

Manufacturing Water Demand Projections Methodology for the 2026 Regional and 2027 State Water Plans

Methodology Summary

The draft manufacturing water demand projections were based upon the highest region-county manufacturing water use in the most recent five years of aggregated data (2015 through 2019) for manufacturing water users from the annual water use survey (WUS). Values from the WUS used in the max year calculation consist of gross intake (withdrawals and purchases) minus any sales to other entities. Within this context, such values are referred to as net use. Similar to the demand projections for the 2021 Regional Water Plans and the 2022 State Water Plan, fresh surface water and groundwater were included in net use. Additionally, volumes of reuse water, such as treated effluent, and brackish groundwater used by manufacturing facilities were included in the historical water use estimates and the water demand projections. However, saline surface water was not included in draft projections. The full intake was included in the baseline (minus sales), not consumptive use. The planning horizon for the sixth planning cycle is 2030 – 2080 and the projected demands apply the 2010-2019 U.S. Census Bureau’s County Business Patterns (CBP)¹ statewide rate of change to project future water demands, as described below.

After draft projections (decades 2030 through 2080) for each region-county are provided to the Regional Water Planning Groups (RWPGs), the RWPGs may request alterations to the draft projections, subject to adequate justification, documentation, and EA approval per guidance in *Exhibit C: General Guidelines for Development of the 2026 Regional Water Plans*.

Key changes from the previous projection methodology:

Demands were projected linearly using County Business Patterns historical number of manufacturing establishments, rather than holding projected demands constant for the long-term planning horizon.

Baseline Manufacturing Water Demand Projections

Using the highest water use year (2015 – 2019), the reported facility water use volumes were subtotaled by region and county. This max year amount, plus the calculated unaccounted water use as described below, is the baseline for the projections. Because the WUS focuses on the major water users within the manufacturing category, it may not capture all firms with significant water use. Given this, the baseline water demand was adjusted to add potential non-surveyed water use, i.e. unaccounted water use. This latter value was determined using a combination of the CBP and WUS data. The CBP provides the number of firms within various number of employee categories for nine manufacturing sectors statewide. This data was used to determine the potential number and size of missing firms from the WUS. Once the number of firms for possible addition was determined, an average water use per firm value, which is based on the 2019 WUS, was assigned for each manufacturing sector and firm size. The average water use value was multiplied by the potential number of missing firms in each NAICS sector to determine the statewide unaccounted water use. The unaccounted water use by NAICS was then

¹ <https://www.census.gov/programs-surveys/cbp/data/datasets.html>

distributed to each county based on percentage of number of employees estimated from the 2019 CBP data.

As an example, the historical manufacturing water use (intake minus sales) plus the calculated unaccounted water use in Hays County, is displayed as Baseline Water Demand in Table 1.

Table 1. Historical manufacturing water use for Hays County, TWDB water use survey

		Net Use Summary from Water Use Survey (acre-feet per year)							
Region	County	2015	2016	2017	2018	2019	Highest County Use (2015)	Unaccounted water use	Baseline Water Demand
K	Hays	134	106	119	119	131	134	+31	165
L	Hays	45	36	32	35	31	45	+7	52
	Total	179	142	151	154	162	179		217

Near-term (2030) Draft Projection Methodology

Once the baseline volume was established, the draft projections were developed using a statewide production growth proxy representing consistent incremental change to ensure the accommodation of potential near-term economic and manufacturing sector production growth. Since the first projected decade (2030) of the full planning horizon (2030 – 2080) is more than ten years from the baseline water use data, the statewide annual historical water use rate of change from 2010 - 2019 was chosen as the proxy to adjust the baseline value to the initial year of projections value (2030). This is to account for potential changes in production and water use that may occur between the baseline water use value and the first projected decade. Examples of how the near-term water use proxy (associated with manufacturing production growth) for annual rate of water use change is applied to baseline water use are in Table 2.

Table 2. Baseline water use and 2030 projections

Region	County	Baseline (acft)	WUS Average Annual Rate of Change (production growth proxy delta)	2030 (acft)
H	BRAZORIA	217,737	0.96%	238,640
D	CASS	32,985	0.96%	36,152
C	DALLAS	18,420	0.96%	20,188
K	HAYS	165	0.96%	181
L	HAYS	52	0.96%	57
G	MCLENNAN	4,166	0.96%	4,566
A	POTTER	8,272	0.96%	9,066

Long-term (2040 - 2080) Draft Projection Methodology

For each planning decade after 2030, a statewide manufacturing growth proxy was applied annually to project increases in manufacturing water demands. For the 2026 Regional Water Plans and the 2027 State Water Plan, the growth proxy was based on the CBP historical number of establishments in the manufacturing sector from 2010-2019 (Table 3). The statewide rate of change was applied to all region-county projections for each decade following 2030 (Table 4).

Table 3. Region-County 2030 projections multiplied by the CBP annual growth rate to project 2040 demands

Region	County	2030 (acft)	CBP Historical Average Annual Rate of Change (economic proxy delta)	2040 (acft)
H	BRAZORIA	238,640	0.37%	247,470
D	CASS	36,152	0.37%	37,490
C	DALLAS	20,188	0.37%	20,935
K	HAYS	181	0.37%	188
L	HAYS	57	0.37%	59
G	MCLENNAN	4,566	0.37%	4,735
A	POTTER	9,066	0.37%	9,401

Table 4. Region-County manufacturing water demand projections (acft)

Region	County	2030	2040	2050	2060	2070	2080
H	BRAZORIA	238,640	247,470	256,626	266,121	275,967	286,178
D	CASS	36,152	37,490	38,877	40,315	41,807	43,354
C	DALLAS	20,188	20,935	21,710	22,513	23,346	24,210
K	HAYS	181	188	195	202	209	217
L	HAYS	57	59	61	63	65	67
G	MCLENNAN	4,566	4,735	4,910	5,092	5,280	5,475
A	POTTER	9,066	9,401	9,749	10,110	10,484	10,872

In order to address changes in the manufacturing industry and any changes in water use patterns, the draft manufacturing water demands are re-estimated as part of each 5-year planning cycle. As with any methodology applied statewide, there may be specific cases for which modifications to this general methodology are warranted. In such cases, TWDB staff may modify the methodology as necessary while being consistent with the original intent.

Major Assumptions

- Baseline considered to be the highest single-year region-county manufacturing water use in the most recent five years of aggregated data (2015 through 2019).
- Historical TWDB annual water use estimates do not capture all manufacturing facilities in Texas, therefore, estimated water use is adjusted using CBP establishment and employee data, and added to the baseline.
- A statewide manufacturing water use growth proxy, including 2010-2019 historical water use estimates and 2010-2019 CBP number of manufacturing establishments, are used to project manufacturing water demands to ensure the accommodation of potential economic and manufacturing sector production growth.

Key Data Sources

Links to the key data sources in developing the projections:

1. Historical water use (county):

https://www3.twdb.texas.gov/apps/reports/WU/SumFinal_CountyReportWithReuse

2. 2021 RWP Projections (county):

https://www3.twdb.texas.gov/apps/reports/Projections/2022%20Reports/demand_county

3. U.S. Census Bureau's County Business Pattern Data:

<https://www.census.gov/programs-surveys/cbp.html>