

# Chapter 11

## Implementation and Comparison to the Previous Regional Water Plan

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Chapter 11 includes a summary of the level of implementation of the 2016 East Texas Regional Water Plan (2016 Plan) recommended Water Management Strategies (WMS) to meet projected needs, as well as a brief comparison of the 2016 Plan and the 2021 East Texas Regional Water Plan (2021 Plan).

### 11.1 Implementation of Previous Regional Water Plan

Title 31 of the Texas Administrative Code §357.45(a) requires the 2021 Plan to report the level of implementation and identified implementation impediments of recommended WMSs and Water Management Strategy Projects (WMSPs) meeting needs in the 2016 Plan.

#### 11.1.1 Texas Water Development Board Implementation Survey

The East Texas Regional Water Planning Group and consultants were responsible for gathering information on the implementation, and reported impediments to implementation, of water management strategies included in the previous regional water plan. Methods used to gather information included:

- Contacting Recommended WMS Project Sponsors;
- Tracking changes in Water User Group (WUG) and Wholesale Water Provider (WWP) supplies since completion of the 2016 Plan;
- Identifying WMSs that are not recommended in the 2021 Plan;
- Reviewing TWDB funding records to identify projects in the region (SWIFT, WIF, State Participation, DWSRF, EDAP, etc.); and,
- Analyzing conservation implementation reports submitted to the TWDB.

The results of this survey were compiled into an Excel workbook developed by the TWDB and submitted to the TWDB along with this 2021 Plan. The workbook is available for public view on the East Texas Regional Water Planning Group website at <https://www.etexwaterplan.org/>.

### 11.2 Comparison to Previous Regional Water Plan

A comparison of the 2016 Plan to the 2021 plan follows for the following categories of water planning issues:

- Water Demand Projections
- Drought of Record
- Water Availability



- Existing Water Supplies
  - Water User Groups
  - Wholesale Water Providers
- Identified Needs
  - Water User Groups
  - Wholesale Water Providers
- Water Management Strategies (WMSs) and Water Management Strategy Projects (WMSPs)
  - Recommended Water Management Strategies
  - Alternative Water Management Strategies
- Simplified Planning

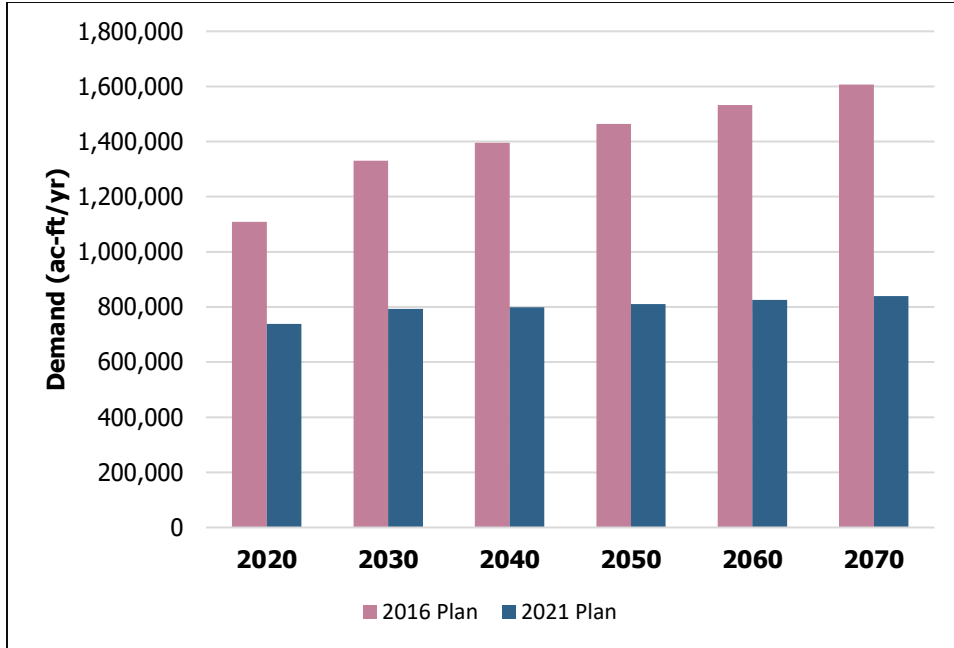
A WMS is a plan to meet a need for additional water by a discrete water user group, which can mean increasing the total water supply or maximizing an existing supply, including through reducing demands. A WMS may or may not require an associated WMSP(s) to be implemented.

A WMSP is a water project that has a non-zero capital cost and that when implemented, would develop, deliver, and/or treat additional water supply volumes, or conserve water for water user groups or wholesale water providers. One WMSP may be associated with multiple WMSs.

### **11.2.1 Water Demand Projections**

The total demand projections for the East Texas Regional Water Planning Area (ETRWPA) decreased for every decade from the 2016 Plan to the 2021 Plan, as shown in Figure 11.1 and Table 11.1. This decrease in demand is largely due to the decrease in projected demands for Jefferson County Irrigation, Jefferson County Manufacturing, and Steam Electric Power in almost every county with a projected steam electric power demand. This is in large part due to the change in methodology the Texas Water Development Board took in developing non-municipal demand projections in this cycle of regional water planning by excluding future demands that lacked water supply contracts for projects occurring in the 2030 decade and beyond.





