



# Summary of the 2021 Region C Regional Water Plan<sup>1</sup>

## 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

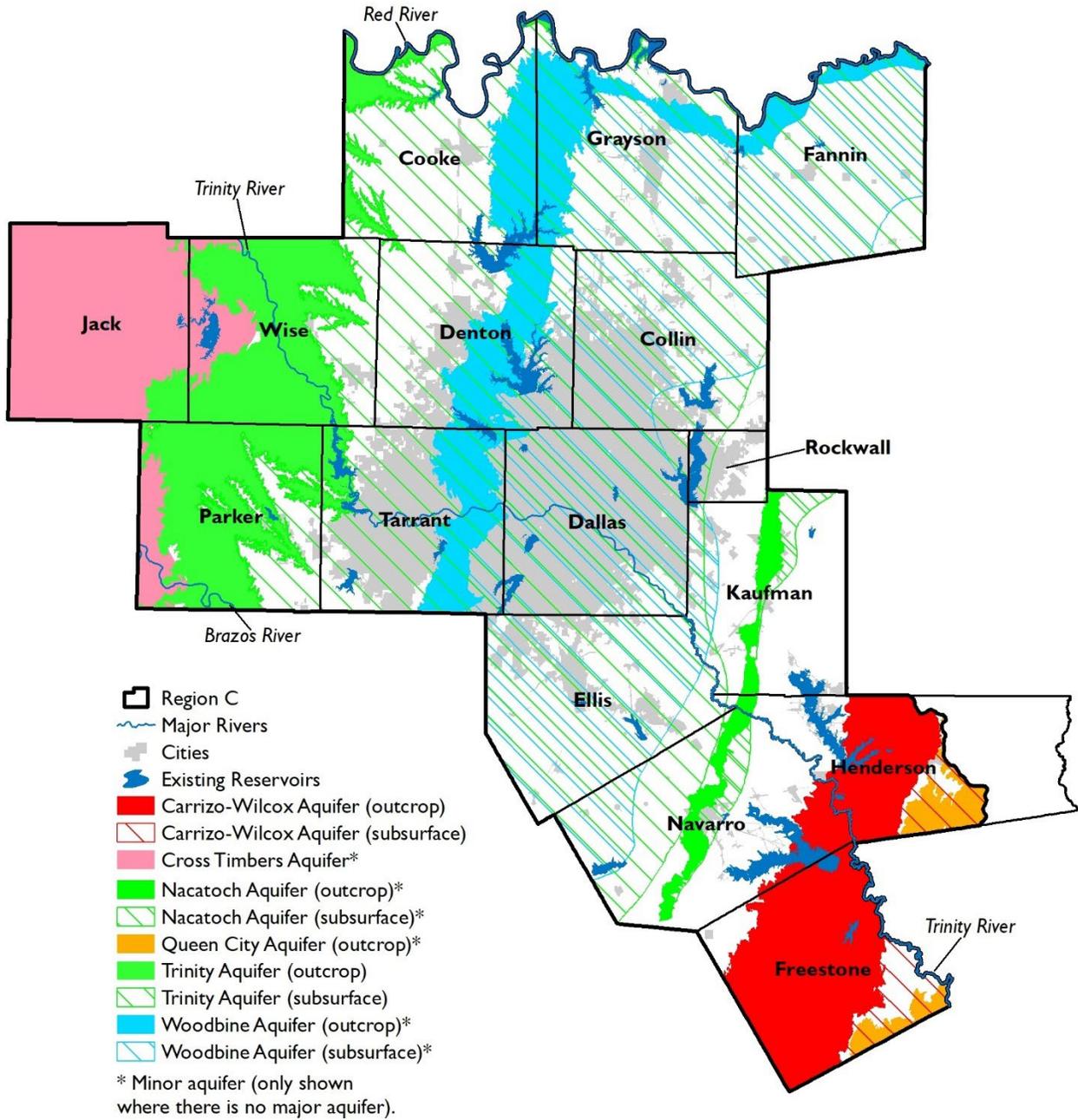
- provide for the orderly development, management, and conservation of water resources,
- prepare for and respond to drought conditions, and
- make sufficient water available at a reasonable cost to ensure public health, safety, and welfare and further economic development while protecting the agricultural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

**The Region C Regional Water Planning Area** includes all or parts of 16 counties (Figure C.1). Overlapping much of the upper portion of the Trinity River Basin, Region C also includes smaller parts of the Red, Brazos, Sulphur, and Sabine basins. The Trinity Aquifer provides the largest supply of groundwater. The Dallas-Fort Worth metropolitan area is centrally located in the region, and its surrounding counties are among the fastest growing in the state. Major economic sectors in the region include trade, transportation, and utilities. The 2021 Region C Regional Water Plan can be found on the TWDB website at

<http://www.twdb.texas.gov/waterplanning/rwp/plans/2021/#region-c>.

