



**Region I**  
East Texas Regional  
Water Planning Group

**Regional Water Planning  
Group Meeting**

etexwaterplan.org




June 21, 2023

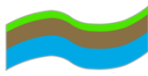
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**Agenda Item No. 11**


Report from Consultant Team




**PLUMMER**



**AGS**  
Advanced Groundwater Solutions, LLC



**FREESE  
AND  
NICHOLS**

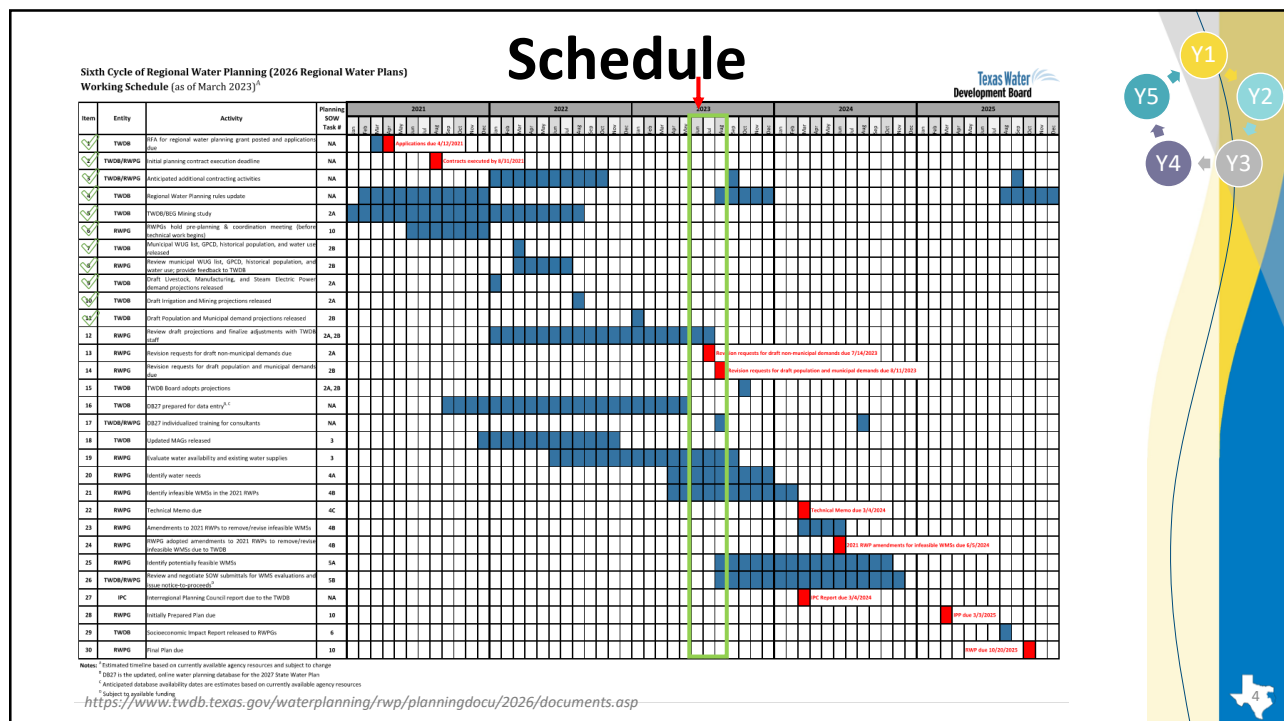


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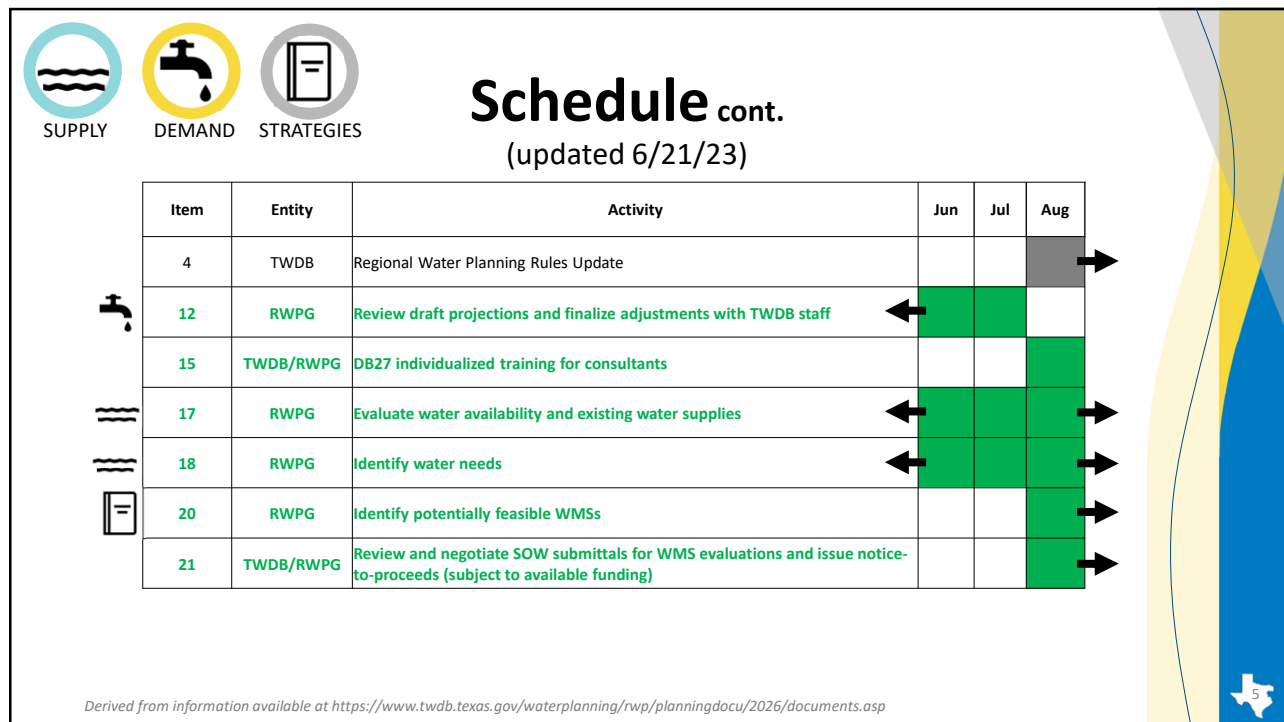
# Today's Discussion

- Update on Planning Process Schedule
- Review and Action on Recommended Revisions to Non-Municipal Demands
- Update, discussion, and possible action on GPCDs, Population Projections, and Municipal Demand Projections
- Update on Infeasible Water Strategies