**Figure 11.1 Total Projected Demand for the East Texas Regional Water Planning Area from the 2016 and 2021 Plans**



**Table 11.1 Summary of Projected Water Demands from the East Texas Regional Water Planning Area by Use Category and Decade**

<b>2016 Plan Projected Demands (ac-ft/yr)</b>						
	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
Municipal	188,646	196,302	204,157	214,540	226,622	239,607
Manufacturing	608,667	800,989	838,639	874,546	909,373	945,886
Mining	27,523	24,547	18,169	15,488	12,986	12,093
Steam Electric Power	82,018	95,544	112,035	132,137	156,640	184,714
Livestock	24,027	25,549	27,361	29,521	32,081	32,764
Irrigation	177,919	187,894	194,851	197,546	195,445	192,186
<b>2016 Total for ETRWPA</b>	<b>1,108,800</b>	<b>1,330,825</b>	<b>1,395,212</b>	<b>1,463,778</b>	<b>1,533,147</b>	<b>1,607,250</b>
<b>2021 Plan Projected Demands (ac-ft/yr)</b>						
	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
Municipal	192,049	199,870	207,822	218,266	230,468	243,611
Manufacturing	305,973	353,415	353,415	353,415	353,415	353,415
Mining	27,523	24,547	18,169	15,488	12,986	12,093
Steam Electric Power	67,011	67,011	67,011	67,011	67,011	67,011
Livestock	47,157	50,284	54,029	58,524	63,890	65,103
Irrigation	98,368	98,368	98,368	98,368	98,368	98,368
<b>2021 Total for ETRWPA</b>	<b>738,081</b>	<b>793,495</b>	<b>798,814</b>	<b>811,072</b>	<b>826,138</b>	<b>839,601</b>
<b>Percent Change in Texas Water Development Board Demand Projections from 2016 to 2021</b>						
	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
Municipal	2%	2%	2%	2%	2%	2%
Manufacturing	-50%	-56%	-58%	-60%	-61%	-63%
Mining	0%	0%	0%	0%	0%	0%
Steam Electric Power	-18%	-30%	-40%	-49%	-57%	-64%
Livestock	96%	97%	97%	98%	99%	99%
Irrigation	-45%	-48%	-50%	-50%	-50%	-49%
<b>Total for ETRWPA</b>	<b>-33%</b>	<b>-40%</b>	<b>-43%</b>	<b>-45%</b>	<b>-46%</b>	<b>-48%</b>

### 11.2.2 Drought of Record

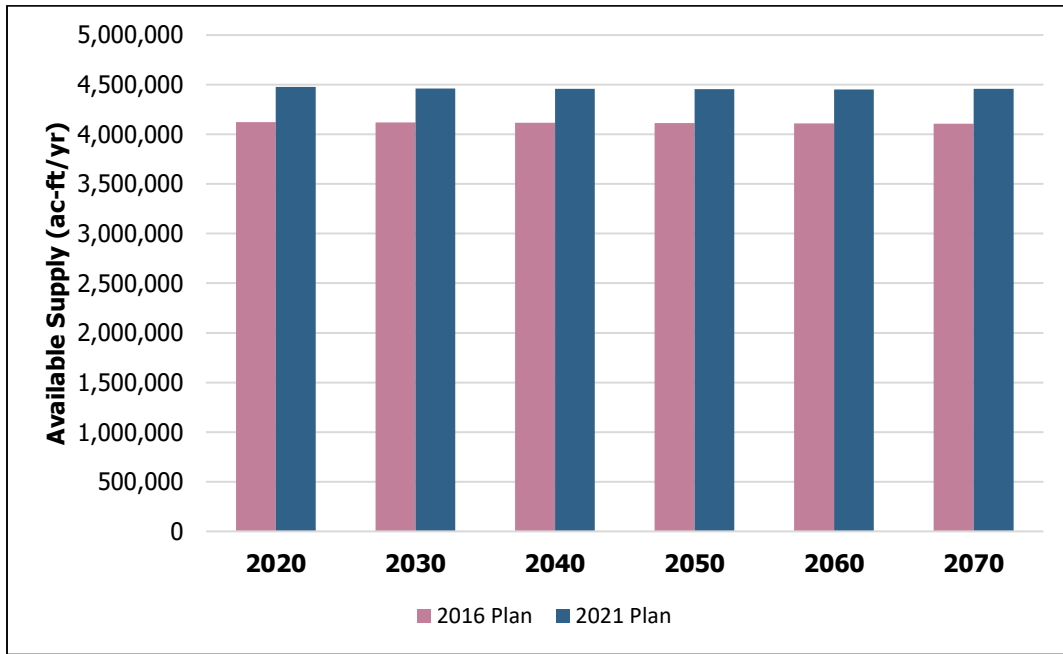
The drought of the 1950’s was the drought of record that has been used for regional water planning in the 2011, 2016, and this 2021 Plan. In all three plans, surface water supplies were determined using the Texas Commission on Environmental Quality (TCEQ) approved Water Availability Models that only incorporate historical hydrologic conditions that occurred between 1940 and 1996. Chapter 7 of the 2021 Plan includes a detailed examination of more recent droughts within the region and suggests that the 2010-2012 period was one of significant drought for the ETRWPA. For a full evaluation of the impact of a potential new drought of record on surface water supply availability, the Water Availability Models should be updated by TCEQ to incorporate the hydrologic conditions that have occurred since 1996.

### 11.2.3 Water Availability

Available water supplies refers to the maximum amount of raw water that could be produced by a source in a drought of record during a repeat of the drought of record, regardless of whether the supply is



physically connected to or legally accessible by an entity. The total water availability increased in every decade by 8 percent from the 2016 Plan to the 2021 Plan, as shown in Figure 11.2 and Table 11.2 below. This increase in availability is largely due to increased permitted surface water supplies. One major explanation for the increase is the approval of a 2016 strategy to increase supplies from Toledo Bend.



