

NOTICE OF OPEN MEETING OF THE
SOUTH CENTRAL TEXAS REGIONAL
WATER PLANNING GROUP

TAKE NOTICE that a meeting of the South-Central Texas Regional Water Planning Group (SCTRWPG) as established by the Texas Water Development Board will be held on Thursday, August 28, 2025 at 9:30 AM both in person and virtually. The in-person meeting will be held at the San Antonio Water System's Customer Service Building, Room CR-145, 2800 US Hwy 281 North, San Antonio, TX 78212. You can attend virtually on WebEx at <https://saws.webex.com/saws/j.php?MTID=m7e99184c70ca35f1cfc795e7a008923>. The planning group members will consider and may take action regarding:

1. (9:30 AM) Roll-Call
2. Public Comment (Limited to 3 minutes)
3. Approval of the Minutes from the Previous Meeting of the South-Central Texas Regional Water Planning Group (SCTRWPG)
4. Status Reports and Communications by TWDB
 - a. Summary of Socioeconomic Impact Analysis – Region L
5. Status Reports and Communications Related to Regional Water Planning including reports by the Chair, Regional Liaisons, Groundwater Management Area Representatives, and Members of the Planning Group
6. Consideration and Appropriate Action Regarding Presentation by Technical Consultant Regarding Schedule and Progress Update
7. Consideration and Appropriate Action to Approve Proposed Responses Regarding the Public Comments and Agency Comments Received on the Initially Prepared Plan (IPP) for the 2026 South Central Texas (Region L) Regional Water Plan
8. Discussion and Appropriate Action Regarding Proposed Update to CRWA Wells Ranch III Project as Presented in SCTRWP 2025 IPP
9. Discussion and Appropriate Action Regarding the Establishment of Additional Subcommittees
10. Schedule and Potential Agenda Items for the Next Meeting of the SCTRWP
11. Public Comment (Limited to 3 minutes)
12. Adjourn

Comments and submissions may be submitted through email to ccastillo@sariverauthority.org and include "Region L South Central Texas Water Planning Group Meeting Public Comment" in the subject line of the email. Any written documentation can be sent to Curt Campbell, Chair, South Central Texas Regional Water Planning Group, c/o San Antonio River Authority, Attn: Caye Castillo, 100 E. Guenther Street, San Antonio, TX 78204. Please direct any questions to Caye Castillo at (210) 302-4258, ccastillo@sariverauthority.org.

AGENDA ITEM NO.3 – APPROVAL OF THE MINUTES FROM THE PREVIOUS MEETING OF THE SOUTH-CENTRAL TEXAS REGIONAL WATER PLANNING GROUP (SCTRWPG)

**Minutes of the South Central Texas Regional Water Planning Group
February 20, 2025**

Chair Campbell called the hybrid meeting to order at 9:31 a.m., held both in person and through WebEx online platform.

23 of the 32 voting members, or their alternates, were present.

Voting Members Present:

Tim Andruss	Donovon Burton for Robert Puente
Curt Campbell	Humberto Ramos
Debbie Farmer	Weldon Riggs
Marisa Bruno for Charlie Flatten	Roland Ruiz
Steve Metzler	Darrell Brownlow
Michelle Shelton for Terrell Graham	Mitchell Sowards
Vic Hilderbran	Jonathan Stinson
Thomas Jungman	Paul Kite
Aarin Teague	Ryan Kelso
Jason Ammerman	Dianne Wassenich
Scooter Mangold	Adam Yablonski
Travis Pruski	

Voting Members Absent:

Ryan Bayle
John Byrum
Andra Wisian
Andrew McBride
Daniel Meyer
Gary Middleton
Vanessa Puig-Williams
Darren Simmons
Dan Yoxall

Non-Voting Members Present:

Carly Rotzler, TX Department of Parks and Wildlife
Tom Hegemier, Region K Liaison
Michele Foss, Texas Water Development Board (TWDB)
Jami McCool, TX Dept. of Agriculture

Non-Voting Members Absent:

Tony Franklin, Texas Soil & Water Cons. Board
Iliana Delgado, TCEQ
Don McGhee, Region M Liaison
Charles Wiedenfeld, Region J Liaison
Carl Crull, Region N Liaison

Beginning with the February 11, 2016, meeting of the South Central Texas Regional Water Planning Group, all recordings are available for the public at www.regionltexas.org.

AGENDA ITEM NO.1: ROLL CALL

Ms. Castillo took roll call.

AGENDA ITEM NO.2: PUBLIC COMMENT (LIMITED TO 3 MINUTES)

No public comments.

AGENDA ITEM NO.3: APPROVAL OF THE MINUTES FROM THE PREVIOUS MEETING OF THE SOUTH CENTRAL TEXAS REGIONAL WATER PLANNING GROUP (SCTRWPG)

Mr. Riggs motioned to approve the minutes from the previous meeting. Mr. Mangold seconded, the motion passed by consensus.

AGENDA ITEM NO.4: DISCUSSION AND APPROPRIATE ACTION REGARDING FILLING EXISTING VACANCIES AND VACANCIES TO RESULT FROM FUTURE TERM EXPIRATIONS OR RESIGNATIONS

Chair Campbell stated that this is a standing agenda item and there are currently no vacancies on the RWPG to or terms to address at this time.

AGENDA ITEM NO.5: STATUS REPORTS AND COMMUNICATIONS BY TWDB

Ms. Foss provided an update from TWDB on SWIFT funding and the 2026 Regional Water Plan process. Her presentation covered the status of 2025 SWIFT funding applications (28 submitted statewide with 3 in Region L), upcoming deadlines for additional information due February 21, and eligibility requirements for 2026 SWIFT funding. She also outlined the Initially Prepared Plan (IPP) process and timeline, including requirements for public hearings, notice procedures, comment periods, and document availability. Key deadlines include IPP submission to TWDB by March 3, 2025, and final Regional Water Plan submission by October 20, 2025. Her presentation is available online at www.regionltexas.org.

AGENDA ITEM NO.6: STATUS REPORTS AND COMMUNICATIONS RELATED TO REGIONAL WATER PLANNING INCLUDING REPORTS BY THE CHAIR, REGIONAL LIAISONS, GROUNDWATER MANAGEMENT AREA REPRESENTATIVES AND MEMBERS OF THE PLANNING GROUP

Chair Campbell provided an update from GMA 9 stating that there were no updates.

Mr. Brownlow reported that GMA 13 will meet on April 11th in Pleasanton. Today is the final day for comments on the 2024 revised GAM as requested by TWDB.

Mr. Hilderbran provided an update from GMA 7, which met yesterday. They are working on a new GAM model for the Edwards Trinity aquifer. There was discussion on whether the new model will be ready in time, and they will probably use the old model instead.

AGENDA ITEM NO.7: CONSIDERATION AND APPROPRIATE ACTION REGARDING PRESENTATION BY TECHNICAL CONSULTANT REGARDING SCHEDULE AND PROGRESS UPDATES

Ms. Gonzalez provided an update from Black & Veatch regarding schedule progress, updates on completed and ongoing efforts, and updates on draft chapters for the 2026 Regional Water Plan. Her presentation covered the project timeline leading to the March 3, 2025 IPP deadline and October 20, 2025 final plan deadline, progress on water management strategy evaluations, cumulative effects analysis results, unmet needs justifications, implementation survey findings, and interregional coordination efforts. The presentation also included updates on Chapters 4, 5, 6, 9, and 10, with details on water needs analysis, strategy revisions, environmental impact assessments, and public participation activities. Her presentation is available online at www.regionltexas.org.

Discussion ensued as Mr. Brownlow reported that GMA 13 is evaluating a new GAM that will generate MAGs affecting the regional planning process. He noted that the Carrizo aquifer GAM used in GMA 13 was created in 2004 and has been used for four planning cycles. The 2024 GAM is under major scrutiny and GMA 13 likely will not have a new approved GAM, meaning they will continue using 20-year-old water availability data. He cautioned the group against placing too much faith in these water availability models.

Mr. Metzler asked about the percentage difference in the models. Mr. Ramos suggested this issue could be addressed through a future subcommittee since they are near the end of the current planning cycle. Mr. Burton noted that SAWS also has concerns about the model.

Mr. Ramos noted seeing private entities in the process and asked about their participation requirements. Ms. Lauren explained that everyone is allowed but not required to coordinate with the RWP process. Private utilities are typically smaller and harder to locate, often falling under the county-other threshold. They are contacted but not treated differently. Mr. Ramos suggested Region L should require certain sized private utilities to participate in the plan.

AGENDA ITEM NO.8: CONSIDERATION AND APPROVAL REGARDING THE INITIALLY PREPARED PLAN (IPP) FOR THE 2026 SOUTH CENTRAL TEXAS (REGION L) REGIONAL WATER PLAN

Ms. Gonzalez presented the next steps for the Initially Prepared Plan, including adoption of the IPP, completion of DB27 data entry and updates, preparation of deliverables for TWDB, and submittal by the March 3, 2025 deadline. She outlined the public hearing requirements and options, noting the minimum requirement of one in-person public hearing with recording and materials available online. The presentation covered possible additional outreach efforts including virtual webinars and informal meetings. She requested direction from the planning

group on how to proceed with public hearings and outreach, and presented the three action items for consideration: adopting the IPP with authorization for technical consultant updates, authorizing submittal to TWDB, and authorizing SARA to post public notices and hold public hearings. Her presentation is available online at www.regionltexas.org.

- a. CONSIDERATION AND APPROPRIATE ACTION TO ADOPT THE IPP AND AUTHORIZE THE TECHNICAL CONSULTANT TO ADDRESS DB27 UPDATES, NON-SUBSTANTIVE REVISIONS, AND PLANNING GROUP CHANGES PRIOR TO IPP SUBMITTAL**

- b. CONSIDERATION AND APPROPRIATE ACTION TO AUTHORIZE THE TECHNICAL CONSULTANT TO SUBMIT THE IPP PACKAGE TO THE TEXAS WATER DEVELOPMENT BOARD ON BEHALF OF THE SOUTH-CENTRAL TEXAS (REGION L) REGIONAL WATER PLANNING GROUP BY MARCH 3, 2025**

- c. DISCUSSION AND APPROPRIATE ACTION TO AUTHORIZE THE SAN ANTONIO RIVER AUTHORITY TO POST PUBLIC NOTICE(S) AND HOLD PUBLIC HEARING(S) ON THE IPP**

Mr. Siebert offered SAWS as a potential venue if Region L chooses to hold the required meeting there. Mr. Ramos asked about budget considerations. Ms. Gonzalez stated there are budgetary constraints. Ms. Wassenich, as a public representative, noted that given the cost of holding in-person meetings and historically slim attendance, it makes sense to hold one public meeting with liberal virtual opportunities to learn about the plan. Mr. Travis suggested one in-person hybrid meeting in the evening and one virtual meeting, plus virtual webinars.

Mr. Stinson motioned to approve all sub-points (a, b, and c) with the clarification that Region L will hold one hybrid IPP hearing in the evening in San Antonio, one virtual informal meeting, and make a recording available online. Mr. Ruiz seconded the motion. The motion passed by consensus.

AGENDA ITEM NO.9: DISCUSSION AND APPROPRIATE ACTION REGARDING THE ESTABLISHMENT OF ADDITIONAL SUBCOMMITTEES

No additional subcommittees were established.

AGENDA ITEM NO.10: SCHEDULE AND POTENTIAL AGENDA ITEMS FOR THE NEXT MEETING OF THE SCTRWPG

The next SCTRWPG meeting is scheduled for August 28, 2025, at 9:30 AM.

AGENDA ITEM NO.11: PUBLIC COMMENT (LIMITED TO 3 MINUTES)

No public comments.

AGENDA ITEM NO.12: ADJOURN

Mr. Stinson motioned to adjourn the meeting. Mr. Riggs seconded the motion. The motion passed by consensus.

The meeting adjourned at 11:29am.