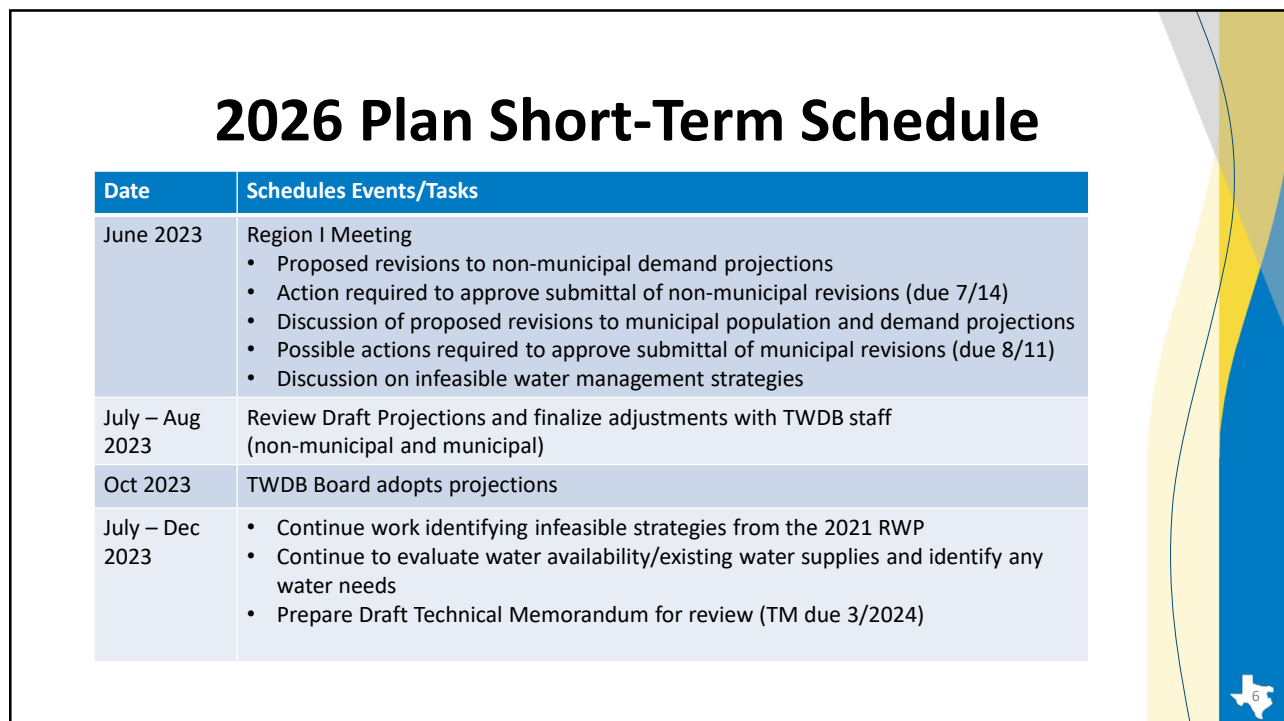
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## Regional Water Planning – Next Up

- Identification of Infeasible Water Management Strategies
- Hold remaining Major Water Provider Meetings
  - City of Jacksonville
  - City of Lufkin
  - City of Carthage
  - Panola County FWSD
- Review Water Supply Availability & Assumptions



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## Projection of Future Water Demands

Non-Municipal

- Livestock
- Manufacturing
- Steam-Electric Power Generation
- Mining
- Irrigation

Municipal

- Population (Based on 2020 Census)



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## Non-Municipal Demands

- Irrigation
- Livestock
- Manufacturing
- Mining
- Steam-Electric Power Generation



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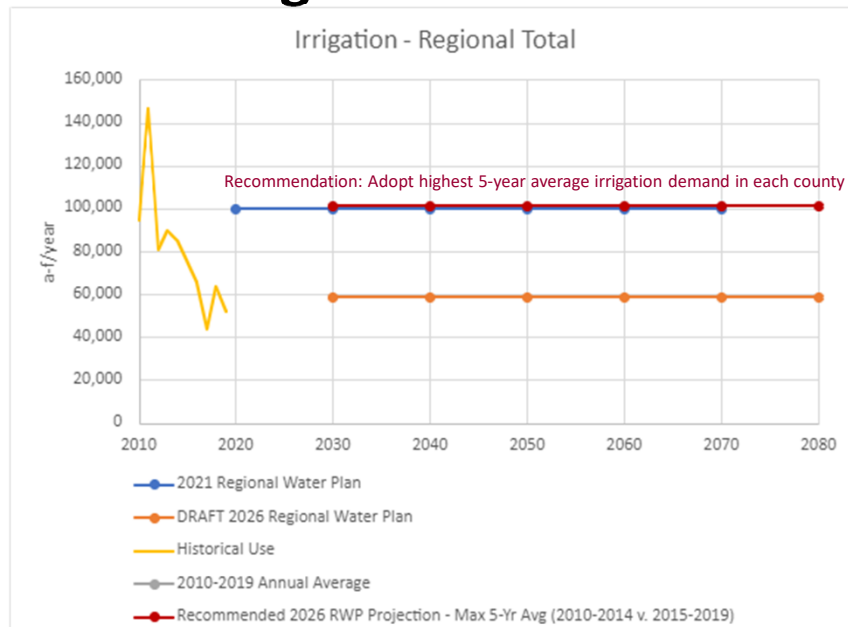
## Irrigation

- TWDB Methodology: same as 2021
- 2030 Baseline: Based on 5-year average (2015 – 2019)
  - Overall decreased demand in irrigation across all counties
- 2030 – 2080 held constant
- Recommendation:
  - Adjust methodology to highest 5-year average of water use (2010-2014 or 2015-2019) in each county; constant over 2030-2080



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# Irrigation Demands



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# Irrigation Demands

County	WUG Type	DRAFT Projections for the 2026 Regional Water Plans						Recommended 2026 RWP Projection - Max 5-Yr Avg (2010-2014 v. 2015-2019)						Comments:
		2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080	
Anderson	Irrigation	905	905	905	905	905	905	905	905	905	905	905	905	2015-2019
Angelina	Irrigation	147	147	147	147	147	147	779	779	779	779	779	779	2010-2014
Cherokee	Irrigation	399	399	399	399	399	399	451	451	451	451	451	451	2010-2014
Hardin	Irrigation	180	180	180	180	180	180	989	989	989	989	989	989	2010-2014
Henderson	Irrigation	459	459	459	459	459	459	459	459	459	459	459	459	2015-2019
Houston	Irrigation	1,531	1,531	1,531	1,531	1,531	1,531	2,137	2,137	2,137	2,137	2,137	2,137	2010-2014
Jasper	Irrigation	303	303	303	303	303	303	303	303	303	303	303	303	2015-2019
Jefferson	Irrigation	51,621	51,621	51,621	51,621	51,621	51,621	88,536	88,536	88,536	88,536	88,536	88,536	2010-2014
Nacogdoches	Irrigation	97	97	97	97	97	97	266	266	266	266	266	266	2010-2014
Newton	Irrigation	42	42	42	42	42	42	101	101	101	101	101	101	2010-2014
Orange	Irrigation	864	864	864	864	864	864	1,824	1,824	1,824	1,824	1,824	1,824	2010-2014
Panola	Irrigation	1,069	1,069	1,069	1,069	1,069	1,069	1,069	1,069	1,069	1,069	1,069	1,069	2015-2019
Polk	Irrigation	80	80	80	80	80	80	230	230	230	230	230	230	2010-2014
Rusk	Irrigation	173	173	173	173	173	173	276	276	276	276	276	276	2010-2014
Sabine	Irrigation	0	0	0	0	0	0	0	0	0	0	0	0	2015-2019
San Augustine	Irrigation	0	0	0	0	0	0	14	14	14	14	14	14	2010-2014
Shelby	Irrigation	7	7	7	7	7	7	10	10	10	10	10	10	2010-2014
Smith	Irrigation	414	414	414	414	414	414	448	448	448	448	448	448	2010-2014
Trinity	Irrigation	68	68	68	68	68	68	278	278	278	278	278	278	2010-2014
Tyler	Irrigation	270	270	270	270	270	270	354	354	354	354	354	354	2010-2014
<b>Regional Total</b>		<b>58,629</b>	<b>58,629</b>	<b>58,629</b>	<b>58,629</b>	<b>58,629</b>	<b>58,629</b>	<b>99,429</b>	<b>99,429</b>	<b>99,429</b>	<b>99,429</b>	<b>99,429</b>	<b>99,429</b>	

