



Summary of the 2021 Llano Estacado (O) Regional Water Plan¹

Texas' regional water plans

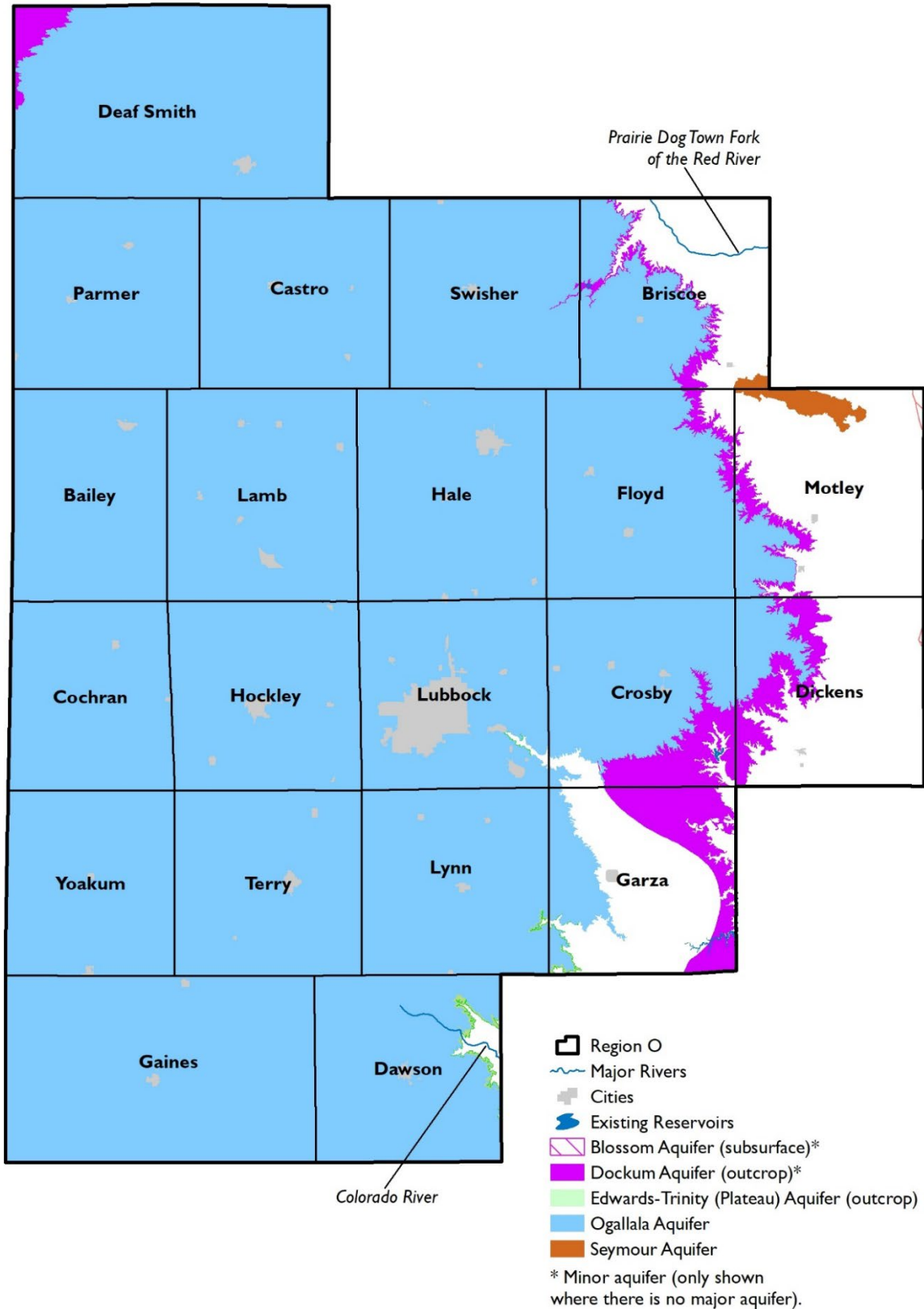
Regional water plans are funded by the Texas Legislature and developed every five years based on conditions that each region would face under a recurrence of a historical drought of record. The 16 regional water plans are developed by local representatives in a public, bottom-up process. The regional 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 Llano Estacado (O) Regional Water Planning Area includes 21 counties (Figure O.1). The region lies within the upstream parts of four major river basins (Canadian, Red, Brazos, and Colorado). Groundwater from the Ogallala and Edwards-Trinity-High Plains Aquifers provide approximately 95 percent of the region's water supply in 2020. The largest economic sector in the region is agriculture. Major cities in the region include Lubbock, Plainview, Levelland, Lamesa, Hereford, and Brownfield. The 2021 Region O Regional Water Plan can be found on the TWDB Web site at <http://www.twdb.texas.gov/waterplanning/rwp/plans/2021/#region-o>.