AGENDA ITEM NO.4 – STATUS REPORTS AND COMMUNICATIONS BY TWDB

A. SUMMARY OF SOCIOECONOMIC IMPACT ANALYSIS – REGION L

Region L Update August 28, 2025

Regional Water Planning Area Boundaries

- TWDB is tasked with reviewing RWP boundaries at least once every 5 years
- Deadline to receive public comments was June 30, 2025
- After closing of the comment period, TWDB evaluates comments and may consider proposing boundary revisions at a regular Board meeting
 - *TWDB anticipates taking this item before the Board in October*

Region L Update August 28, 2025

RWPG Chairs Call July 28, 2025

- Presentation on the Socioeconomic Impact Analysis for 2026 RWPs
 - Meeting notes and recording on TWDB website
 - <https://www.twdb.texas.gov/waterplanning/rwp/planningdocu/2026/documents.asp#Presentations>
- Review of important deadlines and other matters
- TWDB distributed contract amendments for remaining committed funds for 2026 RWPs
- TWDB developing schedule for 2031 RWPs – more info to come this fall

Region L Update August 28, 2025

RWPG Chairs Call July 28, 2025 – Important Deadlines and Reminders

- Deadline for final RWPs to be submitted to TWDB is **October 20, 2025**
- RWP data entry and data revision deadline is **September 22, 2025** – no revisions to RWP data may occur after this date
- Draft copies of DB27 data reports may **not** be included in the final plan to meet reporting requirements – regions must include **final versions** – available **September 24, 2025** in SARA
- Regions **must provide** proposed response to TWDB's IPP comments and plan revisions to TWDB for review **prior** to plan adoption

Region L Update August 28, 2025

RWPG Chairs Call July 28, 2025 – Important Deadlines and Reminders (cont.)

- RWPG discretion to address comments outside of formal IPP comment period
- RWPG meeting where final plan adopted requires 14-day notice and public comment period prior to meeting.
- Final deliverable includes all required electronic files and **4 hard copies**

Region L Update August 28, 2025

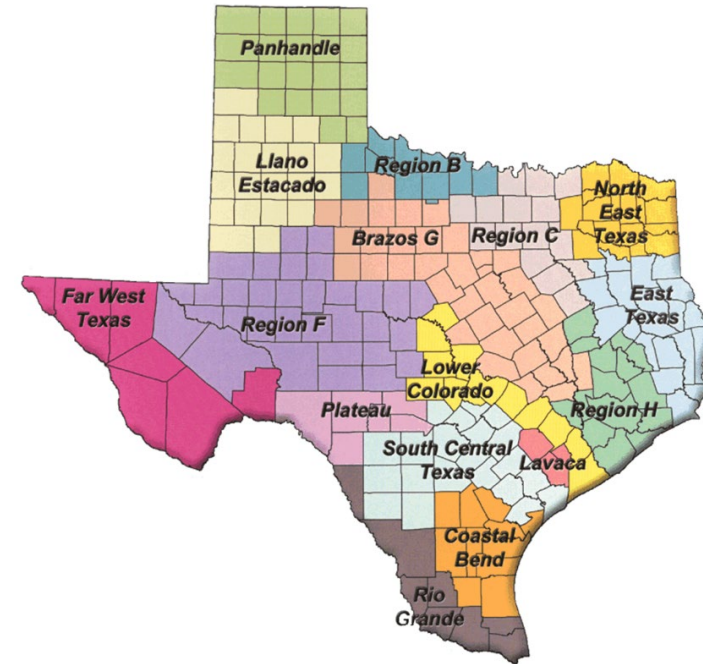
Socioeconomic Impact Analysis (SEIA)

- RWPGs must evaluate the social and economic impacts of not meeting water needs (31 Texas Administrative Code §357.33 (c)).
- Due to the complexity of the analysis, TWDB's Projections & Socioeconomic Analysis department designed and conducted this analysis.
- SEIAs distributed June 26, 2025, to RWPGs. SEIA Addendum distributed August 22.
- Results represent a snapshot of socioeconomic impacts that may occur during a single year repeat of the drought of record if no mitigation strategies are implemented.
- TWDB Socioeconomic Impact Analysis website includes a dashboard that summarizes the data in the report, the methodology for the analysis, and Frequently Asked Questions

<https://www.twdb.texas.gov/waterplanning/data/analysis/index.asp>

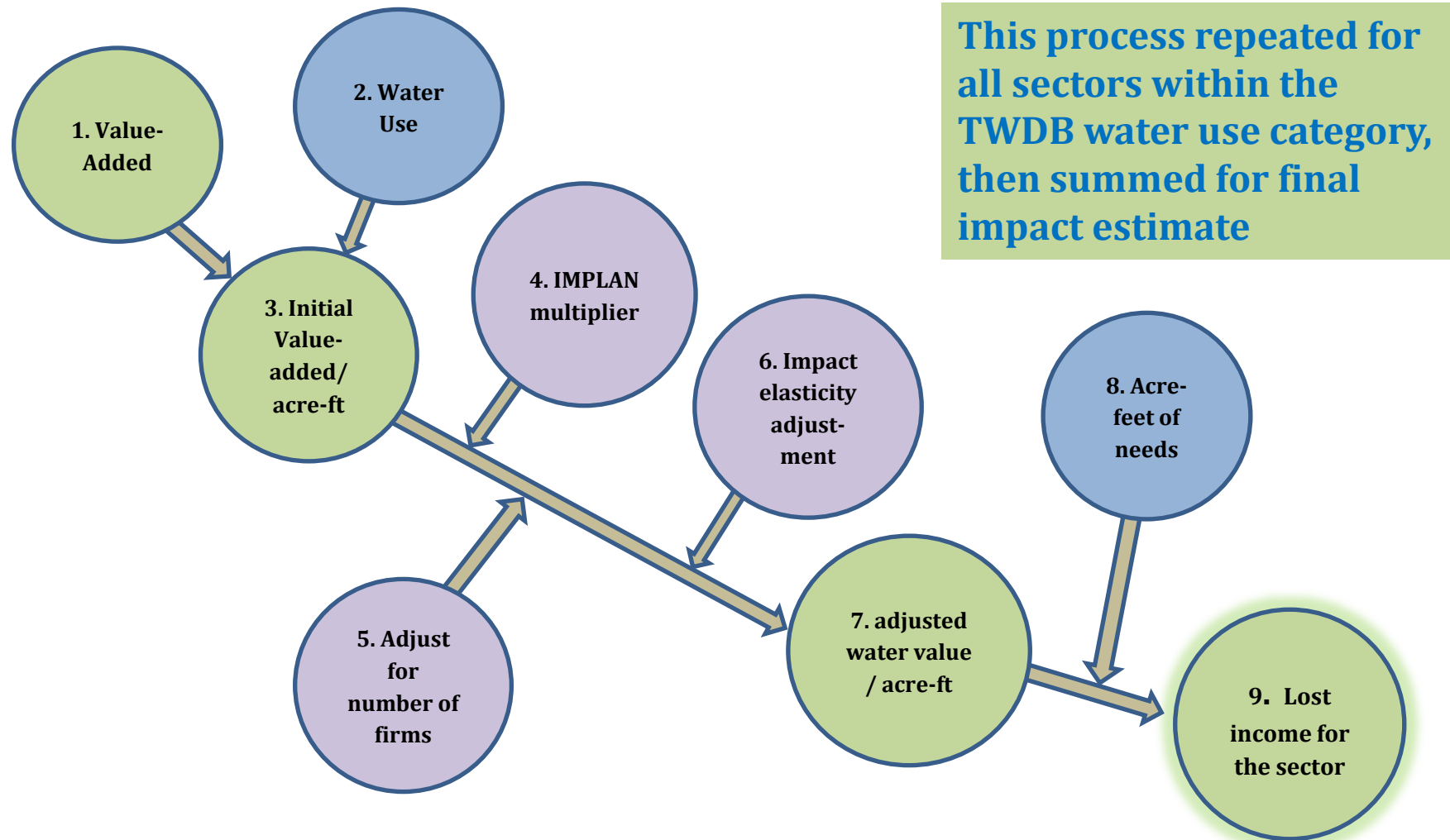
Impact Planning Model (2021)

- A. Input-output software designed to allow estimation of regional impacts of changes in production in 546 sectors
- B. Used to estimate potential lost **income, taxes, and at-risk jobs** for the region due to water shortages



Impacts generated in 2021 dollars and then use CPI to value impacts in year 2023 dollars to match Exhibit C requirements.

Determining Lost Income



$$\text{(adjusted water value /acft)} \times \text{(acft of needs)} = \text{IMPACT}$$

Methodology

Determining Lost Income

Results in impact estimates which:

- Vary by degree of shortage
- Vary by the composition of water use/economic activity by county
- Employ region specific multipliers to reflect impact on that region

Input Data Updates, Changes in Assumptions

- **Baseline structure of the economy**
(IMPLAN model, 2021)
- **Projected water needs**
Updates in supplies, GAMS, DFCs, and WAM runs, infrastructure
- **Key parameters**
Prices (residential water, water trucking costs, electricity rates, etc.)
- **Population and municipal water demand projections**
Based on 2020 U.S. Census, declining population at the county level
- **Impact methodology**
Minor revisions of manufacturing, mining, and irrigation impact procedures
- **Inflation**
Use of CPI to value impacts in year 2023 dollars

Regional Report Contents

- **Executive Summary**
 - a) Year 2021 Primary Production Sectors
 - b) Year 2021 Water Use summary by sector (six SEIA sectors)
 - c) Decadal Needs Projections
- **Description of Impact Measures**
- **Methodology Description**
- **Impact Measurement Results (regional by water use sector)**
- **Appendix A - County level results by WUG (municipal and non-municipal)**

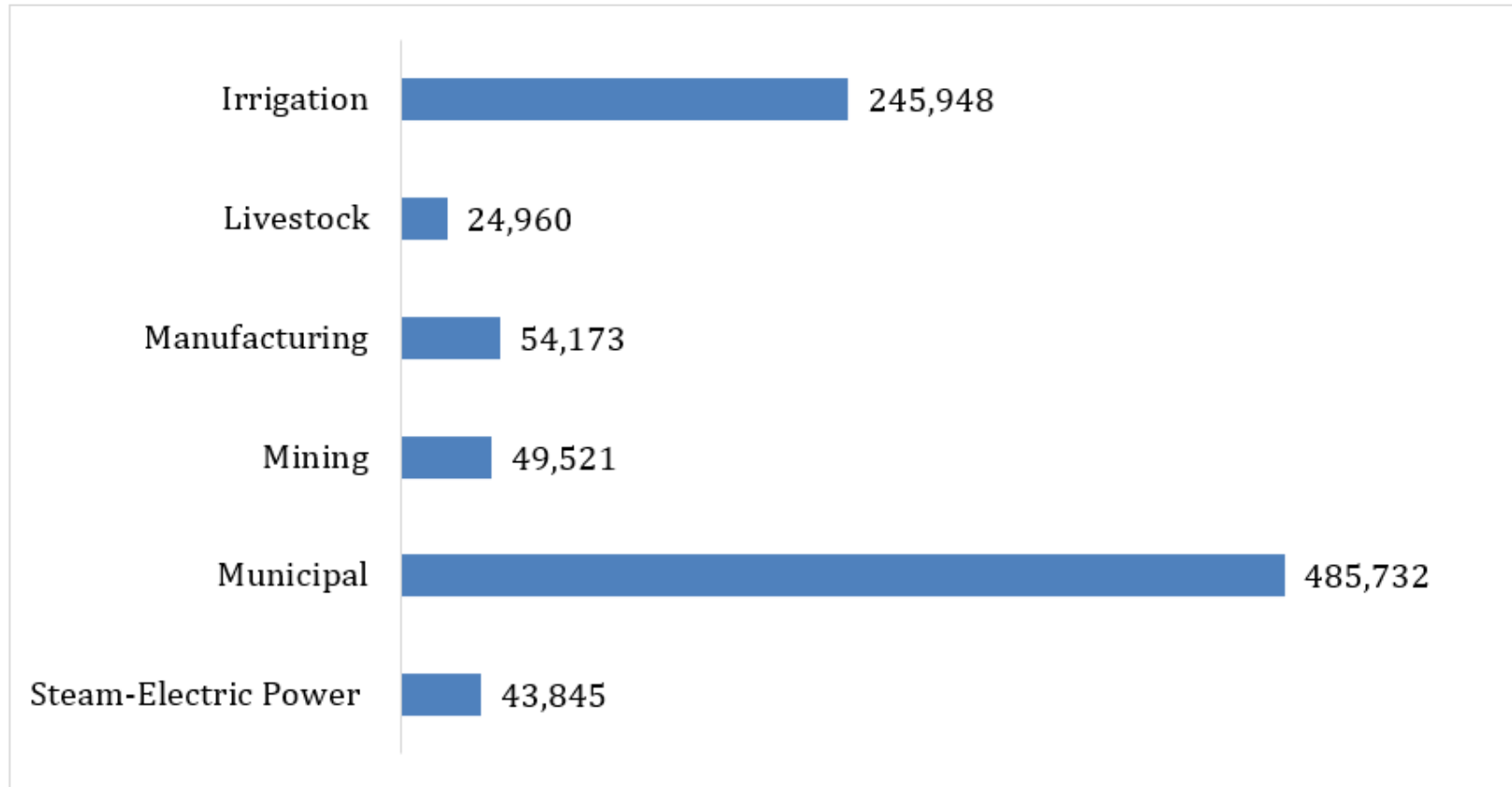
Region L Year 2021 Production Sectors

Table 1-1 Region L regional economy by economic sector*

Economic sector	Value-added (\$ millions)	Tax (\$ millions)	Jobs
Finance and Insurance	\$19,160.31	\$1,049.45	120,803
Manufacturing	\$17,542.18	\$259.32	72,967
Health Care and Social Assistance	\$13,794.86	(\$418.96)	178,812
Professional, Scientific, and Technical Services	\$12,463.15	\$90.73	121,694
Retail Trade	\$10,777.03	\$2,312.27	152,183
Wholesale Trade	\$10,662.76	\$1,566.26	45,565
Real Estate and Rental and Leasing	\$10,423.06	\$1,347.49	77,040
Mining, Quarrying, and Oil and Gas Extraction	\$10,022.89	\$1,801.51	22,851
Accommodation and Food Services	\$7,642.09	\$38.86	146,446
Administrative and Support and Waste Management and Remediation Services	\$7,242.88	\$143.11	118,681