**Figure 11.2 Total Available Supply for the East Texas Regional Water Planning Area from the 2016 and 2021 Plans**



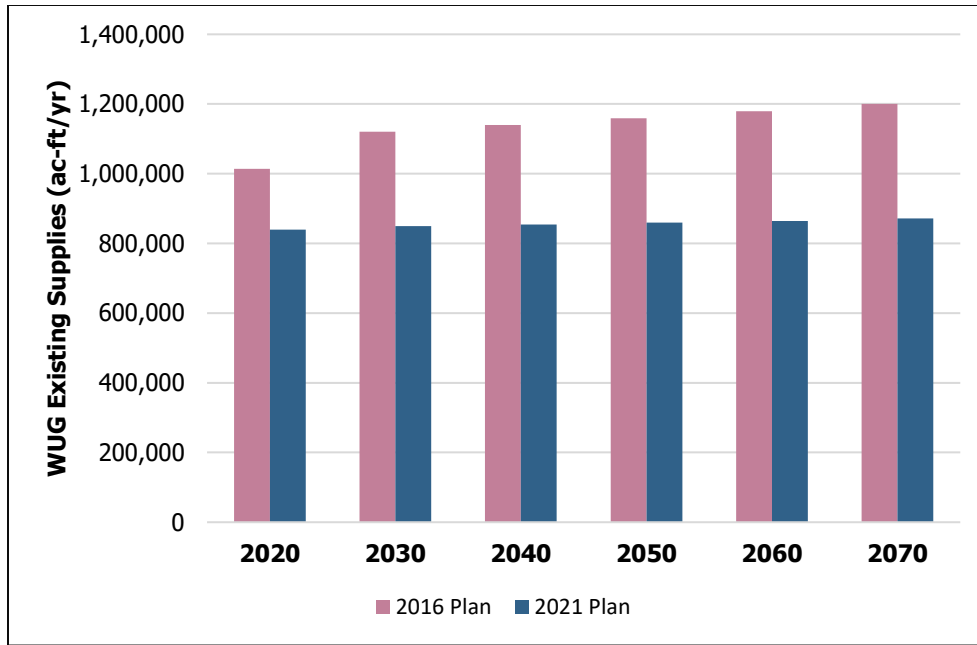
**Table 11.2 Summary of Available Supply in the East Texas Regional Water Planning Area by Decade**

<b>2016 Plan Available Supply (ac-ft/yr)</b>						
	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
Reservoirs (permitted)	1,958,512	1,954,328	1,950,141	1,945,955	1,941,769	1,937,675
Run-of-the-River (freshwater)	606,346	607,145	608,083	609,290	610,720	612,001
Run-of-the-River (brackish)	1,036,462	1,036,462	1,036,462	1,036,462	1,036,462	1,036,462
Groundwater	489,876	490,090	489,478	488,732	487,696	487,696
Local Supplies	19,367	19,367	19,367	19,367	19,367	19,367
Reuse	13955	13955	13955	13955	13955	13955
<b>2016 Total for ETRWPA</b>	<b>4,124,518</b>	<b>4,121,347</b>	<b>4,117,486</b>	<b>4,113,761</b>	<b>4,109,969</b>	<b>4,107,156</b>
<b>2021 Plan Available Supply (ac-ft/yr)</b>						
	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
Reservoirs (permitted)	2,255,265	2,251,402	2,247,600	2,243,702	2,239,008	2,233,125
Run-of-the-River (freshwater)	588,603	589,402	590,340	591,547	592,977	594,258
Run-of-the-River (brackish)	1,036,462	1,036,462	1,036,462	1,036,462	1,036,462	1,036,462
Groundwater	548,868	548,258	548,121	547,520	546,379	545,543
Local Supplies	21,783	21,783	21,783	21,783	21,783	21,783
Reuse	13,986	13,999	14,012	14,023	14,037	14,052
<b>2021 Total for ETRWPA</b>	<b>4,464,967</b>	<b>4,461,306</b>	<b>4,458,318</b>	<b>4,455,037</b>	<b>4,450,646</b>	<b>4,445,223</b>
<b>Percent Change in Available Supply from 2016 to 2021</b>						
	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
Reservoirs (permitted)	15%	15%	15%	15%	15%	15%
Run-of-the-River (freshwater)	-3%	-3%	-3%	-3%	-3%	-3%
Run-of-the-River (brackish)	0%	0%	0%	0%	0%	0%
Groundwater	12%	12%	12%	12%	12%	12%
Local Supplies	12%	12%	12%	12%	12%	12%
Reuse	0%	0%	0%	0%	1%	1%
<b>Total for ETRWPA</b>	<b>8%</b>	<b>8%</b>	<b>8%</b>	<b>8%</b>	<b>8%</b>	<b>8%</b>

### 11.2.4 Existing Supplies of Water User Groups and Wholesale Water Providers

Existing water supply is the maximum amount of water that is physically and legally accessible from existing sources for immediate use by a water user group under a repeat of a drought of record conditions. The existing water supplies of WUGs decreased between 21 percent and 38 percent in every decade from the 2016 Plan to the 2021 Plan, as shown in Figure 11.3 and Table 11.3 below. The largest decrease in supplies occurred in water user groups from Jefferson County who collectively had an average decrease in existing supplies between 143,000 and 312,000 acre-feet per year (ac-ft per year) in every decade of the planning period.





**Figure 11.3 Total Existing Supplies of Water User Groups in the East Texas Regional Water Planning Area from the 2016 and 2021 Plans**

**Table 11.3 Summary of Existing Supplies of Water User Groups in the East Texas Regional Water Planning Area by Decade**