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

Figure O.1 - Llano Estacado (O) regional water planning area



Plan highlights

- Additional supply needed in 2070—1,500,000 acre-feet per year
- Recommended water management strategy volume in 2070—242,000 acre-feet per year
- 26 recommended water management strategy projects with a total capital cost of \$808 million
- Conservation accounts for 64 percent of 2070 strategy volumes
- Groundwater development accounts for 20 percent of 2070 strategy volumes

Population and water demands

Approximately 2 percent of the state’s 2020 population were projected to reside in the Llano Estacado (O) Region. Between 2020 and 2070, the region’s population is projected to increase approximately 49 percent (Table O.4, Figure O.2). By 2070, the total water demands for the region are projected to decrease 27 percent (Table O.4).

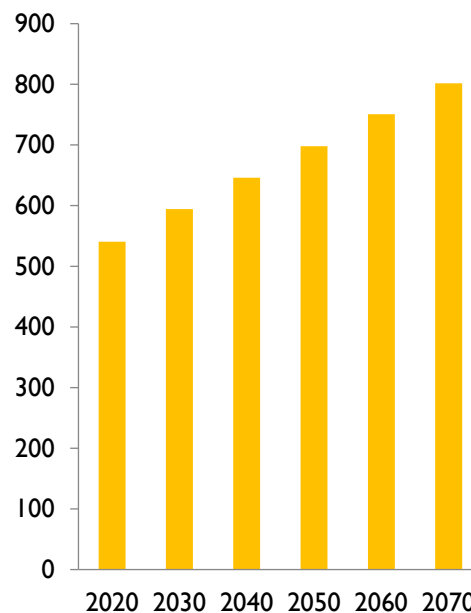
Existing water supplies

The Llano Estacado (O) Region has a variety of surface water and groundwater supply sources, with nearly all of the existing water supply in the region associated with groundwater (Table O.1, Figure O.3). By 2070, the total water supply is projected to decline 66 percent (Table O.4). This projected decline in supply is primarily a result of reduced availability from the Ogallala and Edwards-Trinity (Plateau) aquifers.

Needs

On a region-wide basis the Llano Estacado (O) Region has water supply deficits through 2070. The majority of needs are associated with irrigation water users (Table O.4). In the event of drought, Region O is projected to have a total water supply need of 726,000 acre-feet in 2020, increasing to 1,500,000 million acre-feet by 2070 (Table O.4).

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



Recommended water management strategies and cost

The Llano Estacado (O) Planning Group recommended a variety of water management strategies and projects that would provide less water than is required to meet future needs (Figures O.4 and O.5, Tables O.2 and O.3). In all, the 26 projects would provide 242,000 acre-feet of additional water supply by the year 2070 at a total capital cost of \$808 million.

Recommended water management strategies meet all identified needs in the plan except for approximately 634,000 acre-feet per year associated with irrigation and livestock uses in 2020 increasing to approximately 1,299,000 acre-feet per year in 2070. The vast majority of unmet water needs in the region are associated with irrigation. An unmet need does not prevent an associated entity from pursuing development of additional water supply.