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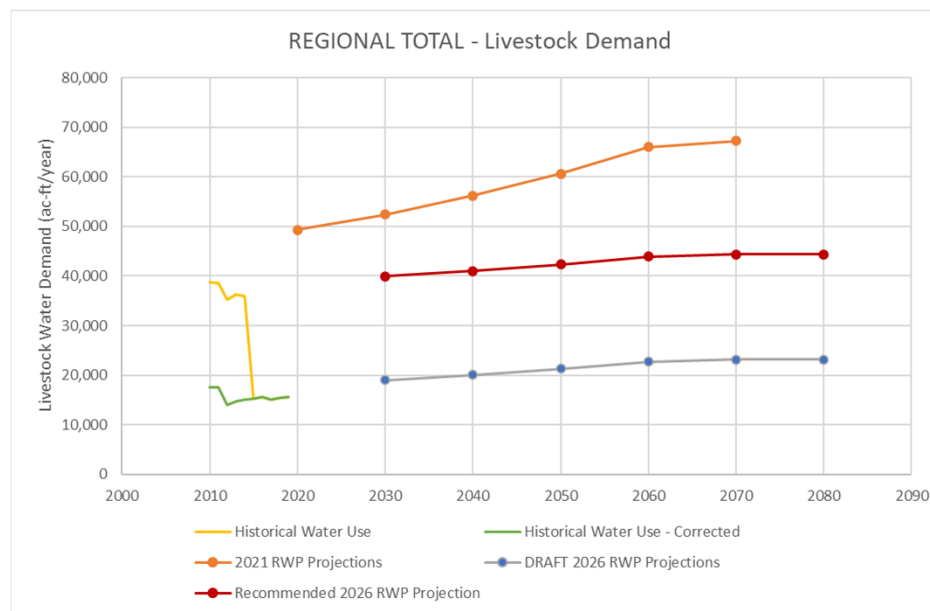
## Livestock

- TWDB Methodology did not change
- 2030 Baseline:
  - Updates to the water use geographic splits (2015 forward)
  - Changes in broiler chicken inventory estimates
  - Changes in assumed water use for 5 livestock types
- Recommendation:
  - Adjust methodology to highest livestock demand by county from 2015-2019 and include any additional planning group identified demands



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## Livestock Demands



**Recommendation:**  
Adopt highest total livestock demand by county, 2015-2019; includes additional MWP identified contracts



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## Livestock Demands

County	WUG Type	DRAFT Projections for the 2026 Regional Water Plans						Recommended 2026 RWP Projection - Max Use by County from 2015-2019						Comments:
		2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080	
Anderson	Livestock	1,252	1,252	1,252	1,252	1,252	1,252	1,321	1,321	1,321	1,321	1,321	1,321	
Angellina	Livestock	659	659	659	659	659	659	684	684	684	684	684	684	
Cherokee	Livestock	1,153	1,153	1,153	1,153	1,153	1,153	1,231	1,231	1,231	1,231	1,231	1,231	
Hardin	Livestock	178	178	178	178	178	178	201	201	201	201	201	201	
Henderson	Livestock	2,866	2,866	2,866	2,866	2,866	2,866	2,881	2,881	2,881	2,881	2,881	2,881	
Houston	Livestock	1,595	1,738	1,894	2,063	2,279	2,279	1,666	1,815	1,978	2,154	2,380	2,380	
Jasper	Livestock	489	489	489	489	489	489	10,492	10,492	10,492	10,492	10,492	10,492	Additional 10,000 AF/YR; identified TPWD contract
Jefferson	Livestock	713	713	713	713	713	713	799	799	799	799	799	799	
Nacogdoches	Livestock	2,491	2,613	2,755	2,917	3,159	3,159	12,625	12,754	12,904	13,074	13,329	13,329	Additional 10,000 AF/YR; identified TPWD contract
Newton	Livestock	98	98	98	98	98	98	114	114	114	114	114	114	
Orange	Livestock	186	186	186	186	186	186	187	187	187	187	187	187	
Panola	Livestock	1,069	1,069	1,069	1,069	1,069	1,069	1,142	1,142	1,142	1,142	1,142	1,142	
Polk	Livestock	101	101	101	101	101	101	114	114	114	114	114	114	
Rusk	Livestock	1,239	1,262	1,285	1,309	1,309	1,309	1,316	1,340	1,364	1,389	1,389	1,389	
Sabine	Livestock	263	345	439	542	542	542	323	424	540	667	667	667	
San Augustine	Livestock	519	577	644	718	718	718	533	592	660	736	736	736	
Shelby	Livestock	3,188	3,811	4,572	5,499	5,499	5,499	3,338	3,991	4,788	5,759	5,759	5,759	
Smith	Livestock	475	475	475	475	475	475	500	500	500	500	500	500	
Trinity	Livestock	178	178	178	178	178	178	187	187	187	187	187	187	
Tyler	Livestock	253	253	253	253	253	253	268	268	268	268	268	268	
<b>Regional Total</b>		<b>18,965</b>	<b>20,016</b>	<b>21,259</b>	<b>22,718</b>	<b>23,176</b>	<b>23,176</b>	<b>39,922</b>	<b>41,037</b>	<b>42,355</b>	<b>43,901</b>	<b>44,381</b>	<b>44,381</b>	



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## Manufacturing

- TWDB Methodology:
  - Add estimated for unaccounted (missing) water
  - Linear demand trend based on WUS data and 2010 – 2019 County Business Patterns (Census Bureau) historical rates of change
  - Baseline from county highest surveyed use (2015 – 2019)
- Proposed Methodology: use same methodology but include planning group and MWP identified new facilities to the baseline



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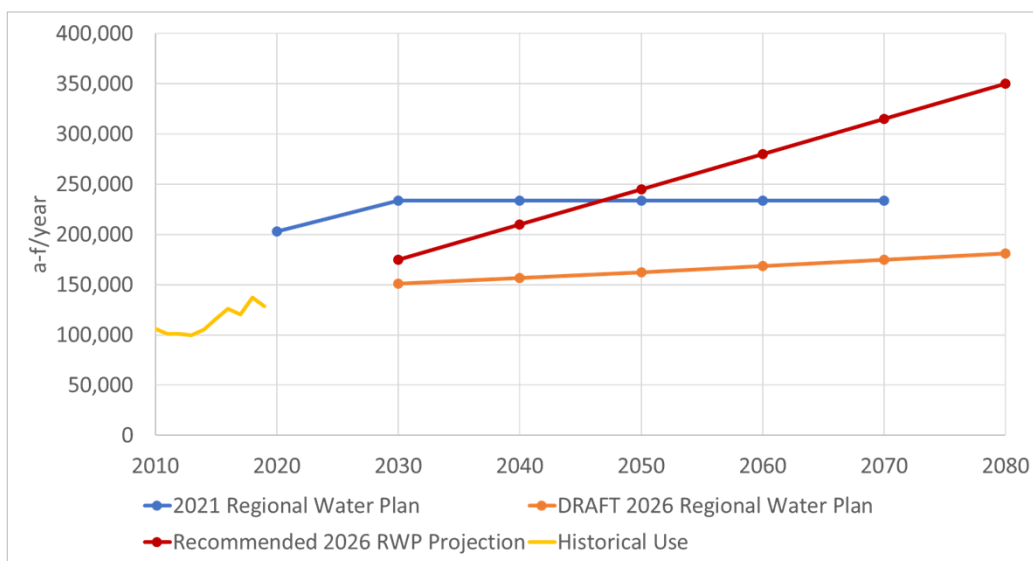
## Manufacturing – Jefferson County

- Met with MWP that serve Jefferson County
  - Identified several new manufacturing facilities
  - Expressed that manufacturing water use has increased substantially in recent years
  - Anticipate that manufacturing water use will continue to grow at similar rate in near and long-term
- Proposed projection: 175,000 ac-ft/year in 2030, 350,000 ac-ft/year in 2080
  - Approximate increase in annual water use rate of change from 2010 to TWDB baseline (2.63 percent)