Region L 2021 Water Use Estimates

Figure 1-1 Region L 2021 water use estimates by water use category (in acre-feet)



Source: TWDB Annual Water Use Estimates (all values in acre-feet)

Region L Needs and Impacts - Irrigation

Table 1-2 Regional water needs summary by water use category*

Water Use Category		2030	2040	2050	2060	2070	2080
Irrigation	water needs (acre-feet per year)	71,258	71,187	71,793	71,862	71,927	71,979
	% of the category's total water demand	23%	23%	23%	23%	23%	23%

Table 4-1 Impacts of water shortages on irrigation

Impact measure	2030	2040	2050	2060	2070	2080
Income losses (\$ millions)*	\$35	\$35	\$36	\$36	\$36	\$36
At risk job losses	1,001	1,001	1,016	1,017	1,017	1,018

* Year 2023 dollars, rounded. Entries denoted by a dash (-) indicate no estimated economic impact. Entries denoted by a zero (\$0) indicate estimated income losses less than \$500,000.

Region L Needs and Impacts - Manufacturing

Water Use Category		2030	2040	2050	2060	2070	2080
Manufacturing	water needs (acre-feet per year)	39,765	41,606	45,440	49,562	53,838	58,272
	% of the category's total water demand	36%	36%	38%	40%	42%	44%

Table 4-3 Impacts of water shortages on manufacturing

Impacts measure	2030	2040	2050	2060	2070	2080
Income losses (\$ millions)*	\$9,192	\$9,568	\$9,999	\$10,553	\$11,259	\$12,102
At risk job losses	73,986	77,134	80,664	85,014	90,268	96,365
Tax losses on production and Imports (\$ millions)*	\$331	\$344	\$360	\$381	\$409	\$444

Region L Needs - Municipal

Water Use Category		2030	2040	2050	2060	2070	2080
Municipal	water needs (acre-feet per year)	38,660	69,433	111,065	184,152	264,266	361,827
	% of the category's total water demand	7%	11%	16%	24%	31%	38%

Region L Impacts - Municipal

Table 4-5 Impacts of water shortages on municipal water users

Impacts measure	2030	2040	2050	2060	2070	2080
Income losses¹ (\$ millions)*	\$319	\$472	\$911	\$1,429	\$2,072	\$2,798
At risk job losses¹	4,121	6,094	11,759	18,437	26,726	36,060
Tax losses on production and imports¹ (\$ millions)*	\$14	\$20	\$39	\$62	\$90	\$121
Trucking costs (\$ millions)*	\$6	\$6	\$6	\$15	\$26	\$107
Utility revenue losses (\$ millions)*	\$154	\$305	\$516	\$865	\$1,245	\$1,704
Utility tax revenue losses (\$ millions)*	\$2	\$5	\$9	\$16	\$23	\$31

Limitations

1. Analysis focuses on sectors with adequate water use data,
2. Consideration of only 1 year of drought,
3. No consideration of impacts on the forwardly linked sectors,
4. No consideration of backward linked impacts on *other planning regions*,
5. Analysis does not consider building moratoriums due to long term water shortages,
6. Increased value of water over time is not considered.
7. Considers structure of the economy as static (year 2021)

SEIA Dashboard



Home Board Financial Assistance Water Planning Groundwater Surface Water Flood Drought Co

[TWDB Home](#) > [Water Planning](#) > [Planning Data](#) > Socioeconomic Impact Analysis

Socioeconomic Impact Analysis

Insufficient water supplies would negatively impact not only existing businesses and industry, but also Texas. An unreliable water supply also disrupts activity in homes, schools, and government and ends. For these reasons, planning groups are required to evaluate the social and economic impacts of not meeting the water plans.

[Interactive Data](#) [2026 RWP Impact Reports](#) [Previous Reports](#) [FAQ](#) [Contact](#)

Questions Regarding SEIA?

TWDB Projections and Socioeconomic Analysis Department
EDA@twdb.texas.gov

Planning Questions?

Michele Foss
michele.foss@twdb.texas.gov

Stay connected:



**Socioeconomic Impacts of Projected Water Shortages
for the South Central Texas (Region L) Regional Water Planning
Area**

Prepared in Support of the 2026 Region L Regional Water Plan



Dr. John R. Ellis

Projections & Socioeconomic Analysis,
Water Supply Planning
Texas Water Development Board

June 2025

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Executive Summary

Evaluating the social and economic impacts of not meeting identified water needs is a required analysis in the regional water planning process. The Texas Water Development Board (TWDB) estimates these impacts for regional water planning groups (RWPGs) and summarizes the impacts in the state water plan. The analysis presented is for the South Central Texas Regional Water Planning Group (Region L).

Based on projected water demands and existing water supplies, Region L identified water needs (potential shortages) that could occur within its region under a repeat of the drought of record for six water use categories (irrigation, livestock, manufacturing, mining, municipal and steam-electric power). The TWDB then estimated the annual socioeconomic impacts of those needs—if they are not met—for each water use category and as an aggregate for the region.

This analysis was performed using an economic impact modeling software package, IMPLAN (Impact for Planning Analysis), as well as other economic analysis techniques, and represents a snapshot of socioeconomic impacts that may occur during a single year repeat of the drought of record with the further caveat that no mitigation strategies are implemented. Decade-specific impact estimates assume that growth occurs, and future shocks are imposed on an economy at 10-year intervals. The estimates presented are not cumulative (i.e., summing up expected impacts from today up to the decade noted), but are simply snapshots of the estimated annual socioeconomic impacts should a drought of record occur in each particular decade based on anticipated water supplies and demands for that same decade.

For regional economic impacts, income losses and jobs potentially at risk are estimated within each planning decade (2030 through 2080). The income losses represent an approximation of gross domestic product (GDP) that would be foregone if water needs are not met.

The analysis also provides estimates of financial transfer impacts, which include tax losses (state, local, and utility tax collections); water trucking costs; and utility revenue losses. In addition, social impacts are estimated, encompassing lost consumer surplus (a welfare economics measure of consumer wellbeing); as well as population and school enrollment losses.

IMPLAN data reported that Region L generated more than \$152 billion in gross domestic product (GDP) (2023 dollars) and supported more than 1.48 million jobs in 2021. The Region L estimated total population was approximately 3.06 million in 2021.

It is estimated that not meeting the identified water needs in Region L would result in an annually combined lost income impact of approximately \$29.8 billion in 2030, decreasing to \$16.8 billion in 2080 (Table ES-1). In 2030, the region could lose approximately 148,400 jobs, and by 2080 at risk job losses would decrease (primarily due to reductions in mining demands and needs) to approximately 145,600 if anticipated needs are not mitigated.

All impact estimates are in year 2023 dollars and were calculated using a variety of data sources and tools including the use of a region-specific IMPLAN model, data from TWDB annual water use

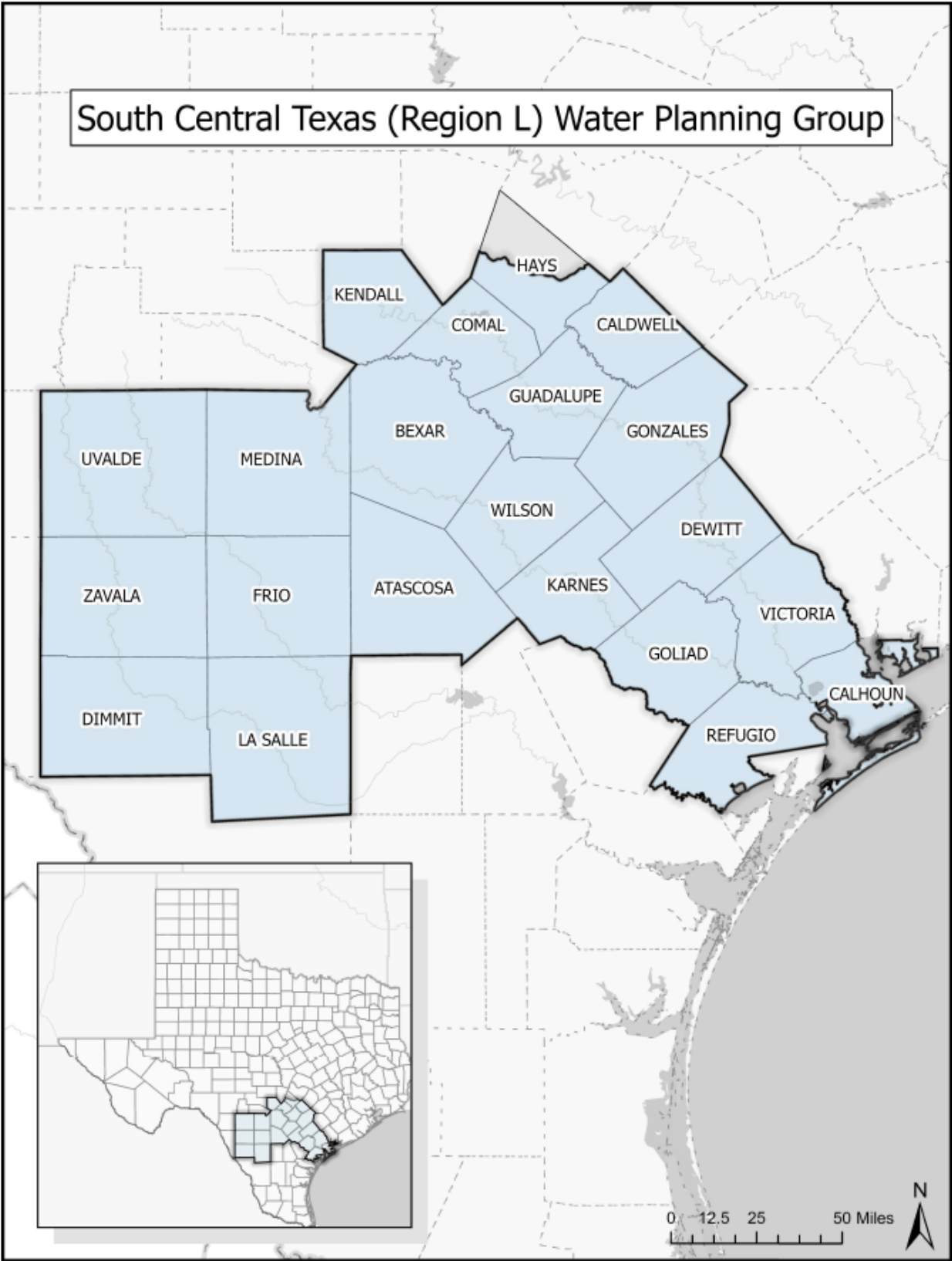
estimates, the U.S. Census Bureau, Texas Agricultural Statistics Service, and the Texas Municipal League.