Conservation

Conservation strategies represent 64 percent of the total volume of water associated with all recommended strategies in 2070. Water conservation was recommended for every irrigation water user group in the region and municipal water user groups that had water use greater than 140 gallons per capita per day.

Table O.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)	20,000	21,000
Surface water total	20,000	21,000
Groundwater		
Ogallala and Edwards-Trinity-High Plains Aquifers	2,790,000	866,000
Remaining groundwater (sources providing less than 2% each)	96,000	91,000
Groundwater total	2,886,000	957,000
Reuse	45,000	37,000
Region total	2,952,000	1,014,000

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

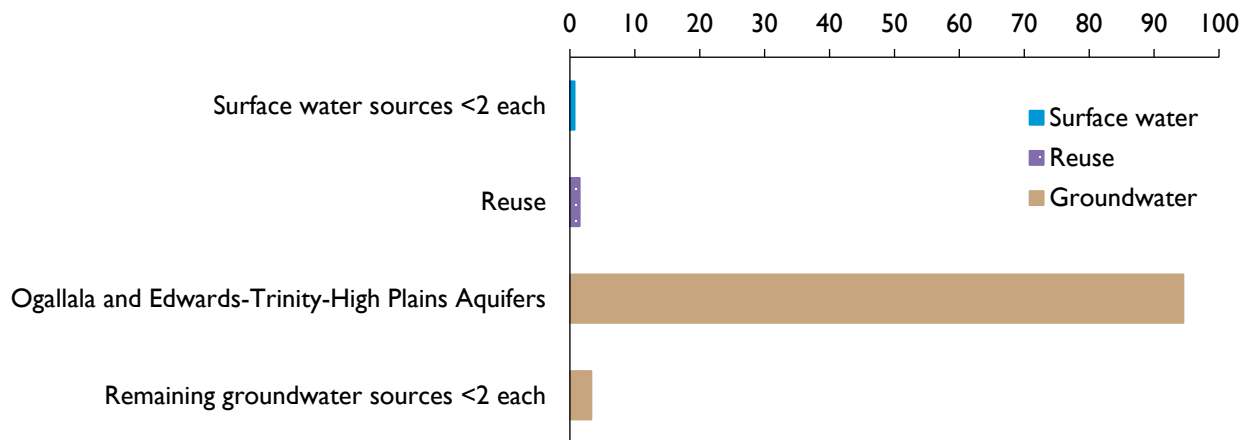


Table O.2 - Ten recommended water management strategy projects with largest capital cost

Recommended water management strategy project	Online Decade	Sponsor(s)	Associated capital cost
Lubbock County - Lubbock Jim Bertram Lake 7	2040	Lubbock	\$251,043,000
Lubbock County - Lubbock Direct Potable Reuse to North Water Treatment Plant	2070	Lubbock	\$125,890,000
Lubbock County - Lubbock CRMWA Aquifer Storage and Recovery	2060	Lubbock	\$103,917,000
Lubbock County - Lubbock Lake Alan Henry Phase 2	2030	Lubbock	\$103,152,000
Lubbock County - Lubbock Bailey County Well Field Capacity Maintenance	2020	Lubbock	\$94,704,000
Gaines County - Seminole Local Groundwater Development	2020	Seminole	\$42,649,000
Lubbock County - Mining Additional Groundwater Development	2020	Mining (Lubbock)	\$18,678,000
Lubbock County - Wolfforth Local Groundwater Development	2040	Wolfforth	\$13,961,000
Plainview Reuse	2040	Plainview	\$10,349,000
Hale County - Manufacturing Additional Groundwater Development	2020	Manufacturing (Hale)	\$8,932,000
<i>Other recommended projects</i>	<i>various</i>	<i>16 various</i>	<i>\$34,551,000</i>
Total capital cost			\$807,826,000

