 32 counties in west central Texas from the Edwards Plateau to the Permian Basin (Figure F.1). The vast majority of the region lies within the Colorado and Rio Grande river basins. The Edwards-Trinity Plateau, Pecos Valley, and Ogallala aquifers provide the largest supplies of groundwater. The largest economic sectors in the region are the oil and gas industry, retail trade, healthcare, and agriculture. Major cities in the region include Midland, Odessa, and San Angelo. The 2021 Region F Regional Water Plan can be found on the TWDB website at http://www.twdb.texas.gov/waterplanning/rwp/plans/2021/#region-f.

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

Figure F.1 - Region F regional water planning area



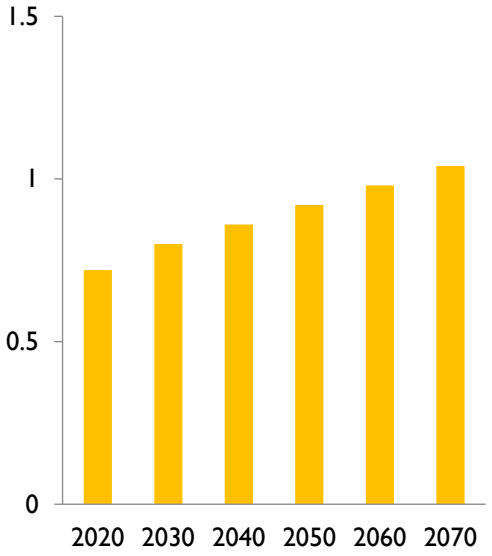
Plan highlights

- Additional supply needed in 2070—103,000 acre-feet per year
- Recommended water management strategy volume in 2070—182,000 acre-feet per year
- 111 recommended water management strategy projects with a total capital cost of $1.64 billion
- Conservation accounts for 36 percent of 2070 strategy volumes
- Innovative technologies, including direct potable reuse, indirect reuse, and groundwater desalination, account for 16 percent of 2070 strategy volumes.

Population and water demands

Approximately 2 percent of the state's 2020 population were projected to reside in Region F. Between 2020 and 2070, the region's population is projected to increase 45 percent (Table F.4, Figure F.2). By 2070, the total water demands for the region are projected to decrease 3 percent (Table F.4).

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



Existing water supplies

More than 80 percent of the existing water supply in Region F is associated with groundwater (Table F.1, Figure F.3). By 2070, the total water supply is projected to decline 9 percent (Table F.4), primarily as a result of reservoir sedimentation and reduced groundwater availability.

Needs

On a region-wide basis, Region F has water supply deficits from 2020 through 2070. The majority of needs are associated with municipal water use and irrigated agriculture (Table F.4). In the event of drought, Region F is projected to have a total water supply need of 63,000 acre-feet in 2020 (Table F.4).

Recommended water management strategies and cost

The Region F 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 F.4 and F.5, Tables F.2 and F.3). In all, the 231 strategies and 111 projects would provide 182,000 acre-feet of additional water supply by the year 2070 at a total capital cost of $1.64 billion.

Recommended water management strategies meet all identified needs in the plan except for 28,000 acre-feet per year associated with irrigation, livestock, manufacturing, mining, municipal, and steam-electric power uses in 2020 and increasing to approximately 40,000 acre-feet per year in 2070. The Region F plan demonstrated that municipal unmet needs would not pose a threat to public health, safety, and welfare in the event of a repeat of the drought of record. An unmet need does not prevent an associated entity from pursuing development of additional supply.

Conservation

Conservation strategies represent 36 percent of the total volume of water associated with all recommended strategies in 2070. Over 90 percent of the region's recommended conservation savings is associated with irrigation demand reduction. Municipal conservation is recommended for all discrete municipal and county-other (rural municipal) water users with an identified water need. Water loss audit and leak repair strategies were recommended for cities with at least 15 percent water loss and water supply corporations or special utility districts with at least 25 percent water loss.