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

**Figure C.1 - Region C regional water planning area**



## Plan highlights

- Additional supply needed in 2070—1,278,000 acre-feet per year
- Recommended water management strategy volume in 2070—1,336,000 acre-feet per year
- 506 recommended water management strategy projects with a total capital cost of \$29.9 billion
- Conservation accounts for 15 percent of 2070 strategy volumes
- New major reservoirs serving water user groups in Region C (Bois d’Arc Lake, Lake Columbia, Lake Ralph Hall, Lake Tehuacana, Marvin Nichols Reservoir, Turkey Peak Reservoir, and Main Stem Balancing Reservoir) account for 33 percent of 2070 strategy volumes.

## Population and water demands

Approximately 26 percent of the state’s 2020 population were projected to reside in Region C. Between 2020 and 2070, the region’s population is projected to increase 92 percent (Table C.4, Figure C.2). By 2070, the total water demands for the region are projected to increase 67 percent (Table C.4).

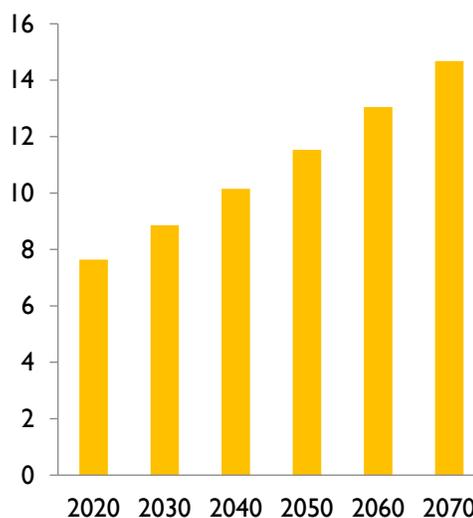
## Existing water supplies

More than three-quarters of the existing water supply in Region C is associated with surface water (Table C.1, Figure C.3). By 2070, the total existing water supply is projected to decline about 3 percent (Table C.4), due primarily to anticipated reservoir sedimentation.

## Needs

On a region-wide basis, Region C does not have enough water supplies to meet demands through 2070, with the vast majority of deficits occurring in the municipal category (Table C.4). In the event of drought, Region C is projected to have a total water supply need of 66,000 acre-feet in 2020, increasing to 1,278,000 acre-feet by 2070 (Table C.4).

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



## Recommended water management strategies and cost

The Region C 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 C.4 and C.5, Tables C.2 and C.3). In all, the 2,867 strategies and 506 projects would provide 1,336,000 acre-feet of additional water supply by the year 2070 at a total capital cost of \$29.9 billion.

Recommended water management strategies meet all identified needs in the plan except for 15,000 acre-feet per year associated with irrigation, mining, municipal, and steam-electric power uses in 2020 and increasing to approximately 16,000 acre-feet per year in 2070. The Region C 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 water supply.