Table O.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
Gaines County Irrigation Water Conservation	na	1	20,000
Hale County Irrigation Water Conservation	na	1	16,000
Castro County Irrigation Water Conservation	na	1	16,000
Expand Capacity CRMWA II	483,000	8	15,000
Lamb County Irrigation Water Conservation	na	1	14,000
Parmer County Irrigation Water Conservation	na	1	12,000
Lubbock County - Lubbock Jim Bertram Lake 7	404,000	1	12,000
Lubbock County - Lubbock CRMWA Aquifer Storage and Recovery	404,000	1	11,000
Terry County Irrigation Water Conservation	na	1	9,000
Deaf Smith County Irrigation Water Conservation	na	1	8,000
<i>Other recommended strategies</i>	<i>na</i>	<i>97</i>	<i>109,000</i>
Total annual water volume			242,000

* Multiple strategies may serve portions of the same population

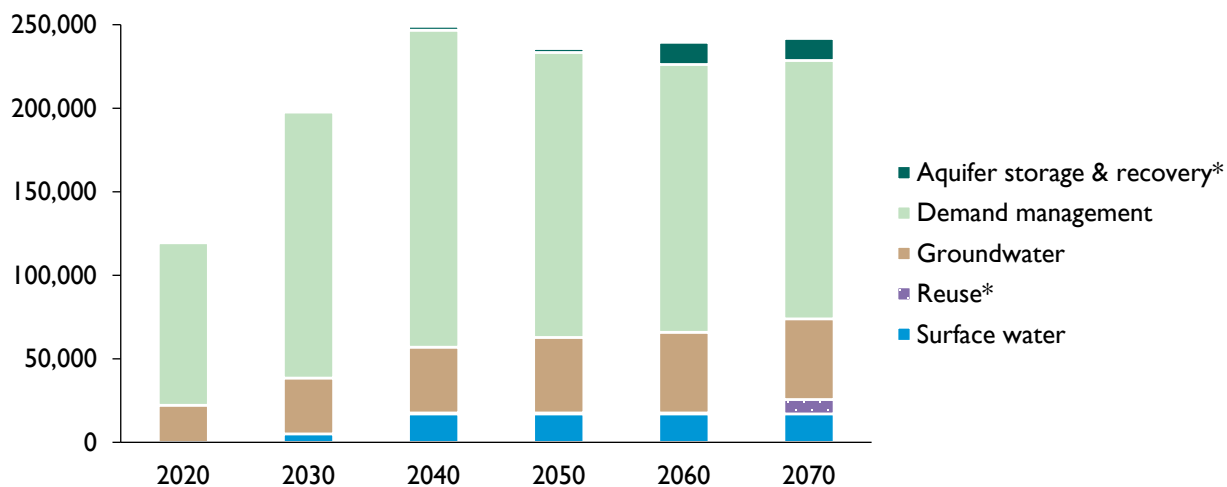
Table O.4 - Population, existing supplies, demands, needs, and strategies 2020–2070 (acre-feet per year)