Table ES-1 Region L socioeconomic impact summary

Regional Economic Impacts	2030	2040	2050	2060	2070	2080
Income losses (\$ millions)*	\$29,830	\$30,815	\$32,126	\$33,578	\$35,289	\$16,763
At risk job losses	148,463	156,161	167,856	180,974	196,508	145,580
Financial Transfer Impacts	2030	2040	2050	2060	2070	2080
Tax losses on production and imports (\$ millions)*	\$2,711	\$2,774	\$2,850	\$2,929	\$3,019	\$712
Water trucking costs (\$ millions)*	\$6	\$6	\$6	\$15	\$26	\$107
Utility revenue losses (\$ millions)*	\$154	\$305	\$516	\$865	\$1,245	\$1,704
Utility tax revenue losses (\$ millions)*	\$2	\$5	\$9	\$16	\$23	\$31
Social Impacts	2030	2040	2050	2060	2070	2080
Consumer surplus losses (\$ millions)*	\$52	\$127	\$264	\$611	\$1,304	\$2,428
At risk population out-migration	21,260	22,362	24,037	25,916	28,140	20,847
At risk school enrollment losses	3,880	4,081	4,387	4,730	5,136	3,805

* Year 2023 dollars, rounded. Entries denoted by a dash (-) indicate no estimated economic impact. Entries denoted by a zero (\$0) indicate estimated income losses less than \$500,000.

Figure ES-1 Region L Planning Area Map



1 Introduction

Water shortages during a repeat of the drought of record would likely curtail or eliminate certain economic activity in businesses and industries that rely heavily on water. Insufficient water supplies could not only have an immediate and real impact on the regional economy in the short term, but they could also adversely and chronically affect economic development in Texas. From a social perspective, water supply reliability is critical as well. Shortages could disrupt activity in homes, schools and government, and could adversely affect public health and safety. For these reasons, it is important to evaluate and understand how water supply shortages during drought could impact communities throughout the state.

As part of the regional water planning process, RWPGs must evaluate the social and economic impacts of not meeting water needs (31 Texas Administrative Code §357.33 (c)). Due to the complexity of the analysis and limited resources of the planning groups, the TWDB has historically performed this analysis for the RWPGs upon their request. Staff of the TWDB's Projections & Socioeconomic Analysis department designed and conducted this analysis in support of Region L, and those efforts for this Region as well as the other 15 regions allow consistency and a degree of comparability in the approach.

This document summarizes the results of the analysis and discusses the methodology used to generate the results. Section 1 provides a snapshot of the region's economy and summarizes the identified water needs in each water use category, which were calculated based on the RWPG's water supply and demand established during the regional water planning process. Section 2 defines each of ten impact assessment measures used in this analysis. Section 3 describes the methodology for the impact assessment and the approaches and assumptions specific to each water use category (i.e., irrigation, livestock, manufacturing, mining, municipal, and steam-electric power). Section 4 presents the impact estimates for each water use category with results summarized for the Region as a whole. Appendix A presents a further breakdown of the socioeconomic impacts by county.

1.1 Regional Economic Summary

The Region L Regional Water Planning Area generated more than \$152 billion in gross domestic product (2023 dollars) and supported more than 1.48 million jobs in the year 2021, according to the IMPLAN dataset utilized in this socioeconomic analysis. This activity accounted for approximately 8 percent of the state's total gross domestic product of 1.9 trillion dollars for the year 2021 based on IMPLAN. Table 1-1 lists all economic sectors ranked by the total value-added to the economy in Region L. The finance and insurance and manufacturing sectors generated 24 percent of the region's total value-added and were also significant sources of tax revenue. The top employers in the region were in the health care and social assistance, retail trade, and accommodation and food services sectors. Region L's estimated total population was roughly 3,061,000, which comprises approximately 10.4 percent of the state's total population in 2021.

To gain deeper insights into Region L's economy, it is helpful to examine Region L's industry types. Region L consists of 222 4-digit NAICS (North American Industry Classification System) industries

in the year 2021 with an employment share of 9.6 percent total jobs in Texas and 8.5 percent of the state's total tax revenue. Trade played a pivotal role in the Region's economy, indicating connections with external markets. Major export commodities included insurance, automobiles, and natural gas & crude petroleum. Major import commodities included scientific research & development services, advertising, public relations, & related services, and pharmaceuticals.

This represents a snapshot of the regional economy as a whole, and it is important to note that not all economic sectors were included in the TWDB socioeconomic impact analysis. Data considerations prompted use of only the more water-intensive sectors within the economy because damage estimates could only be calculated for those economic sectors which had both reliable income and water use estimates.

Table 1-1 Region L regional economy by economic sector*

Economic sector	Value-added (\$ millions)	Tax (\$ millions)	Jobs
Finance and Insurance	\$19,160.31	\$1,049.45	120,803
Manufacturing	\$17,542.18	\$259.32	72,967
Health Care and Social Assistance	\$13,794.86	(\$418.96)	178,812
Professional, Scientific, and Technical Services	\$12,463.15	\$90.73	121,694
Retail Trade	\$10,777.03	\$2,312.27	152,183
Wholesale Trade	\$10,662.76	\$1,566.26	45,565
Real Estate and Rental and Leasing	\$10,423.06	\$1,347.49	77,040
Mining, Quarrying, and Oil and Gas Extraction	\$10,022.89	\$1,801.51	22,851
Accommodation and Food Services	\$7,642.09	\$38.86	146,446
Administrative and Support and Waste Management and Remediation Services	\$7,242.88	\$143.11	118,681
Construction	\$7,071.39	(\$254.10)	100,270
Transportation and Warehousing	\$6,619.45	\$81.94	82,508
Other Services (except Public Administration)	\$6,491.97	\$527.15	109,658
Information	\$5,693.25	\$1,611.11	21,884
Utilities	\$1,513.27	\$344.26	3,037
Educational Services	\$1,380.23	\$13.53	27,474
Management of Companies and Enterprises	\$1,370.33	\$62.04	19,706
Arts, Entertainment, and Recreation	\$1,344.56	\$92.97	26,322
Agriculture, Forestry, Fishing and Hunting	\$896.49	(\$41.29)	33,313
Grand Total	\$152,112.15	\$10,627.67	1,481,215

*Source: 2021 IMPLAN for 546 sectors aggregated by 2-digit NAICS

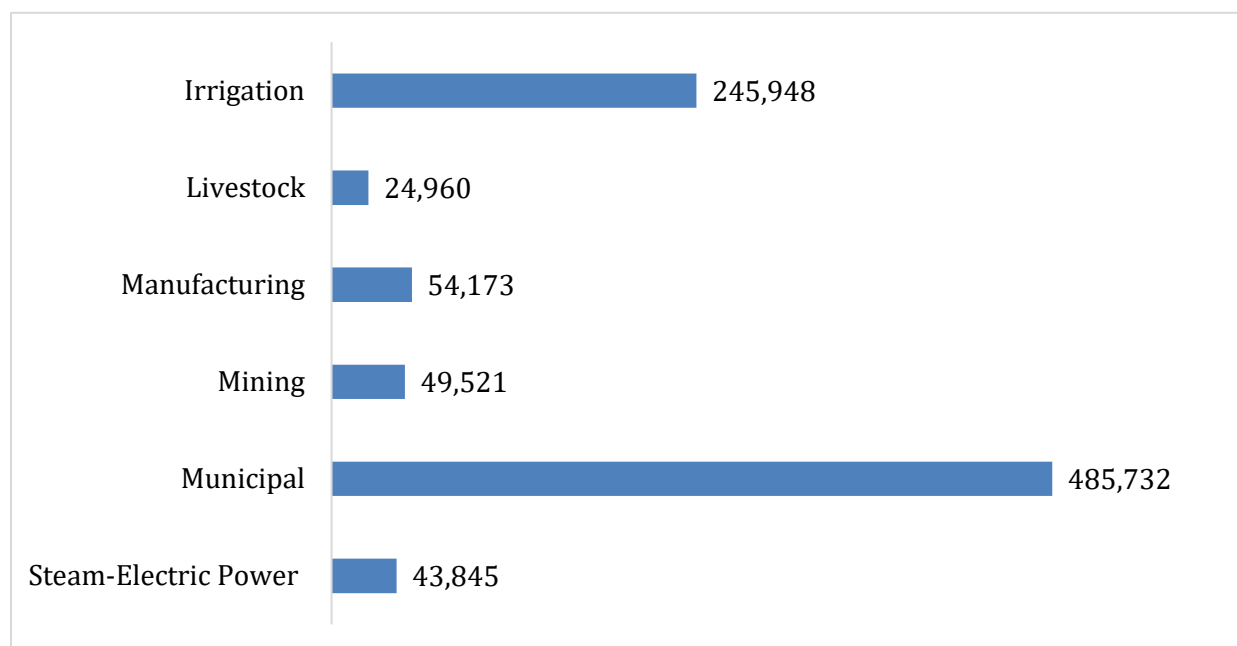
Note that for some sectors, taxes may be negative. This is due to federal subsidies in the sector and the subsequent net value in taxes collected and subsidies paid results in a negative tax payment (i.e., the subsidies paid were larger than the taxes collected for the year). Due to the Covid-19

pandemic, many sectors received more subsidies in the year 2021 than previous years, and the resulting net value for taxes is negative.

1.2 Regional Water Use Summary

While the manufacturing sector led the Region in economic output, the majority (54 percent) of water use occurred in the municipal water use category in 2021. Irrigated agriculture accounted for approximately 27 percent of Region L's water use in 2021. Figure 1-1 illustrates Region L's breakdown of the 2021 water use estimates by TWDB water use category.

Figure 1-1 Region L 2021 water use estimates by water use category (in acre-feet)



Source: TWDB Annual Water Use Estimates (all values in acre-feet)

1.3 Identified Regional Water Needs (Potential Shortages)

As part of the regional water planning process, the TWDB adopted water demand projections for water user groups (WUG) in Region L with input from the planning group. WUG-level demand projections were established for utilities that provide more than 100 acre-feet of annual water supply, combined rural areas (designated as county-other), and county-wide water demand projections for five non-municipal categories (irrigation, livestock, manufacturing, mining and steam-electric power) per ([31 TAC § 357.10\(43\)](#)). The RWPG then compared demands to the existing water supplies of each WUG to determine potential shortages, or needs, by decade.

Table 1-2 summarizes the region's identified water needs in the event of a repeat of the drought of record (needs identified in the Initially Prepared Plans). Demand management, such as conservation, or the development of new infrastructure to increase supplies, are water

management strategies that may be recommended by the planning group to address those needs. This analysis assumes that no strategies are implemented, and that the identified needs correspond to future water shortages. Note that projected water needs generally increase over time, primarily due to anticipated population growth, economic growth, or declining supplies. To provide a general sense of proportion, total projected needs as an overall percentage of total demand by water use category are also presented in aggregate in Table 1-2. Projected needs for individual water user groups within the aggregate can vary greatly and may reach 100% for a given WUG and water use category. A detailed summary of water needs appears in Chapter 4 of the 2026 Region L Regional Water Plan.

Table 1-2 Regional water needs summary by water use category*

Water Use Category		2030	2040	2050	2060	2070	2080
Irrigation	water needs (acre-feet per year)	71,258	71,187	71,793	71,862	71,927	71,979
	% of the category's total water demand	23%	23%	23%	23%	23%	23%
Livestock	water needs (acre-feet per year)	12	12	12	12	12	12
	% of the category's total water demand	0%	0%	0%	0%	0%	0%
Manufacturing	water needs (acre-feet per year)	39,765	41,606	45,440	49,562	53,838	58,272
	% of the category's total water demand	36%	36%	38%	40%	42%	44%
Mining	water needs (acre-feet per year)	34,771	37,867	40,936	43,930	46,782	20,956
	% of the category's total water demand	47%	49%	50%	51%	53%	43%
Municipal**	water needs (acre-feet per year)	38,660	69,433	111,065	184,152	264,266	361,827
	% of the category's total water demand	7%	11%	16%	24%	31%	38%
Steam-Electric Power	water needs (acre-feet per year)	666	666	666	666	666	666
	% of the category's total water demand	1%	1%	1%	1%	1%	1%

Total water needs (acre-feet per year)	185,132	220,771	269,912	350,184	437,491	513,712
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*Entries denoted by a dash (-) indicate no identified water need for a given water use category.

** Municipal category consists of residential and non-residential (commercial and institutional) subcategories.

2 Impact Assessment Measures

A required component of the regional and state water plans is to estimate the potential economic and social impacts of potential water shortages during a repeat of the drought of record. Consistent with previous water plans, ten impact measures were estimated and are described in Table 2-1.