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

Water supply source	2020	2070
Surface water		
Rio Grande Run-of-River	20,000	20,000
Balmorhea Lake/Reservoir	19,000	19,000
Colorado River MWD Lake/Reservoir System	14,000	12,000
Remaining surface water (sources providing less than 2% each)	46,000	44,000
Surface water total	**99,000**	**95,000**
Groundwater		
Edwards-Trinity-Plateau, Pecos Valley, and Trinity Aquifers	207,000	184,000
Edwards-Trinity-Plateau and Pecos Valley Aquifers	175,000	165,000
Ogallala and Edwards-Trinity-High Plains Aquifers	87,000	68,000
Lipan Aquifer	46,000	46,000
Hickory Aquifer	25,000	22,000
Dockum Aquifer	21,000	21,000
Ogallala Aquifer	21,000	21,000
Remaining groundwater (sources providing less than 2% each)	25,000	22,000
Groundwater total	**606,000**	**547,000**
Reuse	**24,000**	**24,000**
Region total	**729,000**	**666,000**

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

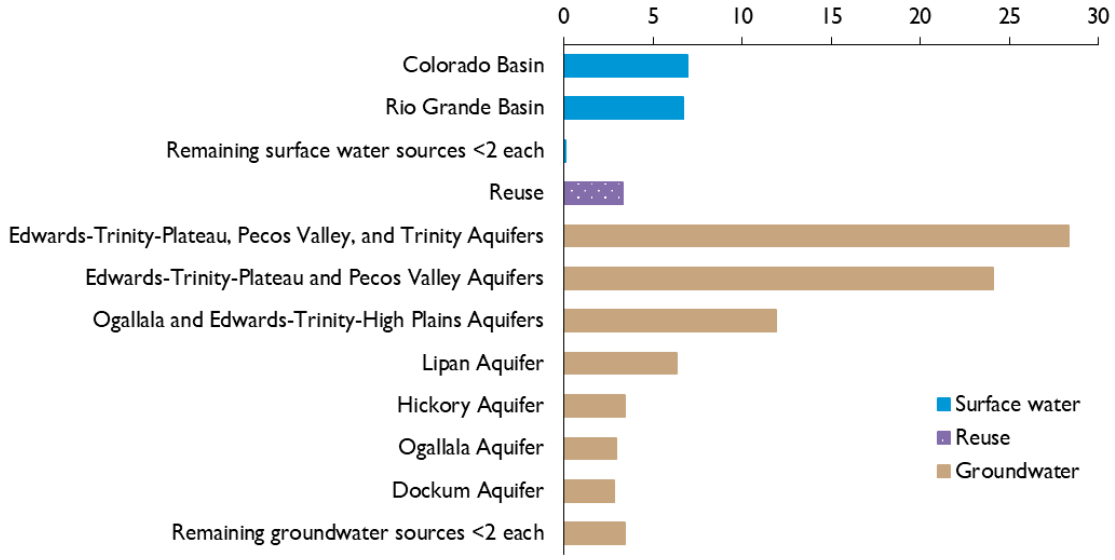


Table F.2 - Ten recommended water management strategy projects with largest capital cost

Recommended water management strategy project	Online Decade	Sponsor(s)	Associated capital cost
West Texas Water Partnership	2030	San Angelo; Abilene; Midland	$549,093,000
CRMWD - Ward County Well Field Expansion and Development of Winkler County Well Field	2050	Colorado River Municipal Water District	$168,324,000
Concho River Water Project - San Angelo	2020	San Angelo	$116,861,000
New Water Treatment Plant - Big Spring	2030	Big Spring	$104,651,000
RO Treatment of Existing Supplies - Odessa	2030	Odessa	$83,062,000
Advanced Treatment (RO) of Paul Davis Well Field Supplies - Midland	2040	Midland	$60,804,000
Hickory Well Field Expansion in McCulloch County - San Angelo	2030	San Angelo	$55,491,000
Partner with Madera Valley WSC & Expand Well Field - Pecos City	2030	Pecos	$43,107,000
Advanced Groundwater Treatment - Brady	2020	Brady	$29,719,000
Direct Potable Reuse - Pecos City	2030	Pecos	$29,541,000
Other recommended projects	*various*	*101 various*	*$394,402,896*
		Total capital cost	**$1,635,055,896**