	Decade	2020	2030	2040	2050	2060	2070	Change
	Population	540,000	594,000	646,000	698,000	751,000	802,000	49%
Existing supplies	Surface water	20,000	20,000	20,000	21,000	21,000	21,000	5%
	Groundwater	2,886,000	2,009,000	1,484,000	1,200,000	1,046,000	957,000	-67%
	Reuse	45,000	39,000	39,000	37,000	37,000	37,000	-18%
	Total water supplies	2,952,000	2,068,000	1,543,000	1,258,000	1,103,000	1,014,000	-66%
Demands	Municipal	82,000	89,000	95,000	101,000	108,000	114,000	39%
	County-other	13,000	13,000	13,000	15,000	17,000	19,000	46%
	Manufacturing	11,000	12,000	12,000	12,000	12,000	12,000	9%
	Mining	17,000	18,000	17,000	14,000	12,000	11,000	-35%
	Irrigation	3,183,000	3,183,000	2,720,000	2,446,000	2,300,000	2,216,000	-30%
	Steam-electric	21,000	21,000	21,000	21,000	21,000	21,000	0%
	Livestock	42,000	46,000	49,000	53,000	56,000	60,000	43%
	Total water demand	3,368,000	3,382,000	2,928,000	2,663,000	2,527,000	2,453,000	-27%
Needs	Municipal	4,000	9,000	15,000	21,000	29,000	35,000	775%
	County-other	0	<500	<500	1,000	1,000	2,000	100%*
	Manufacturing	5,000	6,000	6,000	6,000	6,000	6,000	20%
	Mining	10,000	11,000	10,000	8,000	7,000	6,000	-40%
	Irrigation	706,000	1,440,000	1,451,000	1,446,000	1,446,000	1,445,000	105%
	Livestock	<500	<500	1,000	2,000	4,000	5,000	400%*
	Total water needs	726,000	1,467,000	1,483,000	1,485,000	1,493,000	1,500,000	107%
Strategy supplies	Municipal	6,000	21,000	39,000	45,000	59,000	67,000	1017%
	County-other	<500	2,000	2,000	2,000	2,000	2,000	0%*
	Manufacturing	7,000	8,000	8,000	8,000	8,000	8,000	14%
	Mining	11,000	12,000	12,000	12,000	12,000	12,000	9%
	Irrigation	95,000	158,000	188,000	169,000	159,000	153,000	61%
	Total strategy supplies	119,000	199,000	249,000	236,000	239,000	242,000	103%

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.

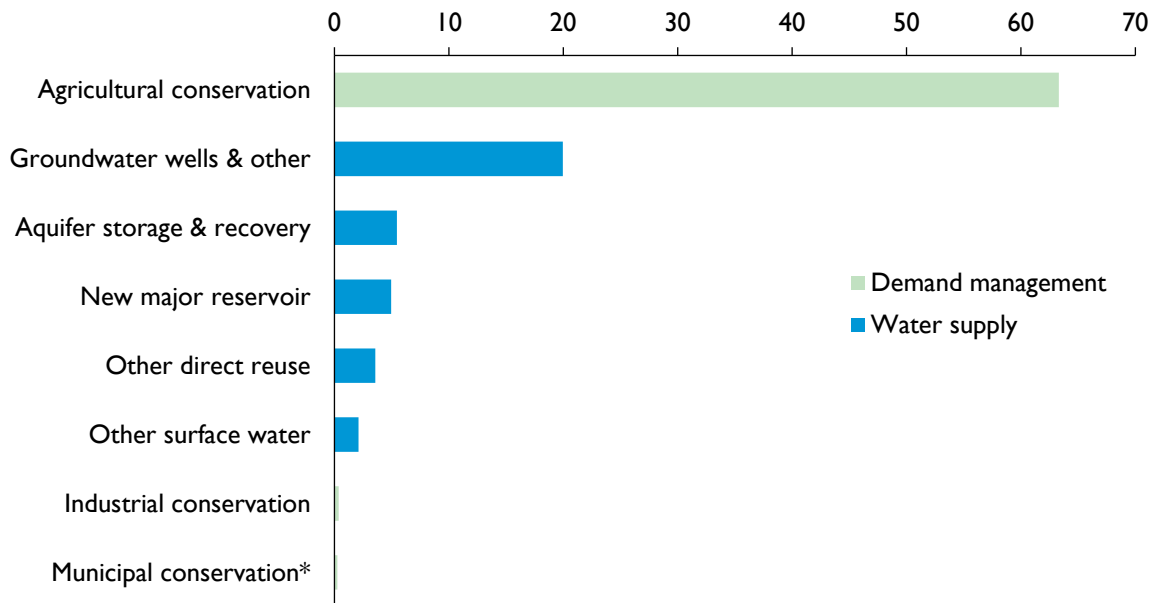
* Percentage based on change from the earliest decade with volumes ≥ 500 acre-feet per year.