2016 WUG Existing Supplies (ac-ft/yr)						
County	2020	2030	2040	2050	2060	2070
Anderson	15,372	15,473	15,411	15,299	15,257	15,239
Angelina	40,719	41,304	41,850	42,393	42,978	43,590
Cherokee	17,454	17,563	17,683	17,922	18,243	18,852
Hardin	17,934	18,232	18,441	18,573	18,581	18,552
Henderson*	7,842	7,705	7,603	7,561	7,154	6,891
Houston	11,448	11,488	11,540	11,604	11,680	11,830
Jasper	102,073	102,015	101,942	101,884	101,847	101,833
Jefferson	512,147	613,229	629,139	643,731	658,509	673,965
Nacogdoches	28,089	28,713	29,436	30,239	31,210	32,363
Newton	17,260	17,333	17,409	17,477	17,544	17,616
Orange	80,249	80,307	80,430	80,557	80,675	80,776
Panola	16,993	17,308	17,160	16,735	17,429	17,666
Polk*	3,217	3,354	3,484	3,606	3,717	3,838
Rusk	64,294	64,652	64,668	64,677	64,693	64,738
Sabine	5,850	5,850	5,850	5,850	5,850	5,850
San Augustine	4,573	4,670	4,781	4,910	5,052	5,052
Shelby	14,667	14,677	14,670	14,972	14,317	14,663
Smith*	40,131	42,343	44,662	47,352	50,396	53,634
Trinity*	1,960	1,960	1,961	1,962	1,960	1,965
Tyler	11,998	11,959	11,922	11,904	11,905	11,910
<b>2016 Total for ETRWPA</b>	<b>1,014,270</b>	<b>1,120,135</b>	<b>1,140,042</b>	<b>1,159,208</b>	<b>1,178,997</b>	<b>1,200,823</b>



**Table 11.3 Summary of Existing Supplies of WUGs In the ETRWPA by Decade (cont.)**

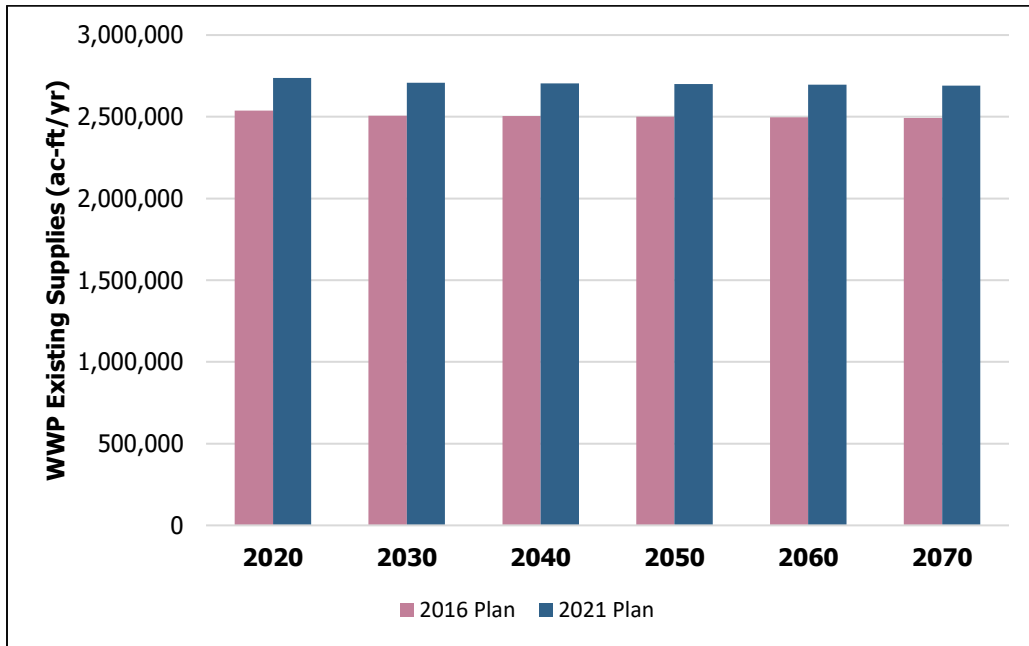
<b>2021 WUG Existing Supplies (ac-ft/yr)</b>						
<b>County</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
Anderson	19,164	19,326	19,290	19,183	19,140	19,120
Angelina	38,612	39,004	39,301	39,640	40,009	40,349
Cherokee	17,563	17,965	18,381	18,966	19,641	20,297
Hardin	8,022	8,223	8,356	8,479	8,606	8,710
Henderson*	8,155	8,199	8,139	8,191	7,558	7,148
Houston	11,692	11,670	11,589	11,518	11,445	11,412
Jasper	85,173	96,446	96,282	96,177	96,129	96,117
Jefferson	368,771	359,445	360,495	360,859	361,389	362,053
Nacogdoches	31,947	32,716	33,499	34,400	35,427	36,601
Newton	16,846	16,876	16,915	16,973	17,037	17,109
Orange	74,632	74,688	74,713	74,770	74,840	74,900
Panola	16,937	17,252	17,105	16,680	17,375	17,612
Polk*	2,671	2,747	2,822	2,902	2,975	3,041
Rusk	61,526	65,287	65,656	66,106	66,633	67,180
Sabine	5,488	5,501	5,495	5,493	5,493	5,493
San Augustine	4,294	4,303	4,314	4,326	4,340	4,340
Shelby	16,149	16,044	15,924	16,132	15,355	15,570
Smith*	39,520	41,677	43,722	46,266	49,139	51,977
Trinity*	1,571	1,581	1,575	1,567	1,576	1,584
Tyler	10,940	10,928	10,831	10,757	10,703	10,676
<b>2021 Total for ETRWPA</b>	<b>839,673</b>	<b>849,878</b>	<b>854,404</b>	<b>859,385</b>	<b>864,810</b>	<b>871,289</b>
<b>Percent Change in WUG Existing Supplies from 2016 to 2021</b>						
<b>County</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
Anderson	20%	20%	20%	20%	20%	20%
Angelina	-5%	-6%	-6%	-7%	-7%	-8%
Cherokee	1%	2%	4%	6%	7%	7%
Hardin	-124%	-122%	-121%	-119%	-116%	-113%
Henderson*	4%	6%	7%	8%	5%	4%
Houston	2%	2%	0%	-1%	-2%	-4%
Jasper	-20%	-6%	-6%	-6%	-6%	-6%
Jefferson	-39%	-71%	-75%	-78%	-82%	-86%
Nacogdoches	12%	12%	12%	12%	12%	12%
Newton	-2%	-3%	-3%	-3%	-3%	-3%
Orange	-8%	-8%	-8%	-8%	-8%	-8%
Panola	0%	0%	0%	0%	0%	0%
Polk*	-20%	-22%	-23%	-24%	-25%	-26%
Rusk	-4%	1%	2%	2%	3%	4%
Sabine	-7%	-6%	-6%	-6%	-6%	-6%
San Augustine	-6%	-9%	-11%	-13%	-16%	-16%
Shelby	9%	9%	8%	7%	7%	6%
Smith*	-2%	-2%	-2%	-2%	-3%	-3%
Trinity*	-25%	-24%	-25%	-25%	-24%	-24%
Tyler	-10%	-9%	-10%	-11%	-11%	-12%
<b>Total for ETRWPA</b>	<b>-21%</b>	<b>-32%</b>	<b>-33%</b>	<b>-35%</b>	<b>-36%</b>	<b>-38%</b>