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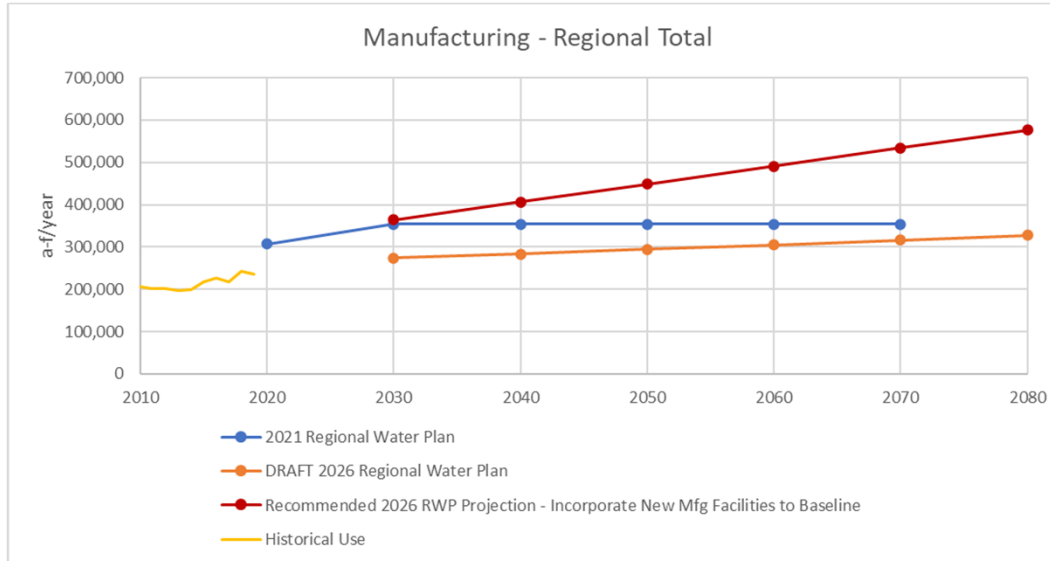
## Manufacturing – Jefferson County



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# Manufacturing Demands

Recommendation: Adopt 2026 TWDB Proposed Demand + Increase Baseline for Proposed New Facilities



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# Manufacturing Demands

County	WUG Type	DRAFT Projections for the 2026 Regional Water Plans						Recommended 2026 RWP Projection						Comments:
		2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080	
Anderson	Manufacturing	1,686	1,748	1,813	1,880	1,950	2,022	1,686	1,748	1,813	1,880	1,950	2,022	Incorporated New Facilities Into Baseline
Angellina	Manufacturing	5,518	5,722	5,934	6,154	6,382	6,618	5,612	5,819	6,034	6,258	6,489	6,729	
Cherokee	Manufacturing	82	85	88	91	94	97	82	85	88	91	94	97	
Hardin	Manufacturing	64	66	68	71	74	77	64	66	68	71	74	77	
Henderson	Manufacturing	0	0	0	0	0	0	0	0	0	0	0	0	
Houston	Manufacturing	201	208	216	224	232	241	201	208	216	224	232	241	
Jasper	Manufacturing	57,668	59,802	62,015	64,310	66,689	69,156	57,668	59,802	62,015	64,310	66,689	69,156	
Jefferson	Manufacturing	150,970	156,556	162,349	168,356	174,585	181,045	175,000	210,000	245,000	280,000	315,000	350,000	Incorporated New Facilities Into Baseline
Nacogdoches	Manufacturing	2,892	2,999	3,110	3,225	3,344	3,468	2,892	2,999	3,110	3,225	3,344	3,468	
Newton	Manufacturing	2	2	2	2	2	2	6,140	6,367	6,603	6,847	7,100	7,363	Incorporated New Facilities Into Baseline
Orange	Manufacturing	47,365	49,118	50,935	52,820	54,774	56,801	103,832	107,674	111,657	115,789	120,073	124,516	Incorporated New Facilities Into Baseline
Panola	Manufacturing	1,298	1,346	1,396	1,448	1,502	1,558	1,298	1,346	1,396	1,448	1,502	1,558	
Polk	Manufacturing	392	407	422	438	454	471	392	407	422	438	454	471	
Rusk	Manufacturing	26	27	28	29	30	31	26	27	28	29	30	31	
Sabine	Manufacturing	449	466	483	501	520	539	449	466	483	501	520	539	
San Augustine	Manufacturing	4	4	4	4	4	4	4	4	4	4	4	4	
Shelby	Manufacturing	1,860	1,929	2,000	2,074	2,151	2,231	1,860	1,929	2,000	2,074	2,151	2,231	
Smith	Manufacturing	2,850	2,955	3,064	3,177	3,295	3,417	2,857	2,963	3,072	3,186	3,304	3,426	Incorporated New Facilities Into Baseline
Trinity	Manufacturing	0	0	0	0	0	0	0	0	0	0	0	0	
Tyler	Manufacturing	118	122	127	132	137	142	118	122	127	132	137	142	
<b>Regional Total</b>		<b>273,445</b>	<b>283,562</b>	<b>294,054</b>	<b>304,936</b>	<b>316,219</b>	<b>327,920</b>	<b>360,180</b>	<b>402,031</b>	<b>444,137</b>	<b>486,506</b>	<b>529,147</b>	<b>572,071</b>	

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## Mining

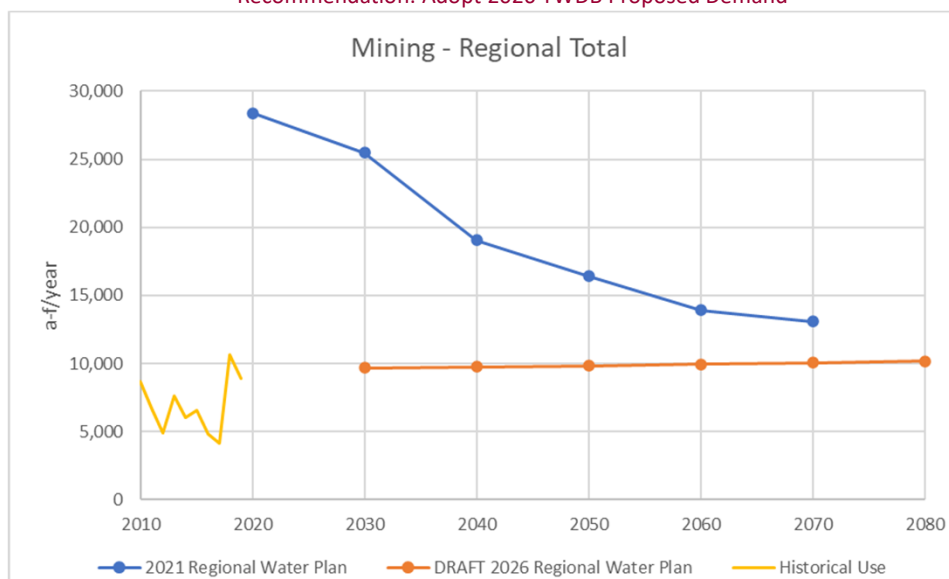
- TWDB Methodology:
  - 2022 TWDB Mining Water Use Study (USGS/UTBEG)
  - Oil & gas (majority of Region I demand), aggregates, coal & lignite (no projected use from coal)
  - 2023 Baseline: Average of UTBEG estimates of annual mining water use
  - Overall reduction in projected mining demands
    - ✓ Observed decreases in reported use
    - ✓ Updated BEG estimated for cessation of coal mining
- Proposed Methodology: No revisions to 2026 draft projections



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## Mining Demands

Recommendation: Adopt 2026 TWDB Proposed Demand



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## Mining Demands

County	WUG Type	DRAFT Projections for the 2026 Regional Water Plans						Recommended 2026 RWP Projection						Comments:
		2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080	
Anderson	Mining	34	34	34	34	34	34							
Angelina	Mining	780	819	855	887	915	940							
Cherokee	Mining	187	187	187	187	187	187							
Hardin	Mining	13	13	13	13	13	13							
Henderson	Mining	173	182	193	222	255	296							
Houston	Mining	302	302	302	302	302	302							
Jasper	Mining	28	28	28	28	28	28							
Jefferson	Mining	294	312	332	354	379	406							
Nacogdoches	Mining	891	891	891	891	891	891							
Newton	Mining	3	3	3	3	3	3							
Orange	Mining	11	11	11	11	11	11							
Panola	Mining	2,280	2,280	2,280	2,280	2,280	2,280							
Polk	Mining	26	27	28	29	30	30							
Rusk	Mining	489	489	489	489	489	489							
Sabine	Mining	203	203	203	203	203	203							
San Augustine	Mining	1,411	1,411	1,411	1,411	1,411	1,411							
Shelby	Mining	2,070	2,070	2,070	2,070	2,070	2,070							
Smith	Mining	427	446	466	487	510	534							
Trinity	Mining	9	9	9	9	9	9							
Tyler	Mining	42	42	42	42	42	42							
<b>Regional Total</b>		<b>9,673</b>	<b>9,759</b>	<b>9,847</b>	<b>9,952</b>	<b>10,062</b>	<b>10,179</b>							