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



* Strategy share at a scale not represented in the figure

Llano Estacado (O) voting planning group members (2017–2021)

Aubrey Spear, municipalities (Chair); Melanie Barnes, public; Jack Campsey, groundwater management areas; Jason Coleman, water districts; Harry DeWit, agriculture; Carrie Dodson, groundwater management areas; Delmon Ellison, Jr., agriculture; Harvey Everheart, water districts; Andrew Freeman, municipalities; Chris Grotegut, DVM, agriculture; Bill Hardbin, electric generating utilities; Joey Hardin, industries; Ronnie Hopper, groundwater management areas; Doug Hutcheson, water utilities; Shane Jones, water utilities; Mark Kirkpatrick, agriculture; Mike McClendon, river authorities; Don McElroy, small business; Shane McMinn, electric generating utilities; Alan Monroe, municipalities; Charlie Morris, counties; Ken Rainwater, public; Jeff Sammon, river authorities; Kent Satterwhite, water districts; Tom Simons, municipalities; Jeffrey Snyder, municipalities; Jim Steiert, environment; John Taylor, municipalities; Jimmy Wedel, agriculture; Ben Weinheimer, Sr., agriculture; and Bret Yeary, electric generating utilities.

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

2022 Texas State Water Plan
 Texas Water Development Board
 View data for Planning Region Select Region GO

Planning Region O

Regional Water Planning Area in Texas

Population

800,000
0

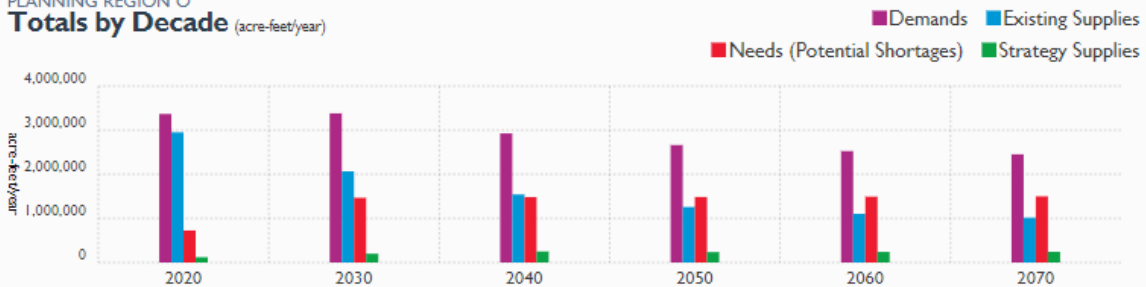
2020 2030 2040 2050 2060 2070

SHOW DATA TABLE

Counties shown on map: Deaf Smith, Armstrong, Collingsworth, Parmer, Castro, Swisher, Briscoe, Hall, Childress, Hardeman, Bailey, Lamb, Hale, Floyd, Motley, Cottle, Foard, Cochran, Lubbock, Crosby, Dickens, King, Knox, Baylor, Oakum, Terry, Lynn, Garza, Kent, Haskell, Gaines, Dawson, Borden, Scurry, Fisher, Jones, Andrews, Martin, Howard, Mitchell, Nolan, Taylor, E

The Llano Estacado (Region O) Regional Water Planning Area encompasses 21 counties in the southern High Plains of Texas. The region lies within the upstream parts of four major river basins (Canadian, Red, Brazos, and Colorado). Major cities in the region include Lubbock, Plainview, Levelland, Lamesa, Hereford, and Brownfield. The 2021 Regional Water Plans can be found on the TWDB website at: <http://www.twdb.texas.gov/waterplanning/rwp/plans/2021/index.asp>.

PLANNING REGION O
Totals by Decade (acre-feet/year)



	2020	2030	2040	2050	2060	2070
Demands	3,367,953	3,381,960	2,927,996	2,663,087	2,526,590	2,452,931
Existing Supplies	2,951,798	2,067,674	1,543,044	1,257,514	1,103,438	1,014,486
Needs (Potential Shortages)	726,021	1,466,543	1,483,178	1,484,990	1,492,860	1,499,897
Strategy Supplies	119,393	199,247	249,021	235,684	239,437	241,763



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