\* The counties marked with an asterisk are split between two water planning regions. The available supply presented in this table represents only the portion of those counties that are within the boundaries of Region I.





The existing water supplies of WWPs increased by 7 percent in every decade in the planning period from the 2016 Plan to the 2021 Plan, as shown in Figure 11.4 and Table 11.4 below. The largest increases in supplies were incurred by the Sabine River Authority of Texas and Center which both had an average increase in existing supplies of 19 percent in every decade of the planning period.



**Figure 11.4 Total Existing Supplies of Wholesale Water Providers in the East Texas Regional Water Planning Area from the 2016 and 2021 Plans**

**Table 11.4 Summary of Existing Supplies of Wholesale Water Providers in the East Texas Regional Water Planning Area by Decade**

2016 WWP Existing Supplies (ac-ft/yr)						
	2020	2030	2040	2050	2060	2070
Angelina and Neches River Authority	65	70	70	70	70	70
Angelina-Nacogdoches Water Control & Improvement District (WCID) No. 1	19,357	18,530	17,703	16,877	16,050	15,264
Athens Municipal Water Authority	6,949	6,869	6,788	6,707	6,626	6,546
Beaumont	33,844	35,807	37,525	37,525	37,525	37,525
Carthage	5,695	5,695	5,695	5,695	5,695	5,695
Center	4,285	4,285	4,285	4,285	4,285	4,285
Houston Co. WCID 1	3,500	3,500	3,500	3,500	3,500	3,501
Jacksonville	7,391	7,391	7,391	7,391	7,391	7,391
Lower Neches Valley Authority	1,201,876	1,173,876	1,173,876	1,173,876	1,173,876	1,173,876
Lufkin	38,644	38,640	38,635	38,631	38,627	38,623
Nacogdoches	23,176	22,792	22,409	22,026	21,642	21,268



**Table 11.4 Summary of Existing Supplies of WWPs in the ETRWPA by Decade (cont.)**

Panola Co. Freshwater Supply District No. 1	21,203	20,615	20,027	19,438	18,850	18,279
Port Arthur	26,253	26,223	25,996	25,949	25,930	25,929
Sabine River Authority of Texas	897,100	897,100	897,100	897,100	897,100	897,100
Tyler	40,756	40,756	40,756	40,756	40,756	40,756
Upper Neches River Municipal Water Authority	205,417	203,375	201,333	199,292	197,250	195,229
<b>Wholesale Water Provider Totals</b>	<b>2,537,531</b>	<b>2,507,554</b>	<b>2,505,129</b>	<b>2,501,168</b>	<b>2,497,233</b>	<b>2,493,407</b>
<b>2021 WWP Existing Supplies (ac-ft/yr)</b>						
	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
Angelina and Neches River Authority	65	70	70	70	70	70
Angelina-Nacogdoches Water Control & Improvement District (WCID) No. 1	20,340	19,635	18,890	18,150	16,715	14,690
Athens Municipal Water Authority	8,203	8,117	8,031	7,945	7,859	7,773
Beaumont	34,469	36,451	37,525	37,525	37,525	37,525
Carthage	5,564	5,564	5,564	5,564	5,565	5,565
Center	5,260	5,260	5,260	5,260	5,260	5,260
Houston Co. WCID 1	3,500	3,500	3,500	3,500	3,500	3,501
Jacksonville	7,391	7,391	7,391	7,391	7,391	7,391
Lower Neches Valley Authority	1,201,876	1,173,876	1,173,876	1,173,876	1,173,876	1,173,876
Lufkin	38,727	38,727	38,727	38,727	38,727	38,727
Nacogdoches	22,692	22,292	21,892	21,492	21,092	20,692
Panola Co. Freshwater Supply District No. 1	21,367	20,686	20,006	19,325	18,644	17,963
Port Arthur	25,684	25,655	25,434	25,389	25,370	25,369
Sabine River Authority of Texas	1,103,010	1,103,010	1,103,010	1,103,010	1,103,010	1,103,010
Tyler	41,056	41,056	41,056	41,056	41,056	41,056
Upper Neches River Municipal Water Authority	197,710	196,110	194,610	193,010	191,310	189,010
<b>Wholesale Water Provider Totals</b>	<b>2,736,915</b>	<b>2,707,401</b>	<b>2,704,843</b>	<b>2,701,291</b>	<b>2,696,970</b>	<b>2,691,479</b>



