

4 Identification of Water Needed

Texas Water Development Board (TWDB) guidelines require that reserves and needs for additional water supply be determined for each water user group in the region based on the comparison of current water supply and projected demand. The specific surpluses and needs shown should be treated with caution because their development requires certain assumptions which are detailed to the right.

The resulting comparison shows the reserves and needs that will exist in Region C if no steps are taken to connect existing water supplies or develop additional water supplies. This comparison is specifically required by Texas Water Development Board planning guidelines ⁽¹⁾. Development of infrastructure to make existing supplies available to users and development of new supplies are treated as water management strategies, and they will be discussed in **Chapter 5**.

Surpluses and needs shown in this chapter are based on certain assumptions:

- TWDB guidelines require that the comparison between supply and demand be based on currently connected supplies, without considering the future connection of already developed supplies ⁽¹⁾.
- The division of existing supplies among users can be made in many ways. For example, the amount of groundwater available in a county on a sustainable basis was divided among users based on historical use and on well capacities. The actual future groundwater use may differ from these assumptions.

Chapter Outline

Section 4.1 – Regional Comparison of Supply and Demand

Section 4.2 – Comparison of Connected Supply and Projected Demand by Major Water Provider

Section 4.3 – Comparison of Connected Supply and Projected Demand by Other Water Providers

Section 4.3 – Summary of Projected Water Shortages

Section 4.5 – Second-Tier Needs Analysis

Related Appendices

Appendix D – DB22 Reports

4.1 Regional Comparison of Supply and Demand

Table 4.1 and **Figure 4.2** the comparison of total currently connected water supply and total projected water demand in Region C, considering all water user groups. If only water user groups with projected shortages (and not reserves) are considered, there is a need for approximately 105,000 acre-feet per year of additional supply by 2020, growing to a need for 1.32 million acre-feet per year of additional supply by 2070, based on currently connected supplies.

Figure 4.1 shows the projected distribution of shortages. Approximately ninety percent of the projected shortage in 2070 is for municipal users. It should be noted that most of the “shortages” shown for 2020 are fully met with expected conservation savings which is treated as a water management strategy rather than a currently available supply. This is discussed in more detail in **Section 4.5** regarding the second-tier needs analysis.

Table 4.2 shows the comparison of supply and demands by county. In 2020, all 16 counties show a net need for more water. On a regional basis, 281 water users in Region C are predicted to have a need for

additional water by 2070. In general, the largest water needs are in Collin, Dallas, Denton and Tarrant Counties

The comparison of supply and demand in **Table 4.1** and **Figure 4.2** focuses on currently connected supplies. These currently connected supplies differ from “existing supplies” in TWDB’s online regional planning database (DB22) because DB22 does not recognize connected but unused supplies. For example, all of the groundwater in Region C is considered existing in DB22, but the connected supplies presented here do not consider unused groundwater an existing/connected supply. Region C also has a significant amount of unconnected supplies that could be made available to the region. An unconnected water supply is an existing and permitted supply that is not currently available due to infrastructure limitations.

Table 4.3 and **Figure 4.3** show the comparison of total supply with demand for Region C, including connected and unconnected supply and surface water imports from other regions. By 2050, the projected demand for Region C exceeds total connected and unconnected supply.

Table 4.1 Comparison of Connected Supply with Projected Demand by Decade

	Values in Acre-Feet per Year					
	2020	2030	2040	2050	2060	2070
Connected Supply in Region C	1,700,626	1,639,287	1,640,266	1,633,382	1,626,563	1,609,164
Projected Demand	1,733,893	1,936,605	2,151,925	2,390,623	2,641,476	2,898,540
Total Regional Need	33,267	297,318	511,659	757,241	1,014,913	1,289,376
Regional Need Considering Only WUGs with Needs	66,891	331,921	549,881	792,777	1,047,080	1,320,231
Counties with Needs	16	16	16	16	16	16
User Groups with Needs	156	238	257	268	276	281

Figure 4.2 Comparison of Connected Supply with Projected Demand by Decade for Region C