Recommend adopting the 2026 Draft Projections



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## Steam Electric Power Generation

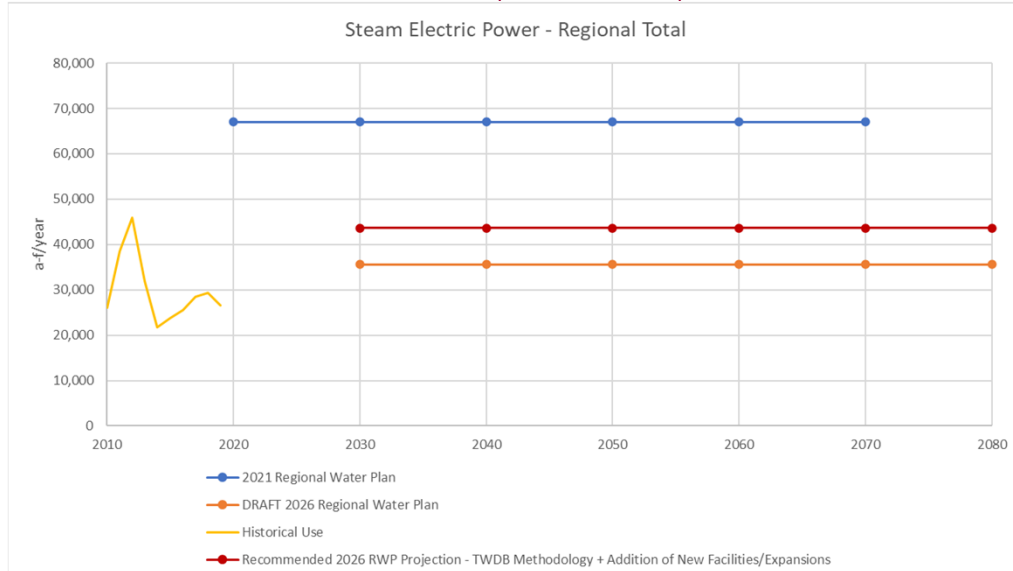
- TWDB Methodology did not change
- 2030 Baseline
  - Highest *single-year, county*-surveyed water use 2015-2019
  - Include near-term facility additions and retirements
  - Holding constant projected use through 2080
- Recommendation:
  - Use same methodology but include planning group and MWP identified new facilities



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# Steam Electric Power Demands

Recommendation: Adopt 2026 TWDB Proposed Demand



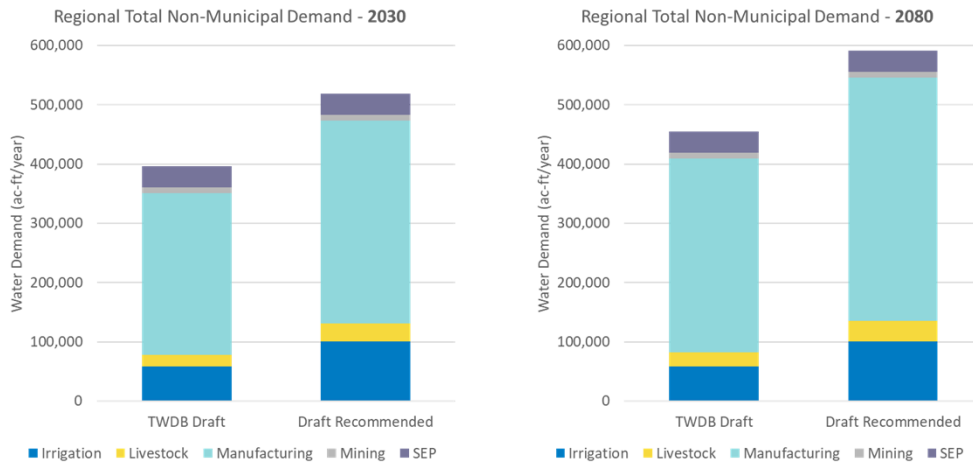
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# Steam Electric Power Demands

County	WUG Type	DRAFT Projections for the 2026 Regional Water Plans						Recommended 2026 RWP Projection						Comments:
		2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080	
Anderson	Steam Electric	2,296	2,296	2,296	2,296	2,296	2,296	2,296	2,296	2,296	2,296	2,296	2,296	Same as Draft Projections
Angelina	Steam Electric	0	0	0	0	0	0	0	0	0	0	0	0	
Cherokee	Steam Electric	310	310	310	310	310	310	310	310	310	310	310	310	
Hardin	Steam Electric	1	1	1	1	1	1	1	1	1	1	1	1	
Henderson	Steam Electric	2,061	2,061	2,061	2,061	2,061	2,061	2,061	2,061	2,061	2,061	2,061	2,061	
Houston	Steam Electric	0	0	0	0	0	0	0	0	0	0	0	0	
Jasper	Steam Electric	0	0	0	0	0	0	0	0	0	0	0	0	
Jefferson	Steam Electric	0	0	0	0	0	0	0	0	0	0	0	0	
Nacogdoches	Steam Electric	400	400	400	400	400	400	400	400	400	400	400	400	
Newton	Steam Electric	6,808	6,808	6,808	6,808	6,808	6,808	6,808	6,808	6,808	6,808	6,808	6,808	
Orange	Steam Electric	4,336	4,336	4,336	4,336	4,336	4,336	10,497	10,497	10,497	10,497	10,497	10,497	Entergy Orange County Advanced Power Station. Estimated 8,000 ac-ft/year demand (From SRA)
Panola	Steam Electric	0	0	0	0	0	0	0	0	0	0	0	0	
Polk	Steam Electric	0	0	0	0	0	0	0	0	0	0	0	0	
Rusk	Steam Electric	19,406	19,406	19,406	19,406	19,406	19,406	19,406	19,406	19,406	19,406	19,406	19,406	
Sabine	Steam Electric	0	0	0	0	0	0	0	0	0	0	0	0	
San Augustine	Steam Electric	0	0	0	0	0	0	0	0	0	0	0	0	
Shelby	Steam Electric	0	0	0	0	0	0	0	0	0	0	0	0	
Smith	Steam Electric	0	0	0	0	0	0	0	0	0	0	0	0	
Trinity	Steam Electric	0	0	0	0	0	0	0	0	0	0	0	0	
Tyler	Steam Electric	3	3	3	3	3	3	3	3	3	3	3	3	
<b>Regional Total</b>		<b>35,621</b>	<b>35,621</b>	<b>35,621</b>	<b>35,621</b>	<b>35,621</b>	<b>35,621</b>	<b>41,782</b>	<b>41,782</b>	<b>41,782</b>	<b>41,782</b>	<b>41,782</b>	<b>41,782</b>	

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## Non-Municipal Demands Comparison



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## Non-Municipal Next Steps

### Action -

Authorize the technical consultant to:

- Finalize technical memorandum,
- Populate and distribute recommended revisions to the draft non-municipal demands for Region I, consistent with the information provided in this meeting, to TWDB, and
- Approve for the consultant to work with the Chair and Technical Committee to submit further revisions and make responses to revision requests by TWDB by the July 14, 2023 deadline.