Table F.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
West Texas Water Partnership	377,000	4	29,000
Irrigation Conservation - Pecos County	na	1	22,000
Subordination - CRMWD System	578,000	16	21,000
Develop Additional Pecos Valley Aquifer Supplies - Reeves County Mining	na	1	10,000
Partner with Madera Valley WSC & Expand Well Field - Pecos City	11,000	1	9,000
Irrigation Conservation - Reeves County	na	1	9,000
Concho River Water Project - San Angelo	170,000	7	8,000
Advanced Treatment (RO) of Paul Davis Well Field Supplies - Midland	224,000	1	6,000
Irrigation Conservation - Martin County	na	1	5,000
Weather Modification	na	10	5,000
Other recommended strategies	*na*	*188*	*57,000*
		Total annual water volume	**182,000**

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

	Decade	2020	2030	2040	2050	2060	2070	Change
	Population	**716,000**	**798,000**	**859,000**	**919,000**	**978,000**	**1,040,000**	***45%***
Existing supplies	Surface water	99,000	98,000	97,000	96,000	96,000	95,000	***-4%***
	Groundwater	606,000	596,000	585,000	568,000	554,000	547,000	***-10%***
	Reuse	24,000	24,000	24,000	24,000	24,000	24,000	***0%***
	Total water supplies	**729,000**	**718,000**	**707,000**	**689,000**	**674,000**	**666,000**	***-9%***
Demands	Municipal	125,000	137,000	145,000	154,000	163,000	173,000	***38%***
	County-other	13,000	13,000	14,000	15,000	16,000	17,000	***31%***
	Manufacturing	12,000	13,000	13,000	13,000	13,000	13,000	***8%***
	Mining	109,000	110,000	91,000	67,000	46,000	34,000	***-69%***
	Irrigation	477,000	477,000	477,000	477,000	477,000	477,000	***0%***
	Steam-electric	18,000	18,000	18,000	18,000	18,000	18,000	***0%***
	Livestock	12,000	12,000	12,000	12,000	12,000	12,000	***0%***
	Total water demand	**765,000**	**780,000**	**770,000**	**755,000**	**745,000**	**744,000**	***-3%***
Needs	Municipal	14,000	18,000	23,000	33,000	43,000	55,000	***293%***
	County-other	<500	1,000	1,000	1,000	1,000	1,000	***0%****
	Manufacturing	1,000	1,000	1,000	1,000	2,000	2,000	***100%***
	Mining	21,000	21,000	18,000	12,000	8,000	5,000	***-76%***
	Irrigation	14,000	18,000	20,000	21,000	25,000	27,000	***93%***
	Steam-electric	13,000	13,000	13,000	13,000	13,000	13,000	***0%***
	Livestock	<500	<500	<500	<500	<500	<500	***0%***
	Total water needs	**63,000**	**72,000**	**75,000**	**81,000**	**91,000**	**103,000**	***63%***
Strategy supplies	Municipal	27,000	65,000	73,000	78,000	83,000	89,000	***230%***
	County-other	1,000	5,000	6,000	6,000	6,000	6,000	***500%***
	Manufacturing	1,000	2,000	2,000	2,000	2,000	3,000	***200%***
	Mining	19,000	19,000	18,000	17,000	16,000	15,000	***-21%***
	Irrigation	29,000	49,000	66,000	66,000	67,000	67,000	***131%***
	Steam-electric	2,000	2,000	2,000	2,000	2,000	2,000	***0%***
	Total strategy supplies	**79,000**	**141,000**	**166,000**	**171,000**	**176,000**	**182,000**	***130%***

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.