**Table 11.4 Summary of Existing Supplies of WWP in the ETRWPA by Decade (cont.)**

Percent Change in WUG Existing Supplies from 2016 to 2021						
	2020	2030	2040	2050	2060	2070
Angelina and Neches River Authority	0%	0%	0%	0%	0%	0%
Angelina-Nacogdoches Water Control & Improvement District (WCID) No. 1	5%	6%	6%	7%	4%	-4%
Athens Municipal Water Authority	15%	15%	15%	16%	16%	16%
Beaumont	2%	2%	0%	0%	0%	0%
Carthage	-2%	-2%	-2%	-2%	-2%	-2%
Center	19%	19%	19%	19%	19%	19%
Houston Co. WCID 1	0%	0%	0%	0%	0%	0%
Jacksonville	0%	0%	0%	0%	0%	0%
Lower Neches Valley Authority	0%	0%	0%	0%	0%	0%
Lufkin	0%	0%	0%	0%	0%	0%
Nacogdoches	-2%	-2%	-2%	-2%	-3%	-3%
Panola Co. Freshwater Supply District No. 1	1%	0%	0%	-1%	-1%	-2%
Port Arthur	-2%	-2%	-2%	-2%	-2%	-2%
Sabine River Authority of Texas	19%	19%	19%	19%	19%	19%
Tyler	1%	1%	1%	1%	1%	1%
Upper Neches River Municipal Water Authority	-4%	-4%	-3%	-3%	-3%	-3%
<b>Wholesale Water Provider Totals</b>	<b>7%</b>	<b>7%</b>	<b>7%</b>	<b>7%</b>	<b>7%</b>	<b>7%</b>

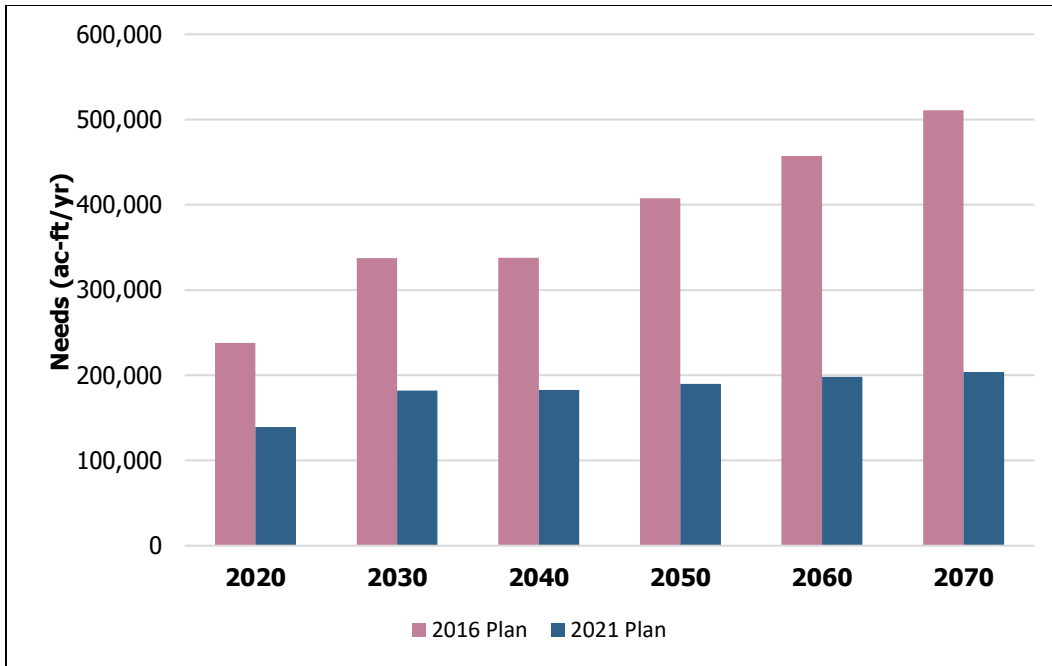
### 11.2.5 Identified Needs

A comparison of WUG and WWP identified needs between the 2016 Plan and the 2021 Plan follows.

#### Water User Groups

In the last round of planning, there were 40 WUGs with identified needs; approximately 80 percent of these needs were from the manufacturing category of water uses. In the 2021 Plan, there are 44 WUGs with identified needs; approximately 75 percent of these needs are from manufacturing. Even though there are more WUGs with an identified need in this round of planning compared to the previous round of planning, the decrease in manufacturing needs reduced the total volume of needs by an average of 50 percent in every decade of the planning period. The summary of total identified water user group needs is presented in Figure 11.5 and Table 11.5 below.





**Figure 11.5 Total Identified Water User Group Needs for the East Texas Regional Water Planning Area in the 2016 and 2021 Plans**



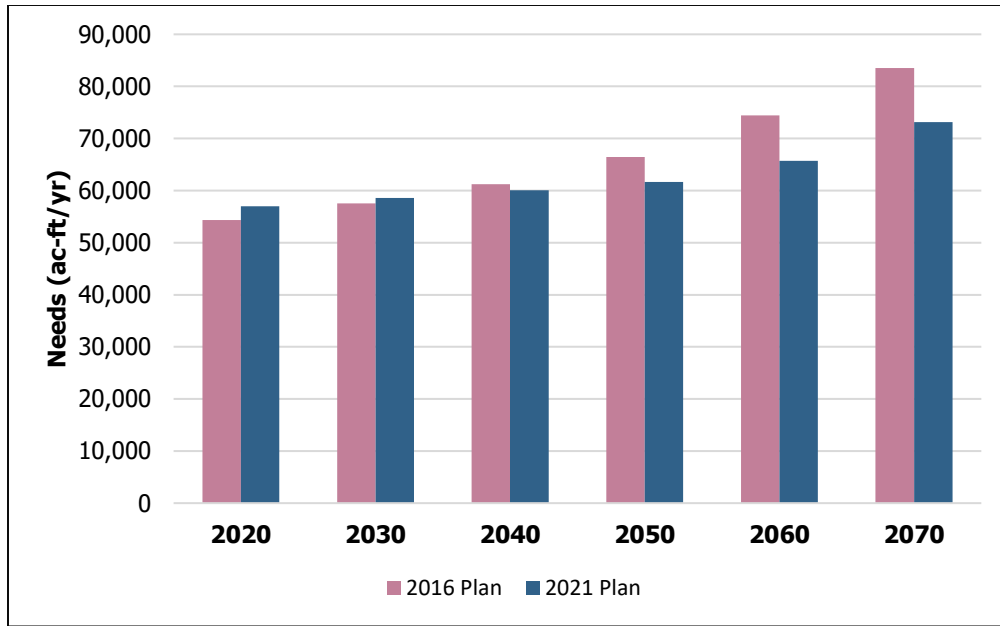
**Table 11.5 Summary of Identified Water User Group Needs from the East Texas Regional Water Planning Area by Use Category and Decade**