## Conservation

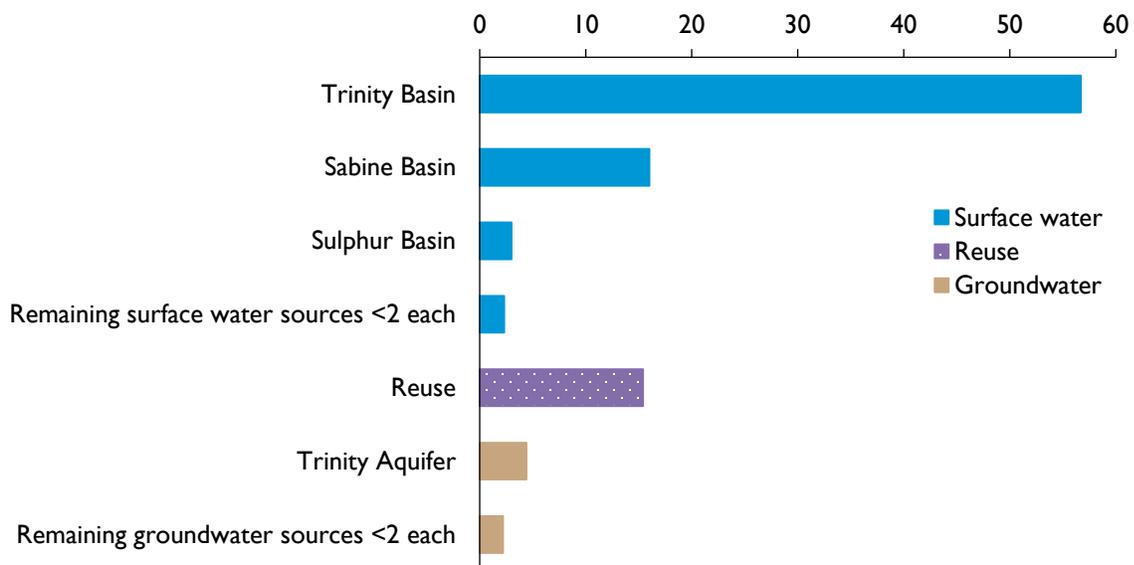
Conservation strategies represent about 15 percent of the total volume of water associated with all recommended strategies in 2070. Municipal water conservation was recommended for every municipal water user group in the region that had a projected need, water use greater than 140 gallons per capita per day, an identified strategy sponsor, and a strategy cost of less than \$5.85 per 1,000 gallons. For rural municipal water users, conservation is recommended for county-other users with water use above 140 gallons per capita per day. Conservation is recommended for all non-municipal users that are shown to have a need.

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

Water supply source	2020	2070
<b>Surface water</b>		
TRWD Lake/Reservoir System	420,000	355,000
Tawakoni Lake/Reservoir	194,000	159,000
North Texas MWD Lake/Reservoir System	194,000	193,000
Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	173,000	139,000
Fork Lake/Reservoir	79,000	75,000
Ray Hubbard Lake/Reservoir	56,000	51,000
Chapman/Cooper Lake/Reservoir Non-System Portion	50,000	49,000
Remaining surface water (sources providing less than 2% each)	161,000	163,000
<b>Surface water total</b>	<b>1,326,000</b>	<b>1,185,000</b>
<b>Groundwater</b>		
Trinity Aquifer	75,000	74,000
Remaining groundwater (sources providing less than 2% each)	37,000	36,000
<b>Groundwater total</b>	<b>112,000</b>	<b>110,000</b>
<b>Reuse</b>		
	<b>261,000</b>	<b>354,000</b>
<b>Region total</b>	<b>1,699,000</b>	<b>1,649,000</b>

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



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

Recommended water management strategy project	Online Decade	Sponsor(s)	Associated capital cost
Marvin Nichols (328) - TRWD, NTMWD, UTRWD	2050	North Texas MWD; Tarrant Regional WD; Upper Trinity Regional WD	\$4,467,478,000
DWU - Infrastructure to Treat and Deliver to Customers 2030	2040	Dallas	\$1,827,578,000
TRWD - Additional Transmission Pipeline	2060	Tarrant Regional WD	\$1,765,505,000
NTMWD Treatment & Treated Water Distribution Improvements 2020-2030	2020	North Texas MWD	\$1,693,455,000
Wright Patman Reallocation NTMWD, TRWD, and UTRWD	2070	North Texas MWD; Tarrant Regional WD; Upper Trinity Regional WD	\$1,645,711,000
NTMWD Treatment & Treated Water Distribution Improvements 2040-2050	2040	North Texas MWD	\$1,085,848,000
NTMWD Treatment & Treated Water Distribution Improvements 2030-2040	2030	North Texas MWD	\$1,021,378,000
NTMWD Treatment & Treated Water Distribution Improvements 2050-2060	2050	North Texas MWD	\$957,348,000
NTMWD - Bois d'Arc Lake	2020	North Texas MWD	\$939,638,000
DWU - Parallel IPL	2070	Dallas	\$795,236,000
Other recommended projects	various	496 various	\$13,732,373,107
<b>Total capital cost</b>			<b>\$29,931,548,107</b>