Table 2-1 Socioeconomic impact analysis measures

Regional economic impacts	Description
Income losses - value-added	The value of output less the value of intermediate consumption; it is a measure of the contribution to gross domestic product (GDP) made by an individual producer, industry, sector, or group of sectors within a year. Value-added measures used in this report have been adjusted to include the direct, indirect, and induced monetary impacts on the region.
Income losses - electrical power purchase costs	Proxy for income loss in the form of additional costs of power as a result of impacts of water shortages.
At risk job losses	Number of part-time and full-time jobs at risk of being lost due to the shortage. These values have been adjusted to include the direct, indirect, and induced employment impacts on the region.
Financial transfer impacts	Description
Tax losses on production and imports	Sales and excise taxes not collected due to the shortage, in addition to customs duties, property taxes, motor vehicle licenses, severance taxes, other taxes, and special assessments less subsidies. These values have been adjusted to include the direct, indirect and induced tax impacts on the region.
Water trucking costs	Estimated cost of shipping potable water.
Utility revenue losses	Foregone utility income due to not selling as much water.
Utility tax revenue losses	Foregone miscellaneous gross receipts tax collections.

Social impacts	Description
Consumer surplus losses	A welfare measure of the lost value to consumers accompanying restricted water use.
At risk population out-migration	Potential population losses accompanying potential job losses.
At risk school enrollment losses	Potential school enrollment losses (K-12) accompanying potential job losses.

2.1 Regional Economic Impacts

The two key measures used to assess regional economic impacts are income losses and at risk job losses. The income losses presented consist of the sum of value-added losses and the additional purchase costs of electrical power.

Income Losses - Value-added Losses

Value-added is the value of total output less the value of the intermediate inputs also used in the production of the final product. Value-added is similar to GDP, a familiar measure of the productivity of an economy. The loss of value-added due to water shortages is estimated by input-output analysis using the IMPLAN software package, and includes the direct, indirect, and induced monetary impacts on the region. The indirect and induced effects are measures of reduced income as well as reduced employee spending for those input sectors which provide resources to the water shortage impacted production sectors.

Income Losses - Electric Power Purchase Costs

The electrical power grid and market within the state is a complex interconnected system. The industry response to water shortages, and the resulting impact on the region, are not easily modeled using traditional input/output impact analysis and the IMPLAN model. Adverse impacts on the region will occur and are represented in this analysis by estimated additional costs associated with power purchases from other generating plants within the region or state. Consequently, the analysis employs additional power purchase costs as a proxy for the value-added impacts for the steam-electric power water use category, and these are included as a portion of the overall income impact for completeness.

For the purpose of this analysis, it is assumed that power companies with insufficient water will be forced to purchase power on the electrical market at a projected higher rate of 5.60 cents per kilowatt hour. This rate is based upon the average day-ahead market purchase price of electricity in Texas that occurred during the recent drought period in 2011. This price is assumed to be comparable to those prices which would prevail in the event of another drought of record.

At Risk Job Losses

The number of jobs at risk of being lost due to the economic impact is estimated using IMPLAN output associated with each TWDB water use category. Because of the difficulty in predicting outcomes and a lack of relevant data, at risk job loss estimates are not calculated for the steam-electric power category. Furthermore, the estimates of such job losses for the remaining water use sectors do not consider conversion to hybrid or remote employment, as IMPLAN employment estimates are based on the establishment locations.

2.2 Financial Transfer Impacts

Several impact measures evaluated in this analysis are presented to provide additional detail concerning potential impacts on a portion of the economy or government. These financial transfer impact measures include lost tax collections (on production and imports), trucking costs for imported water, declines in utility revenues, and declines in utility tax revenue collected by the state. These measures are not solely adverse, with some having both positive and negative impacts. For example, cities and residents would suffer if forced to pay large costs for trucking in potable water. Trucking firms, conversely, would benefit from the transaction. Additional detail for each of these measures follows.

Tax Losses on Production and Imports

Reduced production of goods and services accompanying water shortages adversely impacts the collection of taxes by state and local government. The regional IMPLAN model is used to estimate reduced tax collections associated with the reduced output in the economy. Impact estimates for this measure include the direct, indirect, and induced impacts for the affected sectors.

Water Trucking Costs

In instances where water shortages for a municipal water user group are estimated by RWPGs to exceed 80 percent of water demands, it is assumed that water would need to be trucked in to support basic consumption and sanitation needs. For water shortages of 80 percent or greater, a fixed, maximum of \$45,500¹ per acre-foot of water applied as an economic cost. This water trucking cost was utilized for both the residential and non-residential portions of municipal water needs.

Utility Revenue Losses

Lost utility income is calculated as the price of water service multiplied by the quantity of water not sold during a drought shortage. Such estimates are obtained from utility-specific pricing data provided by the Texas Municipal League, where available, for both water and wastewater. These

¹ Based on a TWDB staff survey of year 2023 water trucking costs in the state. There are many factors and variables that would determine actual water trucking costs including distance, cost of water, and length of drought.

water rates are applied to the potential water shortage to estimate forgone utility revenue as water providers sold less water during the drought due to restricted supplies.

Utility Tax Losses

Foregone utility tax losses include estimates of forgone miscellaneous gross receipts taxes². Reduced water sales reduce the amount of utility tax that would be collected by the State of Texas for water and wastewater service sales.

2.3 Social Impacts

Consumer Surplus Losses for Municipal Water Users

Consumer surplus loss is a measure of impact to the wellbeing of municipal water users when their water use is restricted. Consumer surplus is the difference between how much a consumer is willing and able to pay for a commodity (i.e., water) and how much they actually have to pay. The difference is a benefit to the consumer's wellbeing since they do not have to pay as much for the commodity as they would be willing to pay. Consumer surplus may also be viewed as an estimate of how much consumers would be willing to pay to keep the original quantity of water which they used prior to the drought. Lost consumer surplus estimates within this analysis only apply to the residential portion of municipal demand, with estimates being made for reduced outdoor and indoor residential use. Lost consumer surplus estimates varied widely by location and degree of water shortage.

At Risk Population and School Enrollment Losses

Population at risk of out-migration due to water shortages, as well as the associated decline in school enrollment, are based upon the at risk job loss estimates discussed in Section 2.1. A simplified ratio of at risk jobs and population losses are calculated for the state as a whole based on a recent study of how job layoffs impact the labor market population.³ For every 100 jobs lost, 14 people were assumed to move out of the area. This ratio does not consider conversion to hybrid or remote employment and subsequent impacts to the labor market population. School enrollment losses are estimated as a proportion of the population at risk of out-migration based upon public school enrollment data from the Texas Education Agency concerning the age K-12 population within the state (approximately 18%).

² <https://comptroller.texas.gov/taxes/misc-gross-receipts/>

³ Foote, Andrew, Grosz, Michel, Stevens, Ann. "Locate Your Nearest Exit: Mass Layoffs and Local Labor Market Response." University of California, Davis. April 2015, <http://paa2015.princeton.edu/papers/150194>. The study utilized Bureau of Labor Statistics data regarding layoffs between 1996 and 2013, as well as Internal Revenue Service data regarding migration, to model the change in the population as the result of a job layoff event. The study found that layoffs impact both out-migration and in-migration into a region, and that a majority of those who did move following a layoff moved to another labor market rather than an adjacent county.

3 Socioeconomic Impact Assessment Methodology

This portion of the report provides a summary of the methodology used to estimate the potential economic impacts of future water shortages. The general approach employed in the analysis was to obtain estimates for at risk income and job losses on the smallest geographic level that the available data would support, tie those values to their accompanying historic water use estimate, and thereby determine a maximum impact per acre-foot of water shortage for each of the socioeconomic measures. The calculations of economic impacts are based on the overall composition of the economy divided into many underlying economic sectors. Sectors in this analysis refer to one or more of the 546 specific production sectors of the economy designated within IMPLAN, the economic impact modeling software used for this assessment. Economic impacts within this report are estimated for approximately 330 of these economic sectors, with the focus on the more water-intensive production sectors. The economic impacts for a single water use category consist of an aggregation of impacts to multiple, related IMPLAN economic sectors.

3.1 Analysis Context

The context of this socioeconomic impact analysis involves situations where there are physical shortages of groundwater or surface water due to a recurrence of drought of record conditions. Anticipated shortages for specific water users may be nonexistent in earlier decades of the planning horizon, yet population growth or greater industrial, agricultural or other sector demands in later decades may result in greater overall demand, exceeding the existing supplies. Estimated socioeconomic impacts measure what would happen if water user groups experience water shortages for a period of one year. Actual socioeconomic impacts would likely become larger as drought of record conditions persist for periods greater than a single year.

3.2 IMPLAN Model and Data

The Input-Output (I-O) model provides a framework to analyze an event like a water shortage during a one-year repeat of the drought of record that impacts interdependent economic sectors. IMPLAN cloud is used as the primary software for estimating the value-added, jobs, and tax related impact measures. IMPLAN is a widely-accepted software model that combines data and analytics to empower a greater understanding of different economic impacts utilizing the foundations of I-O modeling techniques. This analysis employed regional level models, developed utilizing Regional Water Planning Area counties, to determine key economic impacts. IMPLAN was originally developed by the U.S. Forestry Service in the 1970's to model economic activity at varying geographic levels. The model is currently maintained by the IMPLAN Group LLC (implan.com) which collects and sells county and state specific data and software.

IMPLAN currently combines information for 546 IMPLAN industry sectors. For the purpose of this socioeconomic impact analysis, all water-intensive industries are consolidated into six water user categories (irrigation, livestock, manufacturing, mining, municipal, and steam-electric power). Estimates of value-added for a water use category is obtained by summing value-added estimates across the relevant IMPLAN sectors associated with that water use category, for which there is

estimated water use in Texas. A similar approach was followed to estimate the number of at risk jobs as well as tax losses on production and imports.

IMPLAN categorizes the impact of water shortage events on value-added, jobs, and tax estimates into three components:

- **Direct effects** representing the initial change in the industry analyzed;
- **Indirect effects** that are changes in inter-industry transactions as supplying industries respond to reduced demands from the directly affected industries; and,
- **Induced effects** that reflect changes in local spending that result from reduced household income among employees in the directly and indirectly affected industry sectors.

3.3 Elasticity of Economic Impacts

The economic impact of a water need is based on the size of the water need relative to the total water demand for each water user group. Smaller water shortages, for example, less than 5 percent, are generally anticipated to result in no initial negative economic impact because water users are assumed to have a certain amount of flexibility in dealing with small shortages. As a water shortage intensifies, however, such flexibility lessens and results in actual and increasing economic losses, eventually reaching a representative maximum impact estimate per unit volume of water. To account for these characteristics, an elasticity adjustment function is used to estimate impacts for the income, tax and job loss measures. Figure 3-1 illustrates this general relationship for the adjustment functions. Negative impacts are assumed to begin accruing when the shortage reaches the lower bound 'b1' (5 percent in Figure 3-1), with impacts then increasing linearly up to the 100 percent impact level (per unit volume) once the upper bound reaches the 'b2' level shortage (40 percent in Figure 3-1).

To illustrate this, if the total annual value-added for manufacturing in the region was \$2 million and the reported annual volume of water used in that industry is 10,000 acre-feet, the estimated economic measure of the water shortage would be \$200 per acre-foot. The economic impact of the shortage would then be estimated using this value-added amount as the maximum impact estimate (\$200 per acre-foot) applied to the anticipated shortage volume and then adjusted by the elasticity function. Using the sample elasticity function shown in Figure 3-1, an approximately 22 percent shortage in the manufacturing category would indicate an economic impact estimate of 50% of the original \$200 per acre-foot impact value (i.e., \$100 per acre-foot).

Such adjustments are not required in estimating lost consumer surplus, utility revenue losses, or utility tax losses. Estimates of lost consumer surplus rely on utility-specific demand curves with the lost consumer surplus estimate calculated based on the relative percentage of the utility's water shortage. Estimated changes in population and school enrollment are indirectly related to the elasticity of job losses.

Assumed values for the lower and upper bounds 'b1' and 'b2' vary by water use category and are presented in Table 3-1.