<b>2016 Plan Identified WUG Needs (ac-ft/yr)</b>						
	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
Municipal	121	534	1,462	4,517	8,749	13,445
Manufacturing	196,450	287,997	278,959	330,608	349,817	370,080
Mining	9,586	7,160	2,794	2,338	2,048	1,916
Steam Electric Power	25,422	33,529	44,283	57,789	82,036	110,014
Livestock	3,011	4,212	5,663	7,419	9,541	9,983
Irrigation	3,512	4,011	4,452	4,812	5,076	5,427
<b>2016 Total for ETRWPA</b>	<b>238,102</b>	<b>337,443</b>	<b>337,613</b>	<b>407,483</b>	<b>457,267</b>	<b>510,865</b>
<b>2021 Plan Identified WUG Needs (ac-ft/yr)</b>						
	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
Municipal	501	877	2,551	5,832	9,265	13,590
Manufacturing	102,587	145,222	145,206	145,188	145,171	145,155
Mining	8,413	5,281	903	468	308	207
Steam Electric Power	3,494	3,494	3,494	3,494	3,494	3,494
Livestock	23,708	26,613	30,128	34,381	39,483	40,666
Irrigation	526	526	526	526	556	576
<b>2021 Total for ETRWPA</b>	<b>139,229</b>	<b>182,013</b>	<b>182,808</b>	<b>189,889</b>	<b>198,277</b>	<b>203,688</b>
<b>Percent Change in Identified WUG Needs from 2016 to 2021</b>						
	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
Municipal	314%	64%	74%	29%	6%	1%
Manufacturing	-48%	-50%	-48%	-56%	-59%	-61%
Mining	-12%	-26%	-68%	-80%	-85%	-89%
Steam Electric Power	-86%	-90%	-92%	-94%	-96%	-97%
Livestock	687%	532%	432%	363%	314%	307%
Irrigation	-85%	-87%	-88%	-89%	-89%	-89%
<b>Total for ETRWPA</b>	<b>-42%</b>	<b>-46%</b>	<b>-46%</b>	<b>-53%</b>	<b>-57%</b>	<b>-60%</b>

### Wholesale Water Providers

In the last round of planning, there were 7 WWPs out of 16 total WWPs with identified needs; approximately 70 percent of these needs were from the Angelina Neches River Authority. In the 2021 Plan, there are 4 WWPs with identified needs; approximately 72 percent of these needs are from the Angelina Neches River Authority. The total needs for the region have increased in 2020 and 2030 by 2,629 and 1,055 acre-feet per year respectively but has decreased in every decade from 2040 to 2070, as shown in Figure 11.6 and Table 11.6 below. In both rounds of planning, the WWPs have identified multiple WMSs to obtain available water in the region to meet their identified needs. The change in needs from the last round of planning to this round of planning is largely due to changes in demand rather than changes in supply.





**Figure 11.6 Total Identified Wholesale Water Provider Needs for the East Texas Regional Water Planning Area in the 2016 and 2021 Plans**



**Table 11.6 Summary of Identified Wholesale Water Provider Needs from the East Texas Regional Water planning Area by Use Category and Decade**

<b>2016 Plan Identified WWP Needs (ac-ft/yr)</b>						
	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
AN WCID #1	1,212	2,039	2,866	3,692	4,519	5,305
ANRA	45,319	45,319	45,319	45,319	45,319	45,319
Athens MWA	2,766	3,048	3,289	3,637	6,323	9,633
Beaumont	0	0	578	2570	4994	7754
Center	0	0	0	0	0	171
HC WCID #1	244	268	296	321	352	386
Lufkin	0	0	0	0	0	0
Tyler	0	0	0	0	0	0
UNRMWA	4,831	6,849	8,869	10,892	12,919	14,940
<b>2016 Total for ETRWPA</b>	<b>54,372</b>	<b>57,523</b>	<b>61,217</b>	<b>66,431</b>	<b>74,426</b>	<b>83,508</b>
<b>2021 Plan Identified WWP Needs (ac-ft/yr)</b>						
	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
AN WCID #1	0	0	0	0	0	0
ANRA	44,464	44,464	44,464	44,464	44,464	44,464
Athens MWA	0	0	0	0	2,386	5,566
Beaumont	0	0	0	0	0	1,938
Center	0	0	0	0	0	0
HC WCID #1	0	0	0	0	0	0
Lufkin	0	0	0	0	0	0
Tyler	0	0	0	0	0	0
UNRMWA	12,537	14,114	15,592	17,174	18,859	21,159
<b>2021 Total for ETRWPA</b>	<b>57,001</b>	<b>58,578</b>	<b>60,056</b>	<b>61,638</b>	<b>65,709</b>	<b>73,127</b>
<b>Percent Change in Identified WWP Needs from 2016 to 2021</b>						
	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
AN WCID #1	N/A	N/A	N/A	N/A	N/A	N/A
ANRA	-2%	-2%	-2%	-2%	-2%	-2%
Athens MWA	N/A	N/A	N/A	N/A	-62%	-42%
Beaumont	N/A	N/A	N/A	N/A	N/A	-75%
Center	N/A	N/A	N/A	N/A	N/A	N/A
HC WCID #1	N/A	N/A	N/A	N/A	N/A	N/A
Lufkin	N/A	N/A	N/A	N/A	N/A	N/A
Tyler	N/A	N/A	N/A	N/A	N/A	N/A
UNRMWA	160%	106%	76%	58%	46%	42%
<b>Total for ETRWPA</b>	<b>5%</b>	<b>2%</b>	<b>-2%</b>	<b>-7%</b>	<b>-11%</b>	<b>-10%</b>