**Table C.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
Marvin Nichols (328) Strategy for NTMWD, TRWD, and UTRWD	10,061,000	211	218,000
DWU - Indirect Reuse Implementation	5,310,000	62	96,000
Integrated Pipeline	5,243,000	111	95,000
NTMWD - Bois d'Arc Lake	4,202,000	79	89,000
Wright Patman Reallocation for NTMWD, TRWD, and UTRWD	10,061,000	211	74,000
DWU - Lake Palestine	5,310,000	61	57,000
NTMWD - Texoma Blending	4,163,000	81	52,000
TRWD - Reuse from TRA Central WWTP	5,243,000	110	44,000
UTRWD - Ralph Hall Reservoir and Reuse	942,000	26	39,000
Conservation - Dallas	1,905,000	1	36,000
Other recommended strategies	na	1,914	535,000
<b>Total annual water volume</b>			<b>1,336,000</b>

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

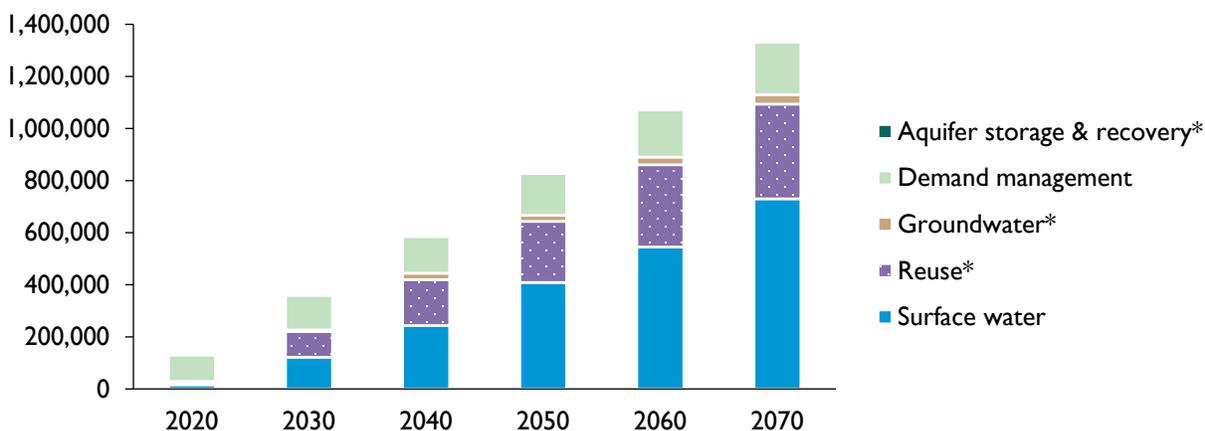
**Table C.4 - Population, existing supplies, demands, needs, and strategies 2020–2070 (acre-feet per year)**

	Decade	2020	2030	2040	2050	2060	2070	Change
	<b>Population</b>	<b>7,638,000</b>	<b>8,858,000</b>	<b>10,150,000</b>	<b>11,533,000</b>	<b>13,052,000</b>	<b>14,685,000</b>	<b>92%</b>
<b>Existing supplies</b>	Surface water	1,326,000	1,264,000	1,240,000	1,222,000	1,206,000	1,185,000	-11%
	Groundwater	112,000	111,000	110,000	110,000	110,000	110,000	-2%
	Reuse	261,000	288,000	308,000	323,000	340,000	354,000	36%
	<b>Total water supplies</b>	<b>1,699,000</b>	<b>1,662,000</b>	<b>1,658,000</b>	<b>1,654,000</b>	<b>1,656,000</b>	<b>1,649,000</b>	<b>-3%</b>
<b>Demands</b>	Municipal	1,488,000	1,691,000	1,913,000	2,138,000	2,367,000	2,586,000	74%
	County-other	27,000	26,000	25,000	35,000	54,000	88,000	226%
	Manufacturing	48,000	53,000	53,000	53,000	53,000	53,000	10%
	Mining	46,000	38,000	34,000	36,000	39,000	44,000	-4%
	Irrigation	44,000	44,000	44,000	44,000	44,000	44,000	0%
	Steam-electric	63,000	67,000	67,000	67,000	67,000	67,000	6%
	Livestock	18,000	18,000	18,000	18,000	18,000	18,000	0%
	<b>Total water demand</b>	<b>1,734,000</b>	<b>1,937,000</b>	<b>2,152,000</b>	<b>2,391,000</b>	<b>2,641,000</b>	<b>2,899,000</b>	<b>67%</b>
<b>Needs</b>	Municipal	41,000	272,000	487,000	715,000	943,000	1,172,000	2759%
	County-other	2,000	3,000	3,000	8,000	20,000	46,000	2200%
	Manufacturing	<500	5,000	9,000	12,000	15,000	18,000	260%*
	Mining	11,000	11,000	13,000	15,000	17,000	21,000	91%
	Irrigation	5,000	5,000	5,000	5,000	5,000	5,000	0%
	Steam-electric	7,000	11,000	13,000	14,000	15,000	16,000	129%
	Livestock	<500	<500	<500	<500	<500	<500	0%
	<b>Total water needs</b>	<b>66,000</b>	<b>307,000</b>	<b>530,000</b>	<b>769,000</b>	<b>1,016,000</b>	<b>1,278,000</b>	<b>1836%</b>
<b>Strategy supplies</b>	Municipal	114,000	334,000	550,000	778,000	1,004,000	1,231,000	980%
	County-other	4,000	6,000	8,000	14,000	26,000	51,000	1175%
	Manufacturing	1,000	6,000	10,000	13,000	16,000	19,000	1800%
	Mining	7,000	7,000	9,000	11,000	14,000	17,000	143%
	Irrigation	2,000	3,000	4,000	6,000	6,000	7,000	250%
	Steam-electric	<500	4,000	6,000	8,000	9,000	10,000	150%*
	Livestock	<500	<500	<500	<500	<500	<500	0%
	<b>Total strategy supplies</b>	<b>129,000</b>	<b>361,000</b>	<b>588,000</b>	<b>830,000</b>	<b>1,075,000</b>	<b>1,336,000</b>	<b>936%</b>