Figure 3-1 Example economic impact elasticity function (as applied to a single water user's shortage)

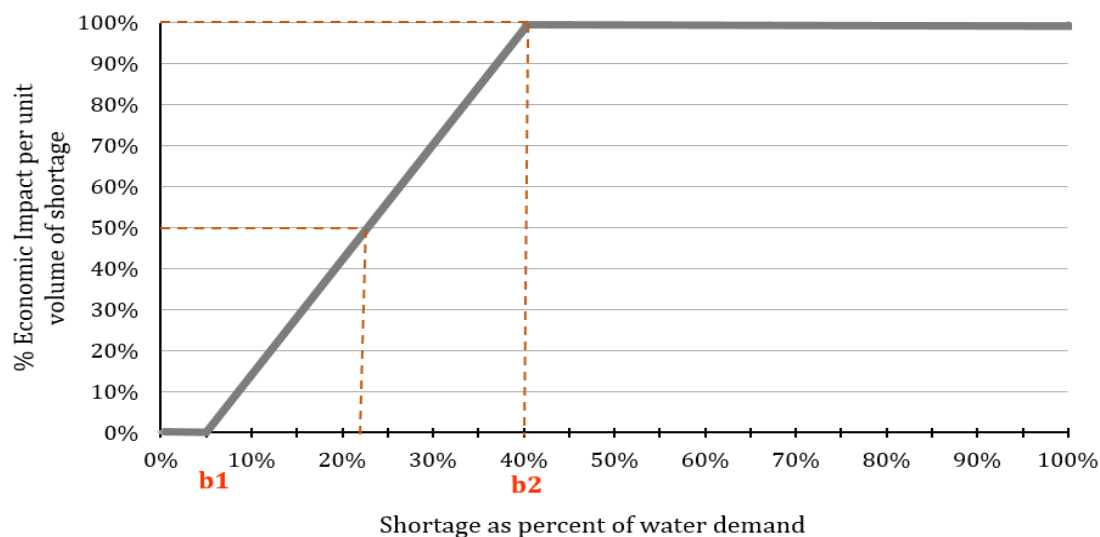


Table 3-1 Economic impact elasticity function lower and upper bounds

Water use category	Lower bound (b1)	Upper bound (b2)
Irrigation	5%	40%
Livestock	5%	10%
Manufacturing	5%	40%
Mining	5%	40%
Municipal (non-residential water intensive subcategory)	5%	40%
Steam-electric power	N/A	N/A

3.4 Analysis Assumptions and Limitations

The modeling of complex systems requires making many assumptions and acknowledging the model's uncertainty and limitations. This is particularly true when attempting to estimate a wide range of socioeconomic impacts over a large geographic area and into future decades. Some of the key assumptions and limitations of this methodology include:

1. The foundation for estimating the socioeconomic impacts of water shortages resulting from a drought are the water needs (potential shortages) that were identified by RWPGs as part of the

regional water planning process. These needs have some uncertainty associated with them but serve as a reasonable basis for evaluating the potential impacts of a drought of record event.

2. All estimated socioeconomic impacts are snapshots for years in which water needs were identified (i.e., 2030, 2040, 2050, 2060, 2070, and 2080). The estimates are independent and distinct “what if” scenarios for each particular year, and water shortages are assumed to be temporary events resulting from a single year recurrence of drought of record conditions. The evaluation assumed that no recommended water management strategies are implemented. Note that the estimates presented are not cumulative (i.e., summing up expected impacts from today up to the decade noted), but are simply snapshots of the estimated annual socioeconomic impacts should a drought of record occur in each particular decade based on anticipated water supplies and demands for that same decade.
3. Because the overarching context of this analysis is a one-year repeat drought of record, it is assumed that water-related utilities and companies would not implement mitigation measures or shock absorbers within such a short timeframe. Therefore, estimated impacts to the economy in this report may appear higher than if mitigation strategies were implemented in the short-term. If faced with drought over a longer timeframe, individual utilities and companies might alter their behavior to induce more efficient use of the limited water supplies available to them.
4. Input-output models such as IMPLAN rely on a static profile of the structure of the economy as it appears today. IMPLAN Input-output analysis is a backward-looking model, as it only reflects effects of input industries. This presumes that the relative contributions of all sectors of the economy would remain the same, regardless of changes in technology, availability of limited resources, and other structural changes to the economy that may occur in the future. Changes in water use efficiency will undoubtedly take place in the future as supplies become more stressed. Use of the static IMPLAN structure was a significant assumption and simplification considering the 50-year time period examined in this analysis. To presume an alternative future economic makeup, however, would entail positing many other major assumptions that would very likely generate as much or more error.
5. This is not a form of cost-benefit analysis. That approach to evaluating the economic feasibility of a specific policy or project employs discounting future benefits and costs to their present value dollars using some assumed discount rate. The methodology employed in this effort to estimate the economic impacts of future water shortages did not use any discounting methods to weigh future costs differently through time.
6. All monetary values originally based upon year 2021 IMPLAN and other sources are reported in constant year 2023 dollars to be consistent with the water management strategy requirements in the State Water Plan.

7. IMPLAN based loss estimates (income-value-added, jobs, and taxes on production and imports) are calculated only for those IMPLAN sectors for which the TWDB's Water Use Survey (WUS) data was available and deemed reliable. Every effort is made in the annual WUS effort to capture all relevant firms who are significant water users. Lack of response to the WUS, or omission of relevant firms, impacts the loss estimates.
8. Impacts are annual estimates. The socioeconomic analysis does not reflect the full extent of impacts that might occur as a result of persistent water shortages occurring over an extended duration. The drought of record in most regions of Texas lasted several years.
9. Loss in value-added estimates are the primary estimate of the economic impacts within this report. One may be tempted to add consumer surplus impacts to obtain an estimate of total adverse economic impacts to the region, but the consumer surplus measure represents the change to the wellbeing of households (and other water users), not an actual change in the flow of dollars through the economy. The two measures (value-added and consumer surplus) are both valid impacts but ideally should not be summed.
10. The value-added, jobs, and taxes on production and import impacts include the direct, indirect and induced effects to capture backward linkages in the economy described in Section 2.1. Population and school enrollment at risk of out-migration also indirectly include such effects as they are based on the associated losses in employment. The remaining measures (consumer surplus, utility revenue, utility taxes, additional electrical power purchase costs, and potable water trucking costs), however, do not include any induced or indirect effects.
11. The majority of impacts estimated in this analysis may be more conservative (i.e., smaller) than those that might actually occur under drought of record conditions due to not including impacts in the forward linkages in the economy. Input-output models such as IMPLAN only capture backward linkages on suppliers (including households that supply labor to directly affected industries). While this is a common limitation in this type of economic modeling effort, it is important to note that forward linkages on the industries that use the outputs of the directly affected industries can also be very important. A good example is impacts on livestock operators. Livestock producers tend to suffer substantially during droughts, not because there is not enough water for their stock, but because reductions in available pasture and higher prices for purchased hay have significant economic effects on their operations. Food processors could be in a similar situation if they cannot get the grains or other inputs that they need. These effects are not captured in IMPLAN, resulting in conservative impact estimates.
12. The model does not reflect dynamic economic responses to water shortages as they might occur, nor does the model reflect economic impacts associated with a recovery from a drought of record including:
 - a. The likely significant economic rebound to some industries immediately following a drought, such as landscaping;

- b. The cost and time to rebuild liquidated livestock herds (a major capital investment in that industry);
 - c. Direct impacts on recreational sectors (i.e., stranded docks and reduced tourism); or,
 - d. Impacts of negative publicity on Texas' ability to attract population and business in the event that it was not able to provide adequate water supplies for the existing economy.
13. Estimates for job losses and the associated population and school enrollment changes may exceed what would actually occur. In practice, firms may be hesitant to lay off employees, even in difficult economic times. Estimates of potential population and school enrollment changes are based on regional evaluations and therefore do not necessarily reflect what might occur on a statewide basis.
14. **The results must be interpreted carefully. It is the general and relative magnitudes of at risk impacts as well as the changes of these impacts over time that should be the focus rather than the absolute numbers.** Analyses of this type are much better at predicting relative percent differences brought about by a shock to a complex system (i.e., a water shortage) than the precise size of an impact. To illustrate, assuming that the estimated economic impacts of a drought of record on the manufacturing and mining water user categories are \$2 and \$1 million, respectively, one should be more confident that the economic impacts on manufacturing are twice as large as those on mining and that these impacts will likely be in the millions of dollars. But one should have less confidence that the actual total economic impact experienced would be \$3 million.
15. The methodology does not capture “spillover” effects between regions – or the secondary impacts that occur outside of the region where the water shortage is projected to occur.
16. The methodology that the TWDB has developed for estimating the economic impacts of unmet water needs, and the assumptions and models used in the analysis, are specifically designed to estimate potential economic effects at the regional and county levels. Although it may be tempting to add the regional impacts together in an effort to produce a statewide result, the TWDB cautions against that approach for a number of reasons. The IMPLAN modeling (and corresponding economic multipliers) are all derived from regional models – a statewide model of Texas would produce somewhat different multipliers. As noted in point 14 within this section, the regional modeling used by TWDB does not capture spillover losses that could result in other regions from unmet needs in the Region analyzed, or potential spillover gains if decreased production in one region leads to increases in production elsewhere. The assumed drought of record may also not occur in every region of Texas at the same time, or to the same degree.

4 Analysis Results

This section presents estimates of potential economic impacts that could reasonably be expected in the event of water shortages associated with a drought of record and if no recommended water management strategies were implemented. Projected economic impacts for the six water use categories (irrigation, livestock, manufacturing, mining, municipal, and steam-electric power) are reported by decade.

4.1 Impacts for Irrigation Water Shortages

Eleven of the 21 counties in the Region are projected to experience water shortages in the irrigated agriculture water use category for one or more decades within the planning horizon. Estimated impacts to this water use category appear in Table 4-1. Note that tax collection impacts were not estimated for this water use category. IMPLAN data indicates a negative tax impact (i.e., increased tax collections) for the associated production sectors, primarily due to past subsidies from the federal government. However, it was not considered realistic to report increasing tax revenues during a drought of record.

Table 4-1 Impacts of water shortages on irrigation

Impact measure	2030	2040	2050	2060	2070	2080
Income losses (\$ millions)*	\$35	\$35	\$36	\$36	\$36	\$36
At risk job losses	1,001	1,001	1,016	1,017	1,017	1,018

* Year 2023 dollars, rounded. Entries denoted by a dash (-) indicate no estimated economic impact. Entries denoted by a zero (\$0) indicate estimated income losses less than \$500,000.

4.2 Impacts for Livestock Water Shortages

One of the 21 counties in the Region are projected to experience water shortages in the livestock water use category, although it does not result in an economic or social impact. Estimated impacts to this water use category appear in Table 4-2.

Table 4-2 Impacts of water shortages on livestock

Impact measure	2030	2040	2050	2060	2070	2080
Income losses (\$ millions)*	\$-	\$-	\$-	\$-	\$-	\$-
At risk job losses	-	-	-	-	-	-
Tax losses on production and	\$-	\$-	\$-	\$-	\$-	\$-

imports (\$ millions)*

* Year 2023 dollars, rounded. Entries denoted by a dash (-) indicate no estimated economic impact. Entries denoted by a zero (\$0) indicate estimated income losses less than \$500,000.

4.3 Impacts of Manufacturing Water Shortages

Manufacturing water shortages in the Region are projected to occur in seven of the 21 counties for at least one decade of the planning horizon. Estimated impacts to this water use category appear in Table 4-3.

Table 4-3 Impacts of water shortages on manufacturing

Impacts measure	2030	2040	2050	2060	2070	2080
Income losses (\$ millions)*	\$9,192	\$9,568	\$9,999	\$10,553	\$11,259	\$12,102
At risk job losses	73,986	77,134	80,664	85,014	90,268	96,365
Tax losses on production and Imports (\$ millions)*	\$331	\$344	\$360	\$381	\$409	\$444

* Year 2023 dollars, rounded. Entries denoted by a dash (-) indicate no estimated economic impact. Entries denoted by a zero (\$0) indicate estimated income losses less than \$500,000.

4.4 Impacts of Mining Water Shortages

Twelve of the 21 counties in the Region are projected to experience water shortages in the mining water use category. Estimated impacts to this water use type appear in Table 4-4.

Table 4-4 Impacts of water shortages on mining

Impacts measure	2030	2040	2050	2060	2070	2080
Income losses (\$ millions)*	\$20,254	\$20,709	\$21,150	\$21,531	\$21,892	\$1,796
At risk job losses	69,356	71,932	74,417	76,507	78,496	12,138
Tax losses on production and Imports (\$ millions)*	\$2,366	\$2,409	\$2,450	\$2,486	\$2,521	\$147

* Year 2023 dollars, rounded. Entries denoted by a dash (-) indicate no estimated economic impact. Entries denoted by a zero (\$0) indicate estimated income losses less than \$500,000.