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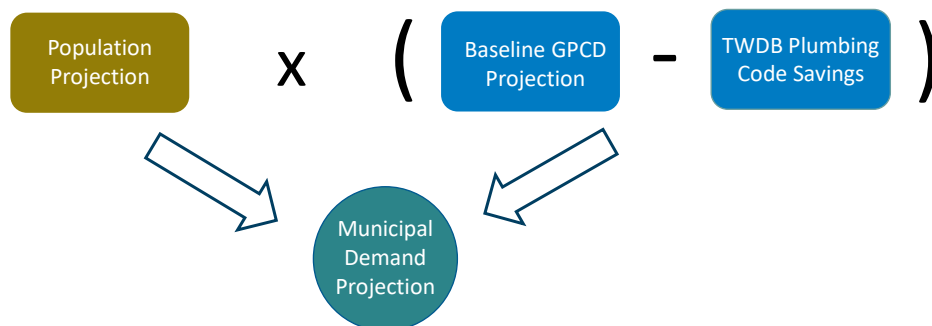
# Municipal Demands

- Usage/GPCD
  - Plumbing Code Savings
  - Baseline Adjustments
- Populations
- Demands



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## Municipal Demand Projections



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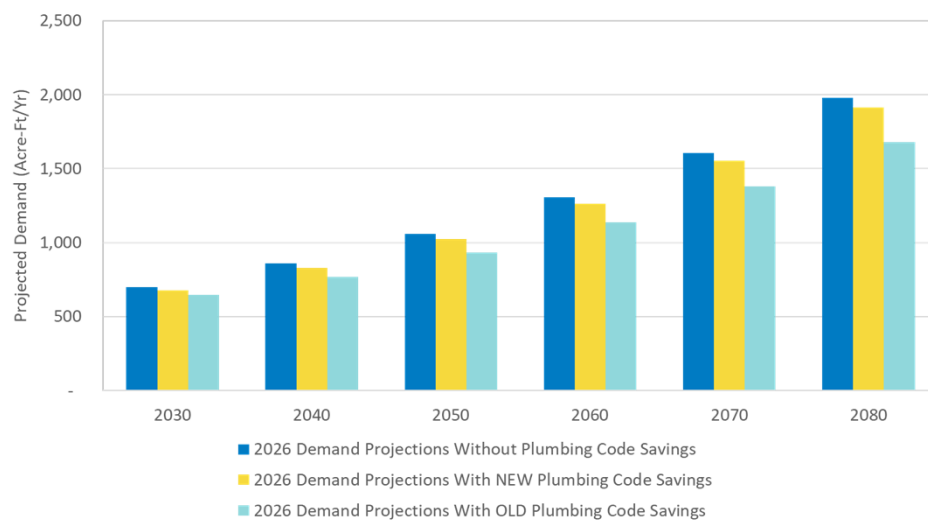
## Municipal Demand Projections – Plumbing Code Savings

- TWDB sent out revised plumbing code savings projections on May 5, 2023
- Revised to adjust assumption regarding adoption of fixtures



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## Municipal Demand Projections – Plumbing Code Savings Revision



*\*Note: City of Chandler (WUG) 1.0 Migration Scenario data was used in this example.*



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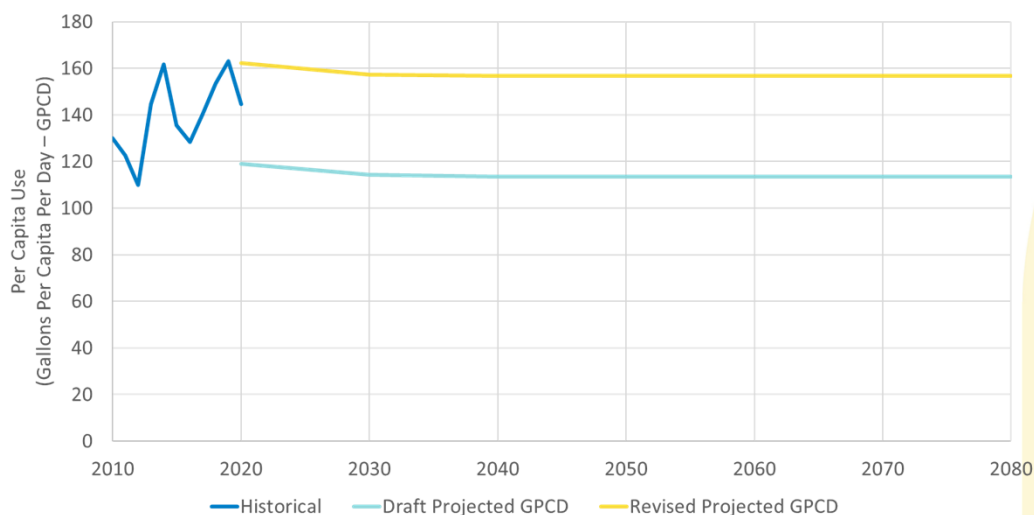


## Municipal Demand Projections – Baseline GPCD

- Draft baseline GPCDs from TWDB
  - 2021 RWP baseline GPCDs minus estimated accumulated plumbing code savings
- Revised baseline GPCDs
  - Reviewed historical GPCD from 2010-2020 period
  - If higher use identified during period, revised the baseline GPCD

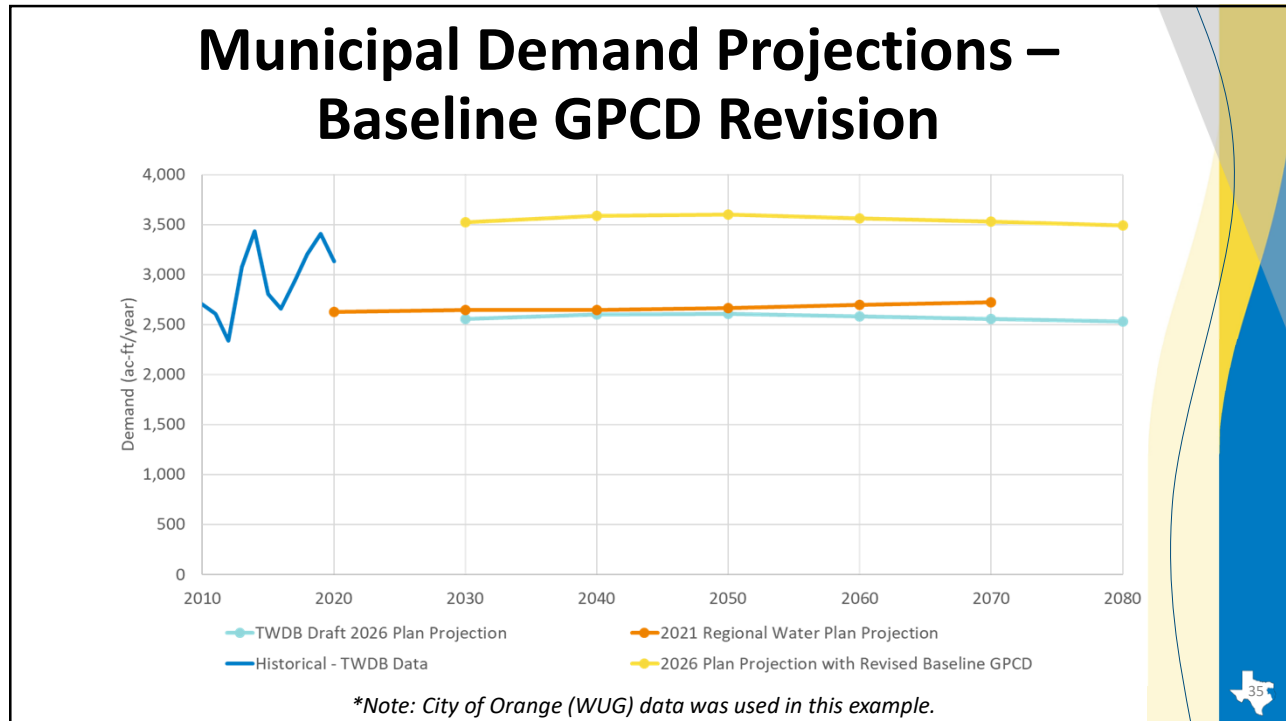
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## Municipal Demand Projections – Baseline GPCD Revision