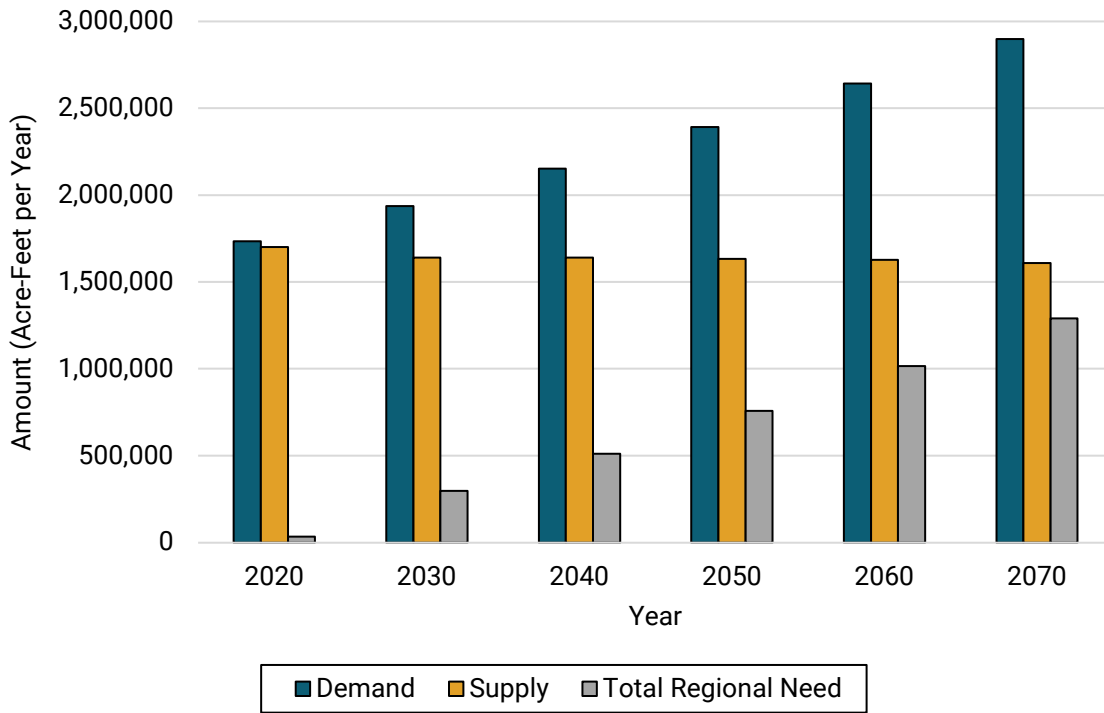


Figure 4.1 Projected Shortage by Use Type for Region C in 2070

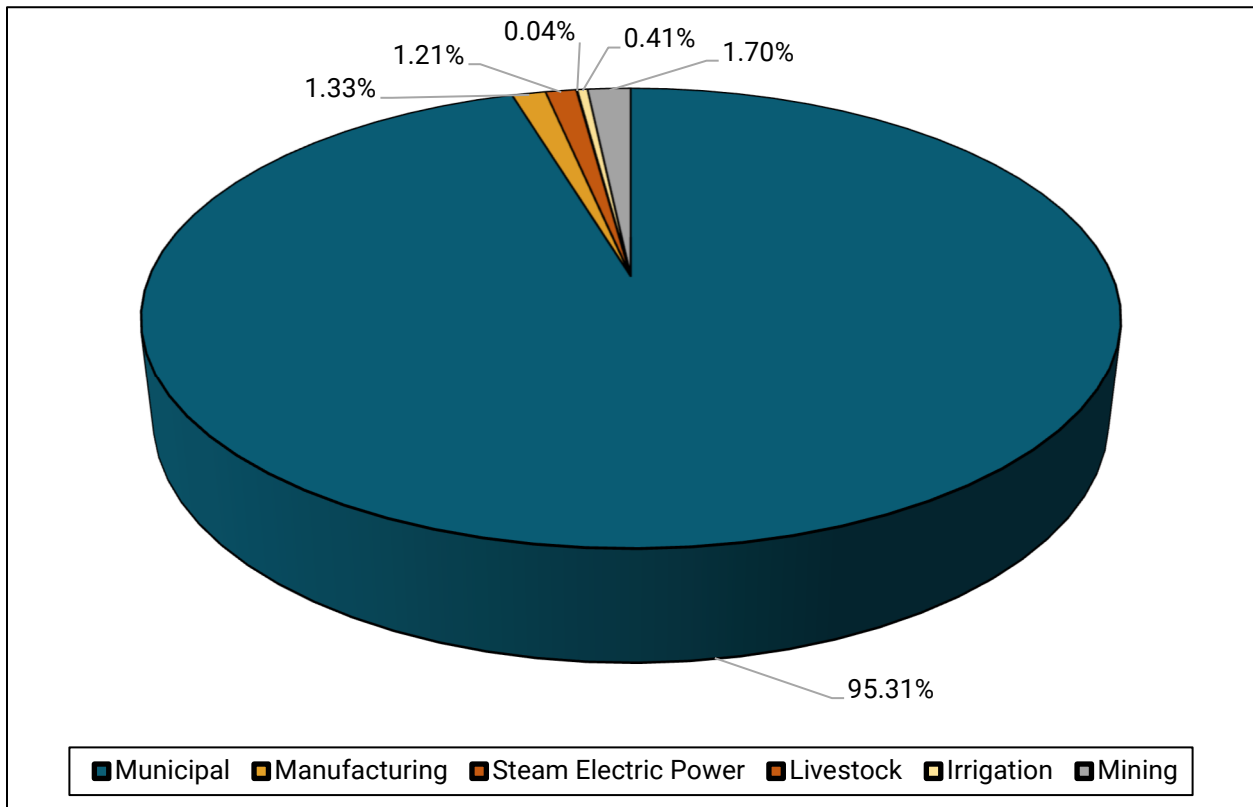


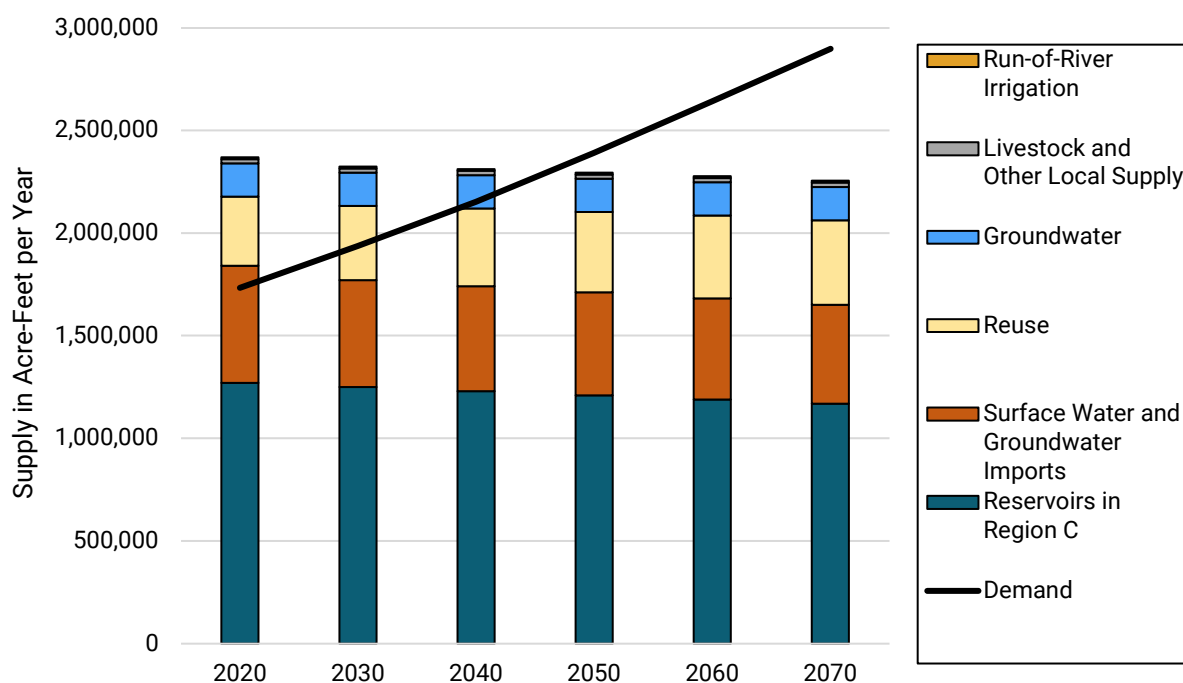
Table 4.2 Need by County for Region C (Acre-Feet per Year)

County	2020	2030	2040	2050	2060	2070
Collin	2,557	50,183	90,354	142,013	192,375	237,749
Cooke	588	220	301	447	1,828	5,922
Dallas	16,469	73,982	126,168	174,502	211,482	240,513
Denton	3,954	40,836	76,447	120,358	171,079	214,190
Ellis	3,374	10,629	15,257	24,854	39,015	64,749
Fannin	4,673	4,619	5,007	7,089	10,891	15,113
Freestone	11,218	11,809	12,840	14,396	15,774	19,245
Grayson	1,167	2,442	3,260	5,050	10,955	27,722
Henderson	861	1,313	1,740	2,405	4,752	8,515
Jack	162	768	1,238	1,614	1,905	2,190
Kaufman	997	5,572	10,590	16,698	26,279	39,375
Navarro	269	315	406	1,812	3,343	5,672
Parker	3,306	12,027	15,693	26,698	42,592	59,980
Rockwall	126	4,820	9,399	13,808	19,392	24,256
Tarrant	10,217	101,642	166,612	220,684	269,306	319,767
Wise	6,953	10,744	14,569	20,349	26,112	35,273
Total	66,891	331,921	549,881	792,777	1,047,080	1,320,231

Table 4.3 Comparison of Total Connected and Unconnected Supply with Demand (Acre-Feet per Year)

	2020	2030	2040	2050	2060	2070
Total Connected and Unconnected Supply	2,368,784	2,323,328	2,311,736	2,293,710	2,276,815	2,254,229
Demand	1,733,893	1,936,605	2,151,925	2,390,623	2,641,476	2,898,540
Reserve (Need)	634,891	386,723	159,811	(96,913)	(364,661)	(644,311)