4.5 Impacts for Municipal Water Shortages

Fourteen of the 21 counties in the Region are projected to experience water shortages in the municipal water use category for one or more decades within the planning horizon.

Impact estimates were made for two sub-categories within municipal water use: residential and non-residential. Non-residential municipal water use includes commercial and institutional users, which are further divided into non-water-intensive and water-intensive subsectors including car wash, laundry, hospitality, health care, recreation, and education. Lost consumer surplus estimates were made only for needs in the residential portion of municipal water use. Available IMPLAN and TWDB Water Use Survey data for the non-residential, water-intensive portion of municipal demand allowed these sectors to be included in income, jobs, and tax loss impact estimate.

Trucking cost estimates, calculated for shortages exceeding 80 percent, assumed a fixed, maximum cost of \$45,500 per acre-foot to transport water for municipal use. The estimated impacts to this water use category appear in Table 4-5.

Table 4-5 Impacts of water shortages on municipal water users

Impacts measure	2030	2040	2050	2060	2070	2080
Income losses¹ (\$ millions)*	\$319	\$472	\$911	\$1,429	\$2,072	\$2,798
At risk job losses¹	4,121	6,094	11,759	18,437	26,726	36,060
Tax losses on production and imports¹ (\$ millions)*	\$14	\$20	\$39	\$62	\$90	\$121
Trucking costs (\$ millions)*	\$6	\$6	\$6	\$15	\$26	\$107
Utility revenue losses (\$ millions)*	\$154	\$305	\$516	\$865	\$1,245	\$1,704
Utility tax revenue losses (\$ millions)*	\$2	\$5	\$9	\$16	\$23	\$31

¹ Estimates apply to the water-intensive portion of non-residential municipal water use.

* Year 2023 dollars, rounded. Entries denoted by a dash (-) indicate no estimated economic impact. Entries denoted by a zero (\$0) indicate estimated income losses less than \$500,000.

4.6 Impacts of Steam-Electric Power Water Shortages

One of the 21 counties in the Region are projected to experience water shortages in the steam-electric water category. Estimated impacts to this water use category appear in Table 4-6.

Note that estimated economic impacts to steam-electric power water users:

- Are reflected as an income loss proxy in the form of estimated additional purchasing costs for power from the electrical grid to replace power that could not be generated due to a shortage;
- Do not include estimates of impacts on jobs. Because of the unique conditions of power generators during drought conditions and lack of relevant data, it was assumed that the industry would retain, perhaps relocating or repurposing, their existing staff in order to manage their ongoing operations through a severe drought.
- Do not presume a decline in tax collections. Associated tax collections, in fact, would likely increase under drought conditions since, historically, the demand for electricity increases during times of drought, thereby increasing taxes collected on the additional sales of power.

Table 4-6 Impacts of water shortages on steam-electric power

Impacts measure	2030	2040	2050	2060	2070	2080
Income Losses (\$ millions)*	\$30	\$30	\$30	\$30	\$30	\$30

* Year 2023 dollars, rounded. Entries denoted by a dash (-) indicate no estimated economic impact. Entries denoted by a zero (\$0) indicate estimated income losses less than \$500,000.

4.7 Regional Social Impacts

Projected changes in population, based upon several factors (household size, population, and job loss estimates), as well as the accompanying change in school enrollment, were also estimated and are summarized in Table 4-7.

Table 4-7 Region-wide social impacts of water shortages

Impacts measure	2030	2040	2050	2060	2070	2080
Consumer surplus losses (\$ millions)*	\$52	\$127	\$264	\$611	\$1,304	\$2,428
At risk population out-migration	21,260	22,362	24,037	25,916	28,140	20,847
At risk school enrollment losses	3,880	4,081	4,387	4,730	5,136	3,805

* Year 2023 dollars, rounded. Entries denoted by a dash (-) indicate no estimated economic impact. Entries denoted by a zero (\$0) indicate estimated income losses less than \$500,000.

Appendix A - County Level Summary of Regional Estimated Economic Impacts

County level summary of estimated regional economic impacts of not meeting identified water needs by water use category and decade (in 2023 dollars, rounded). Values are presented only for counties with projected economic impacts for at least one decade.

(* Entries denoted by a dash (-) indicate no estimated economic impact)

		Income losses (\$ millions)						At risk job losses					
County	Water Use Category	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Atascosa	Mining	\$ 1,440.27	\$ 1,576.88	\$ 1,710.43	\$ 1,836.57	\$ 1,954.41	\$ -	5,242	5,739	6,226	6,685	7,114	-
Atascosa	Municipal	\$ 1.72	\$ 2.33	\$ 2.97	\$ 3.40	\$ 4.02	\$ 4.97	22	30	38	44	52	64
Atascosa Total		\$ 1,442.00	\$ 1,579.21	\$ 1,713.41	\$ 1,839.96	\$ 1,958.43	\$ 4.97	5,264	5,770	6,264	6,728	7,165	64
Bexar	Manufacturing	\$ -	\$ -	\$ 45.34	\$ 177.63	\$ 383.22	\$ 661.67	-	-	333	1,304	2,814	4,858
Bexar	Municipal	\$ 181.80	\$ 207.54	\$ 225.99	\$ 244.27	\$ 276.93	\$ 359.47	2,346	2,678	2,917	3,152	3,574	4,639
Bexar Total		\$ 181.80	\$ 207.54	\$ 271.33	\$ 421.90	\$ 660.14	\$ 1,021.14	2,346	2,678	3,249	4,457	6,387	9,497
Caldwell	Manufacturing	\$ 5.90	\$ 6.56	\$ 7.22	\$ 7.87	\$ 8.53	\$ 9.18	55	61	67	73	79	85
Caldwell	Municipal	\$ 0.06	\$ 0.59	\$ 1.24	\$ 5.24	\$ 20.06	\$ 39.46	1	7	16	67	239	454
Caldwell Total		\$ 5.96	\$ 7.14	\$ 8.46	\$ 13.12	\$ 28.59	\$ 48.64	55	68	82	139	318	539
Calhoun	Irrigation	\$ 5.83	\$ 5.83	\$ 5.83	\$ 5.83	\$ 5.83	\$ 5.83	314	314	314	314	314	314
Calhoun	Manufacturing	\$ -	\$ -	\$ -	\$ 28.72	\$ 125.10	\$ 277.09	-	-	-	130	565	1,251
Calhoun Total		\$ 5.83	\$ 5.83	\$ 5.83	\$ 34.55	\$ 130.93	\$ 282.92	314	314	314	444	879	1,565
Comal	Mining	\$ 141.28	\$ 380.75	\$ 610.70	\$ 790.24	\$ 963.35	\$ 1,122.58	962	2,592	4,158	5,380	6,558	7,642
Comal	Municipal	\$ 9.29	\$ 66.03	\$ 257.90	\$ 459.37	\$ 733.30	\$ 1,030.60	120	852	3,328	5,928	9,464	13,300
Comal Total		\$ 150.58	\$ 446.78	\$ 868.60	\$ 1,249.61	\$ 1,696.65	\$ 2,153.18	1,082	3,444	7,486	11,308	16,022	20,943
Dimmit	Irrigation	\$ 3.18	\$ 3.18	\$ 3.18	\$ 3.18	\$ 3.18	\$ 3.18	66	66	66	66	66	66
Dimmit	Mining	\$ 4,243.36	\$ 4,243.36	\$ 4,243.36	\$ 4,243.36	\$ 4,243.36	\$ -	14,024	14,024	14,024	14,024	14,024	-
Dimmit	Municipal	\$ -	\$ -	\$ -	\$ 0.01	\$ 0.14	\$ 0.24	-	-	-	0	2	3
Dimmit Total		\$ 4,246.54	\$ 4,246.54	\$ 4,246.54	\$ 4,246.55	\$ 4,246.68	\$ 3.41	14,090	14,090	14,090	14,090	14,092	69
Frio	Mining	\$ 3,188.65	\$ 3,189.44	\$ 3,189.44	\$ 3,190.23	\$ 3,190.23	\$ -	10,518	10,521	10,521	10,523	10,523	-
Frio	Municipal	\$ 0.81	\$ 3.18	\$ 5.53	\$ 5.97	\$ 6.49	\$ 7.09	10	41	71	77	84	92
Frio Total		\$ 3,189.46	\$ 3,192.62	\$ 3,194.97	\$ 3,196.20	\$ 3,196.72	\$ 7.09	10,528	10,562	10,592	10,600	10,607	92
Goliad	Irrigation	\$ 0.00	\$ -	\$ -	\$ -	\$ -	\$ -	0	-	-	-	-	-
Goliad Total		\$ 0.00	\$ -	\$ -	\$ -	\$ -	\$ -	0	-	-	-	-	-

		Income losses (\$ millions)						At risk job losses					
County	Water Use Category	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Gonzales	Mining	\$ 2,593.36	\$ 2,616.93	\$ 2,644.07	\$ 2,671.21	\$ 2,699.07	\$ -	8,671	8,750	8,840	8,931	9,024	-
Gonzales Total		\$ 2,593.36	\$ 2,616.93	\$ 2,644.07	\$ 2,671.21	\$ 2,699.07	\$ -	8,671	8,750	8,840	8,931	9,024	-
Guadalupe	Mining	\$ 323.19	\$ 323.19	\$ 323.19	\$ 323.19	\$ 323.19	\$ -	1,009	1,009	1,009	1,009	1,009	-
Guadalupe	Municipal	\$ 7.77	\$ 44.35	\$ 124.49	\$ 204.88	\$ 293.96	\$ 398.09	100	572	1,607	2,644	3,794	5,137
Guadalupe Total		\$ 330.96	\$ 367.54	\$ 447.68	\$ 528.07	\$ 617.15	\$ 398.09	1,110	1,582	2,616	3,654	4,803	5,137
Hays	Municipal	\$ 29.15	\$ 55.29	\$ 148.78	\$ 288.88	\$ 448.22	\$ 588.52	376	714	1,920	3,728	5,784	7,595
Hays Total		\$ 29.15	\$ 55.29	\$ 148.78	\$ 288.88	\$ 448.22	\$ 588.52	376	714	1,920	3,728	5,784	7,595
Karnes	Irrigation	\$ 0.08	\$ 0.08	\$ 0.70	\$ 0.70	\$ 0.70	\$ 0.70	2	2	15	15	15	15
Karnes	Mining	\$ 1,138.29	\$ 1,138.29	\$ 1,138.29	\$ 1,138.29	\$ 1,138.29	\$ -	3,755	3,755	3,755	3,755	3,755	-
Karnes Total		\$ 1,138.37	\$ 1,138.37	\$ 1,138.99	\$ 1,138.99	\$ 1,138.99	\$ 0.70	3,756	3,756	3,770	3,770	3,770	15
Kendall	Manufacturing	\$ 3,393.70	\$ 3,551.55	\$ 3,709.39	\$ 3,867.24	\$ 4,025.09	\$ 4,182.93	40,378	42,256	44,134	46,012	47,890	49,768
Kendall	Municipal	\$ -	\$ 2.17	\$ 51.20	\$ 121.00	\$ 190.68	\$ 268.87	-	28	661	1,562	2,461	3,470
Kendall Total		\$ 3,393.70	\$ 3,553.72	\$ 3,760.60	\$ 3,988.24	\$ 4,215.77	\$ 4,451.81	40,378	42,284	44,795	47,574	50,351	53,238
La Salle	Irrigation	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	1	1	1	1	1	1
La Salle	Mining	\$ 3,847.50	\$ 3,847.50	\$ 3,847.50	\$ 3,847.50	\$ 3,847.50	\$ -	12,691	12,691	12,691	12,691	12,691	-
La Salle Total		\$ 3,847.53	\$ 3,847.53	\$ 3,847.53	\$ 3,847.53	\$ 3,847.53	\$ 0.03	12,692	12,692	12,692	12,692	12,692	1
Medina	Irrigation	\$ 9.87	\$ 9.91	\$ 9.94	\$ 9.97	\$ 10.00	\$ 10.02	247	248	249	250	250	251
Medina	Mining	\$ 257.38	\$ 290.71	\$ 320.07	\$ 346.72	\$ 370.16	\$ 389.54	1,752	1,979	2,179	2,360	2,520	2,652
Medina	Municipal	\$ 9.53	\$ 9.96	\$ 11.78	\$ 14.83	\$ 17.92	\$ 20.39	123	129	152	191	231	263
Medina Total		\$ 276.78	\$ 310.58	\$ 341.80	\$ 371.52	\$ 398.07	\$ 419.95	2,123	2,356	2,580	2,802	3,002	3,166
Uvalde	Irrigation	\$ 9.73	\$ 9.73	\$ 9.73	\$ 9.73	\$ 9.73	\$ 9.73	207	207	207	207	207	207
Uvalde	Mining	\$ 136.13	\$ 154.66	\$ 173.87	\$ 192.15	\$ 209.74	\$ 226.41	927	1,053	1,184	1,308	1,428	1,541
Uvalde	Municipal	\$ 3.87	\$ 2.98	\$ 1.99	\$ 1.07	\$ 0.39	\$ -	50	38	26	14	5	-
Uvalde Total		\$ 149.73	\$ 167.37	\$ 185.58	\$ 202.94	\$ 219.86	\$ 236.14	1,184	1,299	1,417	1,529	1,640	1,749
Victoria	Manufacturing	\$ 5,720.25	\$ 5,934.47	\$ 6,156.61	\$ 6,386.98	\$ 6,625.86	\$ 6,873.55	32,912	34,145	35,423	36,748	38,123	39,548
Victoria	Mining	\$ 47.86	\$ 50.56	\$ 52.96	\$ 54.80	\$ 56.50	\$ 57.78	250	264	277	286	295	302
Victoria	Municipal	\$ 74.25	\$ 76.12	\$ 76.62	\$ 75.94	\$ 75.17	\$ 74.28	958	982	989	980	970	959
Victoria	Steam Electric Power	\$ 29.67	\$ 29.67	\$ 29.67	\$ 29.67	\$ 29.67	\$ 29.67	-	-	-	-	-	-
Victoria Total		\$ 5,872.04	\$ 6,090.81	\$ 6,315.86	\$ 6,547.39	\$ 6,787.21	\$ 7,035.28	34,121	35,391	36,688	38,015	39,388	40,808
Wilson	Manufacturing	\$ 0.62	\$ 1.68	\$ 3.15	\$ 4.98	\$ 8.34	\$ 12.37	5	13	24	37	62	92