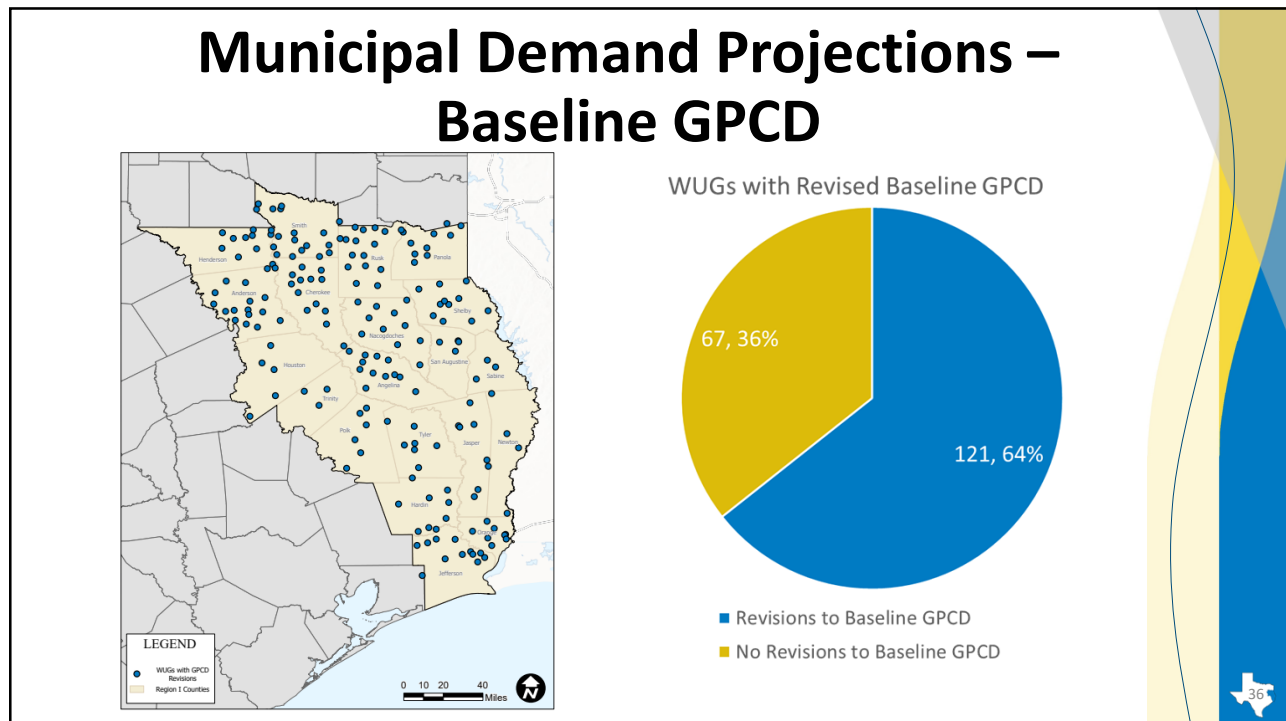


*\*Note: City of Orange (WUG) data was used in this example. Year 2020 represents the baseline GPCD.*

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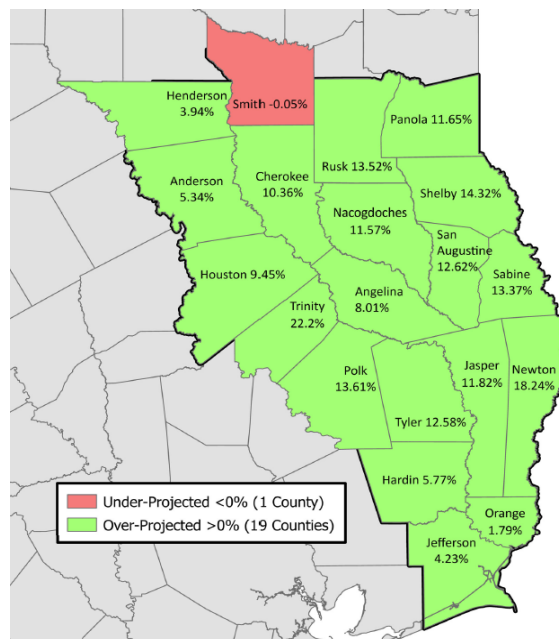
## Population Projections - Scenarios

- Provided by TWDB:
  - Region-County Projections 2030 – 2080: 1.0 & 0.5 migration scenarios
  - WUG Projections 2030 – 2080: 1.0 migration only
- RWPG option to use half-migration scenario *by county*
- Coordination with TWBD
  - Options for counties with proposed reversed migration?



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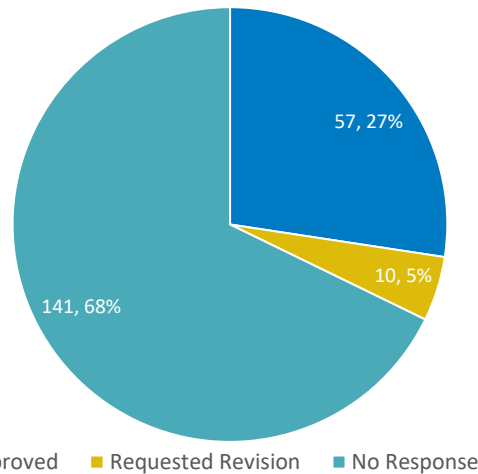
## 2021 State Water Plan Projections vs 2020 Census



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## Municipal WUG Responses to Survey

- Sent out survey via e-mail to all Region I municipal WUGs
- Sent follow-up e-mail and called WUGs
- Received 10 requested revisions
  - Mainly related to population projections

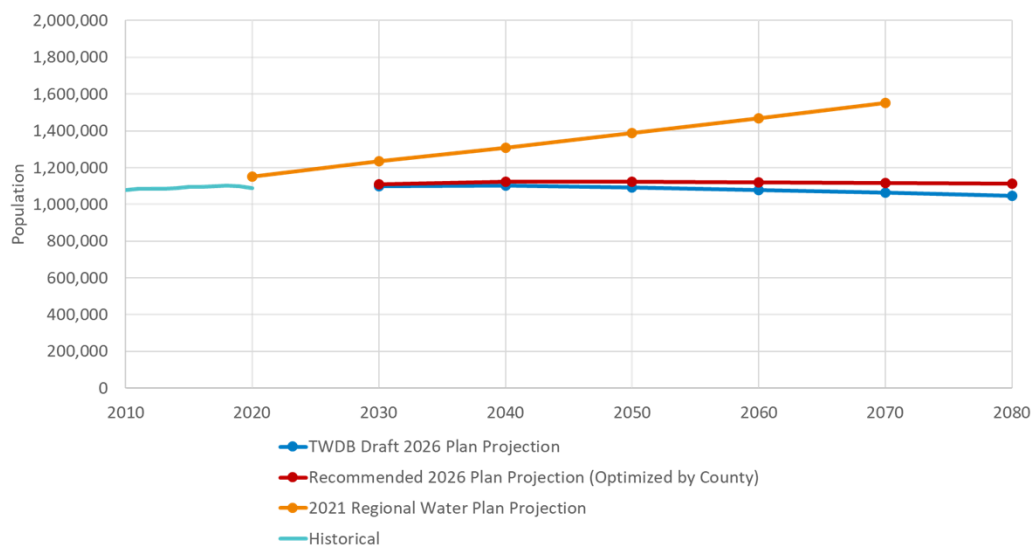


\*Note: A summary of survey responses by WUG can be found in the Population and Municipal Demand Projections Table handout.