Figure 4.3 Comparison of Connected and Unconnected Supply and Demand for Region C



4.2 Comparison of Connected Supply and Projected Demand by Major Water Provider

Under the planning rules, a major water provider (MWP) is defined as “a water user group or a wholesale water provider of particular significance to the region’s water supply as determined by the regional water planning group.”⁽¹⁾ The Region C Water Planning Group has designated six major water providers for Region C. In addition, two other wholesale water providers are considered “regional” water providers. **Table 4.4** shows the projected reserves or needs for additional supply for each major and regional water provider. Steps to meet these projected needs will be discussed in **Chapter 5D**.

Table 4.4 Reserve or (Need) by Major Water Provider Using Only Connected Supplies (Acre-Feet per Year)

Water Provider	Projected Reserve or (Need) for Current and Future Customers					
	2020	2030	2040	2050	2060	2070
Major Water Providers						
Tarrant Regional Water District	(6,886)	(96,243)	(180,377)	(268,052)	(350,790)	(452,052)
North Texas Municipal Water District	(1,766)	(82,267)	(141,385)	(216,720)	(295,275)	(368,961)
Fort Worth	(6,640)	(88,259)	(144,559)	(193,004)	(240,446)	(291,831)
Dallas Water Utilities	(20,466)	(47,873)	(107,474)	(174,706)	(238,482)	(281,878)
Trinity River Authority	(2,177)	(66,871)	(90,145)	(106,993)	(124,794)	(153,235)
Upper Trinity Regional Water District	7,522	(14,197)	(37,823)	(64,393)	(85,440)	(107,774)
Regional Water Providers						
Greater Texoma Utility Authority	2,743	(21,816)	(37,947)	(45,883)	(58,163)	(74,153)
Corsicana	2,138	978	(58)	(1,404)	(2,979)	(5,346)

4.3 Comparison of Connected Supply and Projected Demand by Other Water Providers

Projected supplies, demands, reserves, and shortages are summarized for each wholesale water provider and water user group in **Chapters 5D** and **5E**. As shown on **Table 4.1** there are 281 water user groups with projected water shortages by 2070.

Chapter 5E of this plan discusses the selection of water management strategies to address the requirements for additional supply. Many water user groups in Region C are served by wholesale water providers, and the needs of these water user groups will be addressed by obtaining additional supplies from the wholesale water providers. Other water user groups will require the development of individual water management strategies to address their needs.

4.4 Summary of Projected Water Shortages

All of the Region C counties have net needs beginning in 2020. There are over 150 water user groups that are projected to need more supply in 2020, growing to over 280 water user groups by 2070.

If no new supplies are developed, the total projected overall shortage in Region C is approximately 33,000 acre-feet per year by 2020, growing to over 1.29 million acre-feet per year by 2070. Many of the shortages in 2020 are fully addressed by water conservation measures.

Additionally, there are substantial unconnected supplies in Region C that could be made available by completing water transmission facilities. However, many Region C water suppliers depend on the region's major and regional water providers for all or part of their supplies. Most of the major and regional water providers will need to connect or develop additional supplies by 2020, and all will need additional supplies by 2040.

4.5 Second-Tier Needs Analysis

Regional planning rules require a second-tier needs analysis for all WUGs and MWP for which conservation and direct reuse are recommended WMSs. The second-tier needs analysis determines water needs that would remain if recommended conservation and direct reuse strategies were fully implemented. TWDB has provided a second-tier water needs analysis report from DB22. This report is included in **Appendix D. Table 4.5** summarizes the second-tier needs by WUG category.

Table 4.5 Second-Tier Water Needs by WUG Category

WUG Category	Values in Acre-Feet per Year					
	2020	2030	2040	2050	2060	2070
Municipal	8,707	161,883	359,079	568,095	784,058	1,003,940
County Other	1,668	2,052	2,327	7,500	18,597	43,334
Manufacturing	421	5,369	9,091	12,167	14,620	17,551
Mining	6,113	6,243	7,055	8,211	9,703	12,191
Steam Electric Power	6,824	9,041	10,597	11,873	12,835	13,663
Livestock	479	479	479	479	479	479
Irrigation	4,580	4,578	4,564	4,571	4,704	4,977
Total	28,792	189,645	393,192	612,896	844,996	1,096,135

4.6 Chapter 4 List of References

- (1) Texas Water Development Board, *Exhibit C Second Amended General Guidelines for Fifth Cycle Regional Water Plan Development* (April 2018), Austin, [Online] URL: http://www.twdb.texas.gov/waterplanning/rwp/planningdocu/2021/doc/current_docs/contract_docs/2ndAmendedExhibitC.pdf?d=1570051503683, April, 2018.