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.

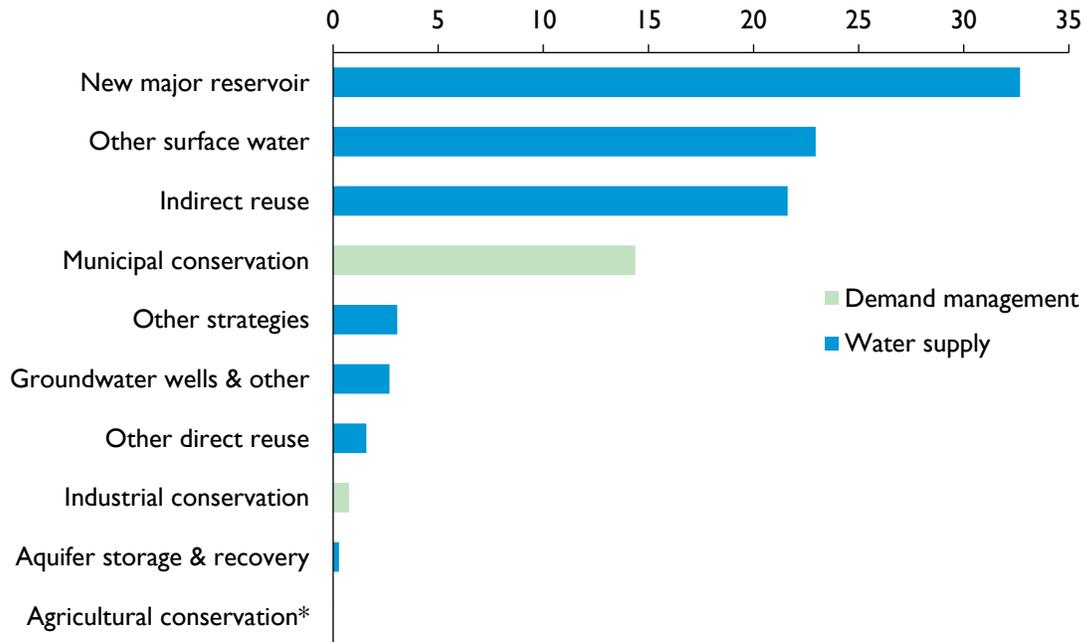
\* Percentage based on change from the earliest decade with volumes ≥500 acre-feet per year.