Note: Angelina-Nacogdoches Water Control & Improvement District No. 1 (AN WCID #1)  
 Angelina and Neches River Authority (ANRA)  
 Municipal Water Authority (MWA)  
 Upper Neches River Municipal Water Authority (UNRMWA)

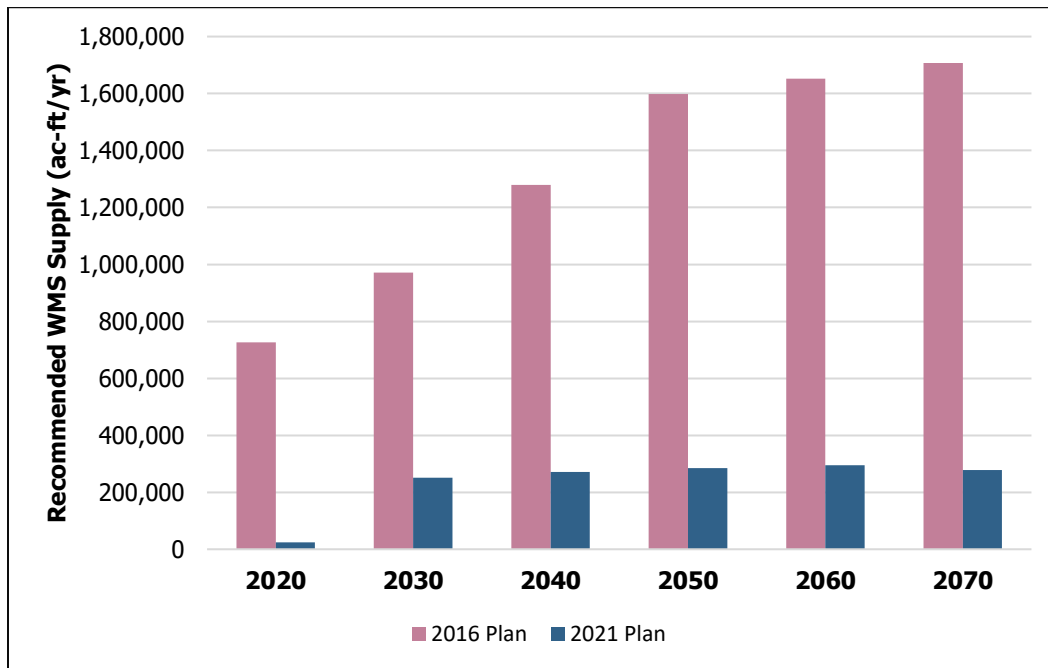


### 11.2.6 Water Management Strategies and Water Management Strategy Projects

To the extent practical, the RWPG developed WMSs that serve multiple WUGs to achieve economies of scale. Additionally, during the project prioritization process, projects that serve multiple WUGs are given a higher score, resulting in a higher prioritization. Oftentimes, however, strategies that benefit the entire region are not financially feasible in the ETRWPA. The ETRWPG discussed during the regularly scheduled meeting on September 16<sup>th</sup>, 2020 that region-wide strategies are often unnecessary due to the abundance of water available in the area. Regionalization could become more practical as conditions change in the future.

#### Recommended Water Management Strategies

The 2016 Plan included 70 Recommended WMSs with a total supply of over 725,00 acre-feet per year beginning in 2020 and increasing to over 1,700,000 acre-feet per year beginning in 2070. In the 2021 Plan, there are 134 Recommended WMSs with a total supply of over 24,468 acre-feet beginning in 2020 and increasing to over 278,546 acre-feet per year beginning in 2070, as shown in Figure 11.7. Changes in WUG and WWP long term water planning account for differences observed between the 2016 and 2021 Plans. A major change in the 2021 Plan is a conservation WMS was developed for all municipal WUGs with a base water use of over 140 gpcd rather than only including conservation WMSs for WUGs with projected needs.



**Figure 11.7 Total Supply of Recommended Water Management Strategies for the East Texas Regional Water Planning Area in the 2016 and 2021 Plans**





### Alternative Water Management Strategies

The 2016 Plan included four Alternative WMSs with a total of 33,574 acre-feet per year for every decade in the planning period (2020-2070). The Region I 2021 Plan includes four Alternative WMSs with a total of 24 acre-feet per year in 2020 decreasing to 10 acre-feet per year in 2070, as shown in Table 11.7 below. All four Alternative WMSs included in the Region I plan were developed by Regions C and I for WUGs in Henderson or Athens Counties. This decrease in supply from alternative strategies is largely due to project sponsors' increased level of planning to develop and confidence in the feasibility of recommended WMSs negating the need for alternative strategies.

**Table 11.7 Summary of Water Management Strategies in the East Texas Regional Water planning Area by Decade**

<b>2016 Plan Water Management Strategies Supply (ac-ft/yr)</b>						
	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
Recommended WMSs	726,190	970,814	1,278,989	1,598,554	1,652,293	1,707,025
Alternative WMSs	33,574	33,574	33,574	33,574	33,574	33,574
<b>2021 Plan Water Management Strategies Supply (ac-ft/yr)</b>						
	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
Recommended WMSs	24,468	250,791	271,865	284,718	294,829	278,546
Alternative WMSs	24	23	22	22	13	10
<b>Percent Change in Water Management Strategy Supply from 2016 to 2021</b>						
	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
Recommended WMSs	-97%	-74%	-79%	-82%	-82%	-84%
Alternative WMSs	-100%	-100%	-100%	-100%	-100%	-100%

### 11.2.7 Simplified Planning

The purpose of this section is to identify how simplified planning in the 2021 Plan evaluated the differences in water demands, availability, and supplies of the ETRWPA compared to the 2016 Plan to determine no significant changes had occurred in the region. In addition, this section shall identify what data was adopted directly from the previous plan for inclusion in the current, simplified plan. However, the ETRWPG made a declaration of intent to forgo simplified planning at its general meeting held August 15, 2018.



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