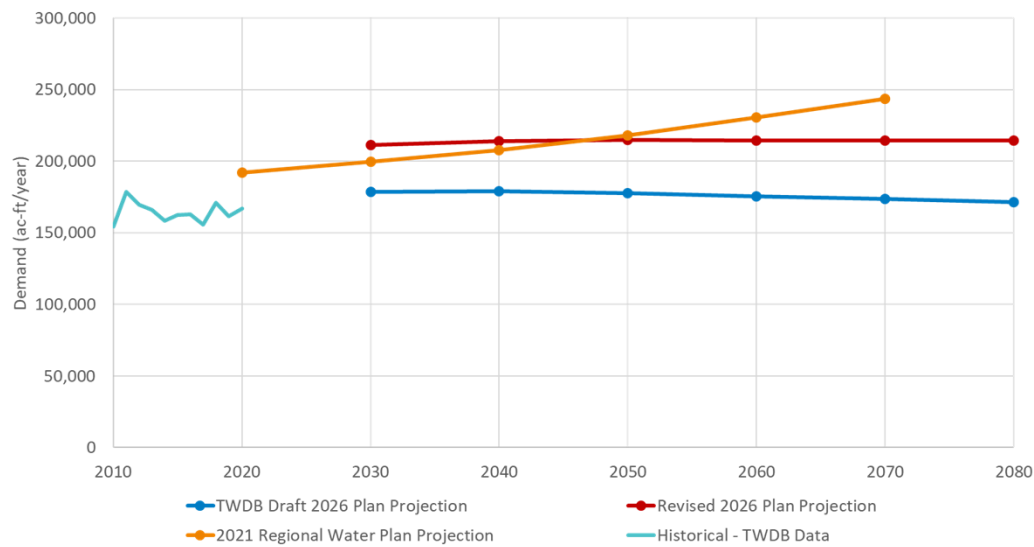
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## Population Projections – Region I



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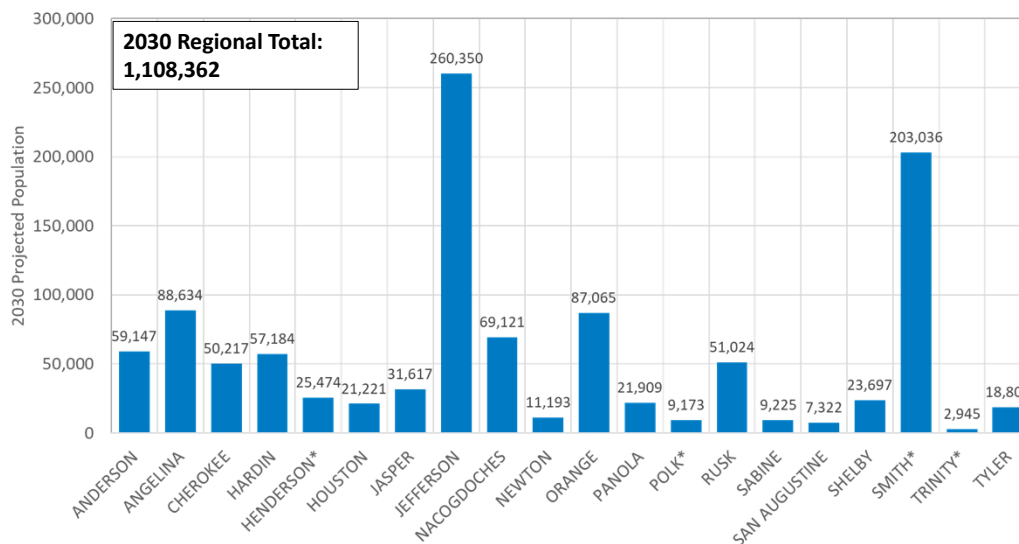
## Municipal Demand Projections - Region I



Note: 1,120 ac-ft/year = 1 million gallons/day (MGD)

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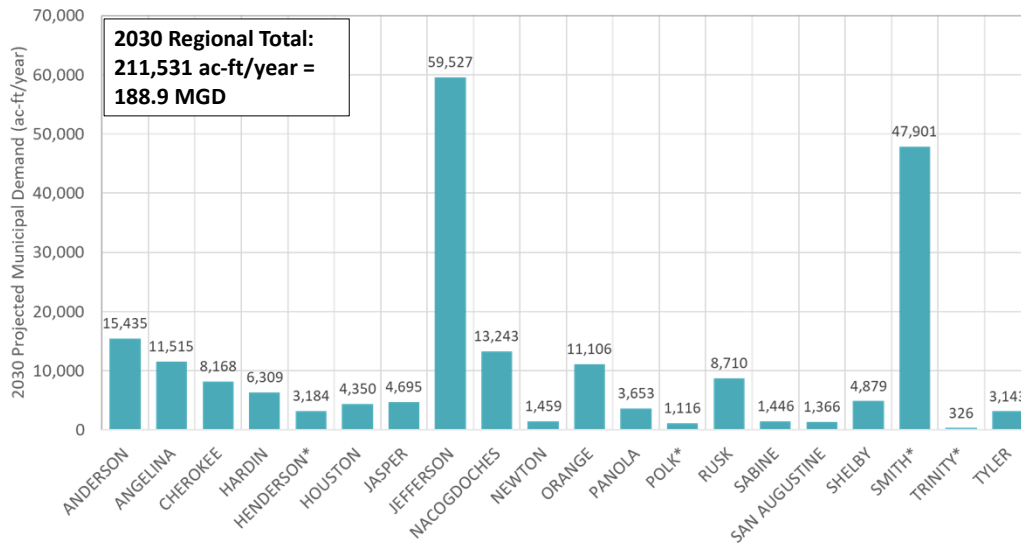
## Population Projections by County



\*Note: Only the Region I portion for split counties (Henderson, Polk, Smith, Trinity) is displayed.

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## Municipal Demand Projections by County



\*Note: Only the Region I portion for split counties (Henderson, Polk, Smith, Trinity) is displayed.

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## Municipal Next Steps

### Action -

Authorize the technical consultant to:

- Submit a technical memorandum,
- Populate and distribute recommended revisions to the draft municipal demands for Region I, consistent with the information provided in this meeting, to TWDB, and
- Approve for the consultant to work with the Chair and Technical Committee to submit further revisions and make responses to revision requests by TWDB by the August 11, 2023 deadline.

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# Evaluation of Infeasible Water Management Strategies and Projects



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## Potentially Feasible Water Management Strategies

- Statutory and Rule Requirements
  - TWC §16.053(e)(5) and 31 TAC §357.34(c))
- Regional Water Planning Groups must consider, but are not limited to considering, 24 types of WMSs for all identified water needs.
- Technical Memorandum (Due March 4, 2024 to TWDB), IPP, and Final RWP must include:
  - The documented process used by the RWPG to identify potentially feasible WMS;
  - The list or table of all identified WMSs that were considered potentially feasible, to date, for meeting a need in the region per 31 TAC §357.12(b).
  - If no potentially feasible WMSs are identified or recommended for an identified water need, then the RWP must document the reason.



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## Statutory Language for the New Requirement to Identify Infeasible WMSs

“Infeasible WMSs include those WMSs where proposed sponsors have not taken an affirmative vote or other action to make expenditures necessary to construct or file applications for permits required in connection with implementation of the WMS on a schedule in order for the WMS to be completed by the time the WMS is needed to address drought in the plan.”



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## Infeasibility Review of 2021 RWP WMSs and Projects

- Focus on reviewing 2021 Plan’s strategies and projects that require a permit and/or involve construction and that:
  - are shown to be online by the 2020 (no later than January 5, 2023) or 2030 decade,
  - Related to:
    - ✓ new major reservoirs,
    - ✓ seawater desalination,
    - ✓ direct potable reuse,
    - ✓ brackish groundwater,
    - ✓ aquifer storage and recovery, and
    - ✓ out of state water transfers;
  - Generally required for implementation either:
    - ✓ significant resources;
    - ✓ significant time.



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## Infeasibility Review of 2021 RWP WMSs and Projects

- TWDB recognizes information may be difficult to obtain or may not be available for some WUG categories
  - E.g.: County-Wide WUGs, Non-municipal WUGs
- Therefore, the Regional Water Planning Group may not be able to determine infeasibility for some strategies or projects.



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## Questions?

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