** Percentage based on change from the earliest decade with volumes ≥500 acre-feet per year.*

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

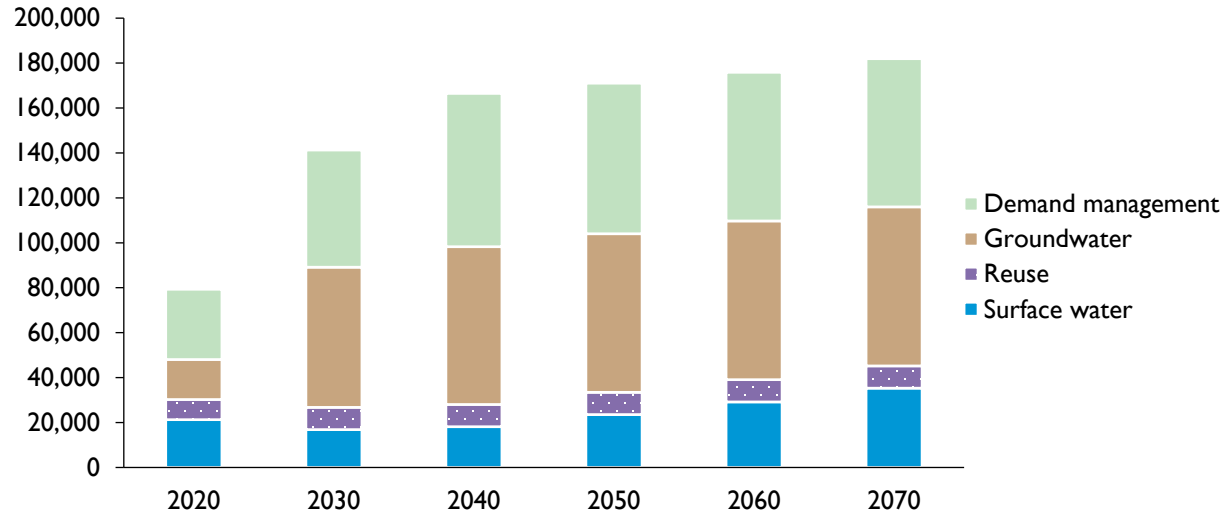
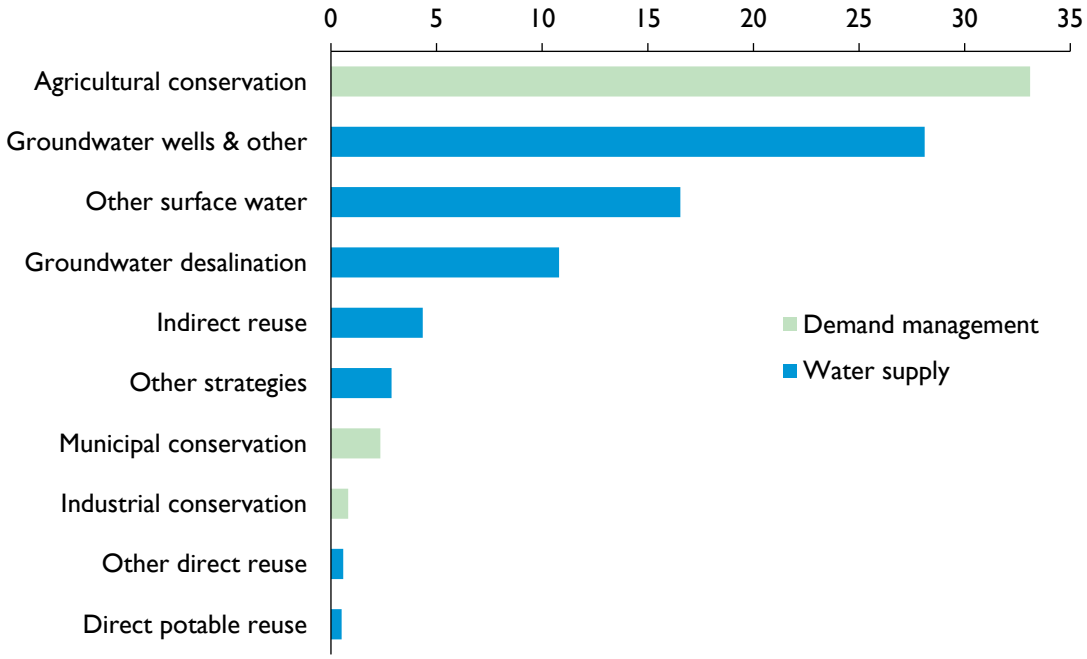