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

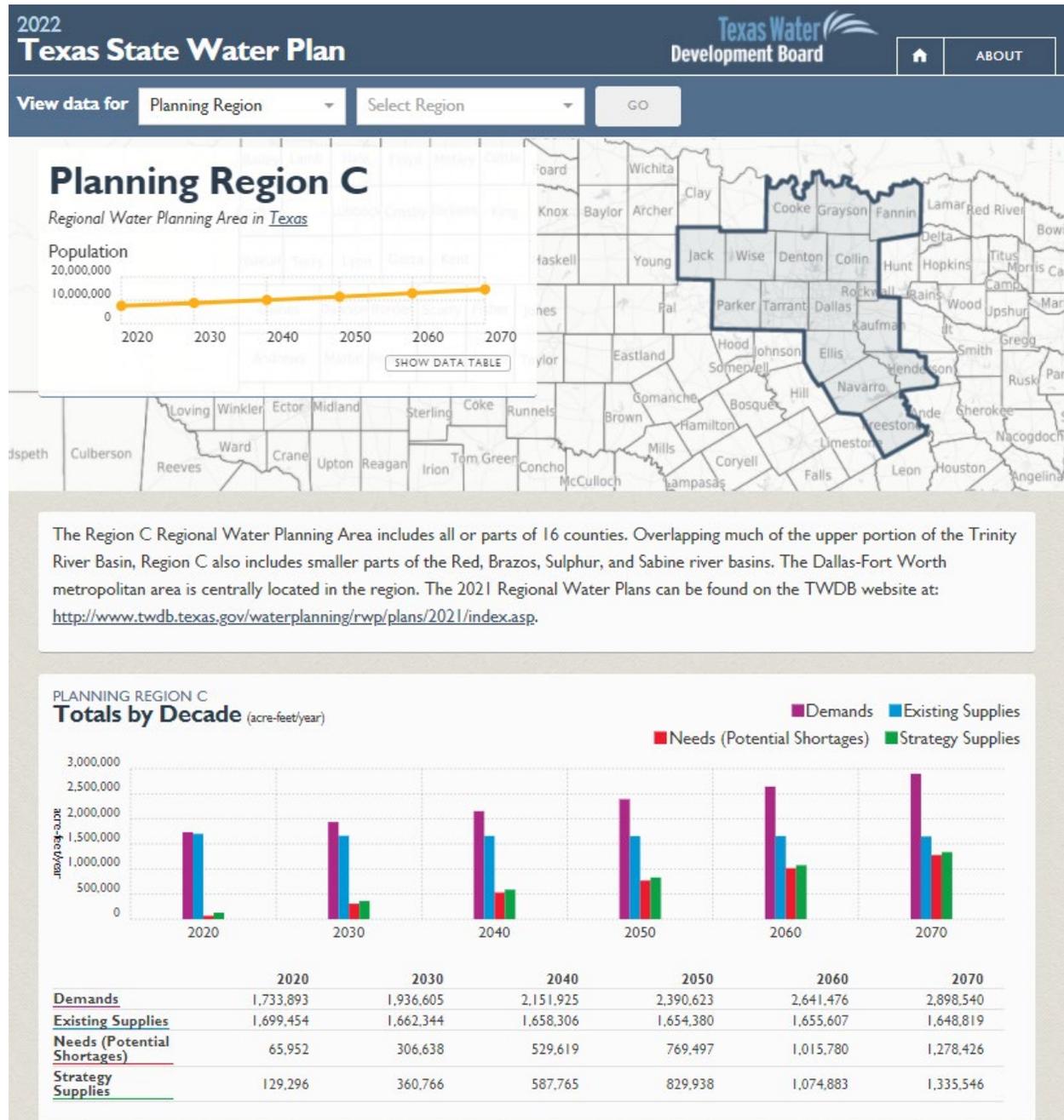


\* Strategy share at a scale not represented in the figure

## Region C voting planning group members (2017–2021)

Kevin Ward, river authorities (Chair); David Bailey, groundwater management areas; Kenneth Banks, municipalities; Jay Barksdale, public; Chris Boyd, water utilities; John Carman, municipalities; Bill Ceverha, public; Grace Darling, environment; John Paul Dineen III, agriculture; Gary Douglas, groundwater management areas; Tim Fisher, municipalities; Christopher Harder, P.E., municipalities; James Hotopp, municipalities; Tom Kula, water districts; Harold Latham, groundwater management areas; Russell Laughlin, industries; John Lingenfelder, public; G.K. Maenius, counties; Howard Martin, municipalities; Jim McCarter, water utilities; Steve Mundt, small business; Jo "Jody" Puckett, municipalities; Mike Rickman, water districts; Bob Riley, environment; Drew Satterwhite, water districts; Rick Shaffer, municipalities; Gary Spicer, electric generating utilities; Connie Standridge, water utilities; Jack Stevens, water districts; Richard Wagner, P.E., municipalities; and Tom Woodward, agriculture.

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



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