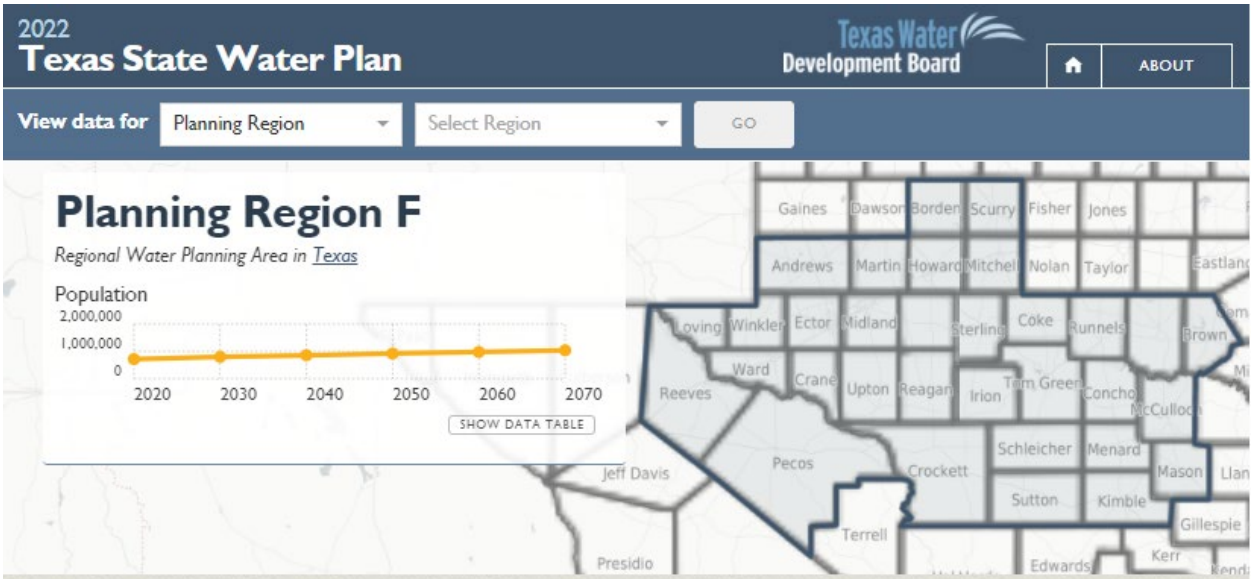
Figure F.5 - Share of recommended water management strategies by strategy type in 2070 (percent)



Region F voting planning group members (2017–2021)

John Grant, water districts (Chair); Tom Arsuffi, public; Jerry Bearden, counties; Stephen Brown, river authorities; Chuck Brown, river authorities; Jimmy Carlile, industries; Don Daniel, agriculture; Ben Deishler, water districts; Ricky Dickson, municipalities; Kenneth Dierschke, agriculture; Ty Edwards, groundwater management areas; Tommy Ervin, small business; Ava Gerke, water districts; Richard Gist, water utilities; Michelle Guelker, municipalities; Charles Hagood, small business; Kim Halfmann, counties; Scott Holland, groundwater management areas; Scott McWilliams, river authorities; Wendell Moody, public; Raul Rodriguez, counties; Caroline Runge, environment; John Shepard, municipalities; Raymond Straub, Jr., groundwater management areas; Allison Strube, municipalities; Merle Taylor, municipalities; Gilbert Van Deventer, environment; Tim Warren, electric generating utilities; Paul Weatherby, groundwater management areas; Doug Wilde, agriculture; Len Wilson, public; and Rhetta Yanez, 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**.



The Region F Regional Water Planning Area is located in the Edwards Plateau encompassing 32 counties. Intersected by the Pecos River to the south and the Colorado River to the north, most of the region is located in the upper portion of the Colorado River Basin and Pecos portion of the Rio Grande Basin; a small portion is in the Brazos Basin. The major cities in the region include Midland, Odessa, and San Angelo. The 2021 Regional Water Plans can be found on the TWDB website at: http://www.twdb.texas.gov/waterplanning/rwp/plans/2021/index.asp.

	2020	2030	2040	2050	2060	2070
Demands	765,150	779,505	769,525	755,112	744,947	744,366
Existing Supplies	729,263	718,312	706,607	688,587	673,716	665,624
Needs (Potential Shortages)	62,592	71,866	75,088	81,200	90,974	102,788
Strategy Supplies	79,345	141,281	166,483	171,034	175,868	181,964

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