Region L

		Income losses (\$ millions)						At risk job losses					
County	Water Use Category	2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Wilson	Municipal	\$ 1.07	\$ 1.69	\$ 2.70	\$ 3.82	\$ 5.16	\$ 6.44	14	22	35	49	67	83
Wilson Total		\$ 1.69	\$ 3.37	\$ 5.84	\$ 8.80	\$ 13.51	\$ 18.81	18	34	58	87	129	176
Zavala	Irrigation	\$ 6.74	\$ 6.74	\$ 6.74	\$ 6.74	\$ 6.74	\$ 6.74	163	163	163	163	163	163
Zavala	Manufacturing	\$ 71.52	\$ 74.16	\$ 76.90	\$ 79.73	\$ 82.66	\$ 85.69	636	660	684	709	735	762
Zavala	Mining	\$ 2,896.49	\$ 2,896.49	\$ 2,896.49	\$ 2,896.49	\$ 2,896.49	\$ -	9,554	9,554	9,554	9,554	9,554	-
Zavala Total		\$ 2,974.75	\$ 2,977.39	\$ 2,980.12	\$ 2,982.96	\$ 2,985.89	\$ 92.43	10,353	10,377	10,401	10,426	10,453	925
Region L Total		\$ 29,830.23	\$ 30,814.56	\$ 32,125.99	\$ 33,578.43	\$ 35,289.40	\$ 16,763.11	148,463	156,161	167,856	180,974	196,508	145,580

Addendum to Socioeconomic Impact Analysis for the 2026 Regional Water Plans

After the release of the socioeconomic impact analysis regional reports, the TWDB determined that a portion of the multi-faceted socio-economic impact estimates likely include upwardly biased impact results. It appears that the baseline value-added per acre-foot, used to determine the final drought degree adjusted impact estimates, may be inflated for the manufacturing water use sector. A similar conclusion applies for the estimates for jobs at risk and tax collections within that sector since all three measures rely upon a similar calculation procedure and required datasets.


Initial estimates for the value-added per acre-foot of water use are obtained using IMPLAN data coupled with TWDB Water Use Survey data. These calculations are limited to production subsectors (4-digit NAICS codes) for which TWDB Water Use Survey data was available and deemed reliable. These value-added estimates are adjusted downward, if necessary, to better correspond to the footprint of the data collected in the Water Use Survey. This is done to better match the productivity estimate from IMPLAN with the quantitative estimate of the water used to produce that output. The adjustment process involves using the proportion of the number of firms surveyed in the Water Use Survey versus the number of firms in the U.S. Census County Business Pattern data, limited to those firms with more than 50 employees. This approach assumes that the Water Use Survey captures water use from the larger water users in the state for the manufacturing sector.

Historically, this methodology has served the socio-economic impact estimation effort well, yet several factors have combined to result in likely upwardly biased estimates during this cycle that include:

- Adherence to the usual 5-year increment to access baseline IMPLAN value-added estimates prompted use of year 2021 data, a year with significant economic impacts as well as data collection issues prompted by the COVID pandemic, and
- Increased data suppression (reduced geographic data coverage) within the U.S. Census County Business Pattern Employment Data

This addendum is to make consumers of this analysis aware of the potentially skewed results for the manufacturing sector. Factors that are at play in this likely overestimated impact include: abnormal data collection results accompanying the COVID pandemic resulting in much higher than normal impact estimates for this water use sector, and reality-check values for the value-added per acre-foot of water that are almost non-existent within the research literature. The few research-based values that do exist, however, apply for periods ten or more years ago and/or foreign countries. Neither of these sources are deemed as being reliable for determining a reasonable upper bound or reliable estimate for this unique impact measure. The net effect is believed to overstate large projected income losses, jobs at risk, and tax collections within the manufacturing sector. This likely impacts a number of the sixteen planning regions but cannot be conclusively determined prior to planning groups needing to adopt their final regional water plans.

AGENDA ITEM NO.6 – CONSIDERATION AND APPROPRIATE ACTION REGARDING PRESENTATION BY
TECHNICAL CONSULTANT REGARDING SCHEDULE AND PROGRESS UPDATE


 BLACK & VEATCH

8/28/2025

Agenda Item 6: Consideration and Appropriate Action Regarding Presentation by Technical Consultant Regarding Schedule and Progress Update

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Schedule and Progress Updates – Overview

- A. Schedule Progress
- B. Update on Completed, New, or Ongoing Efforts

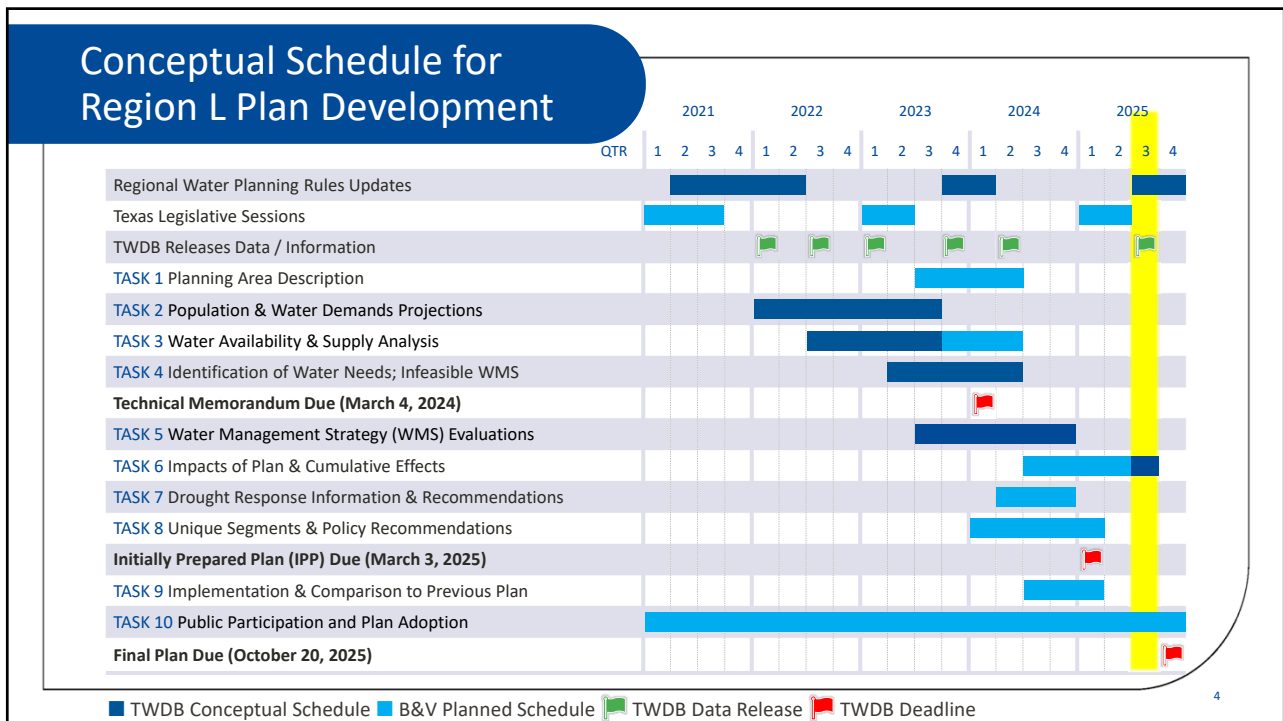
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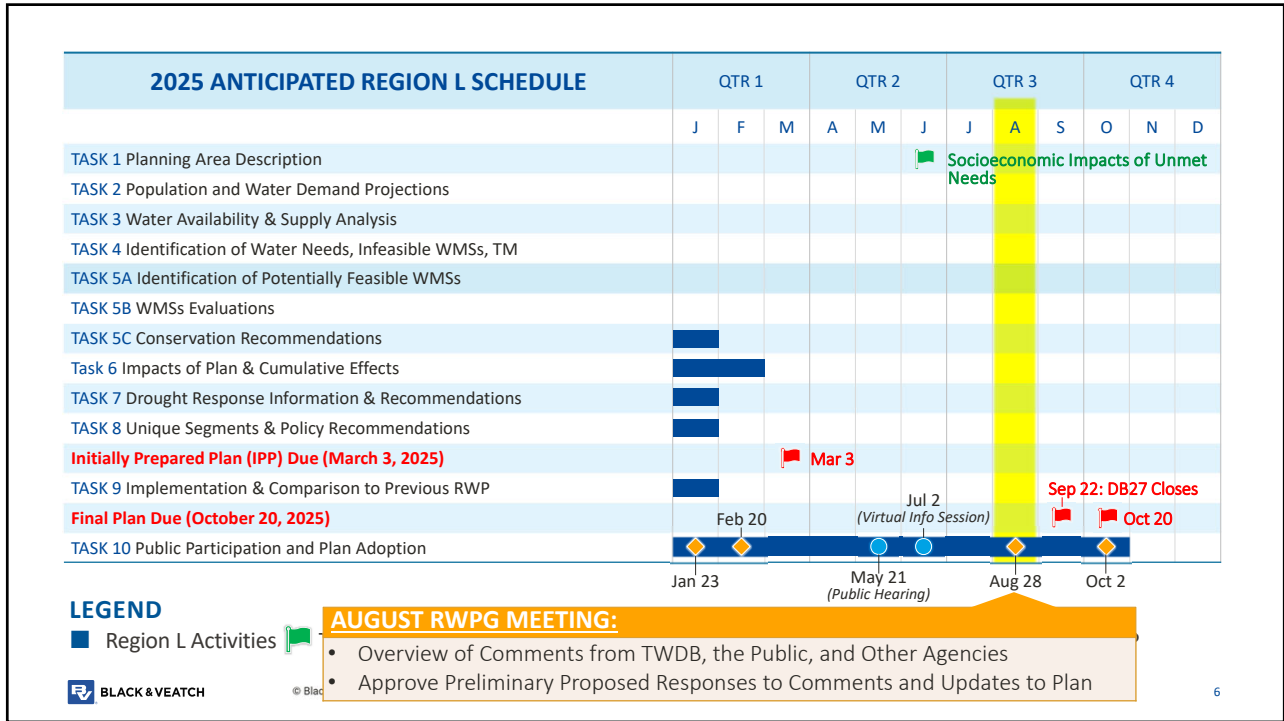
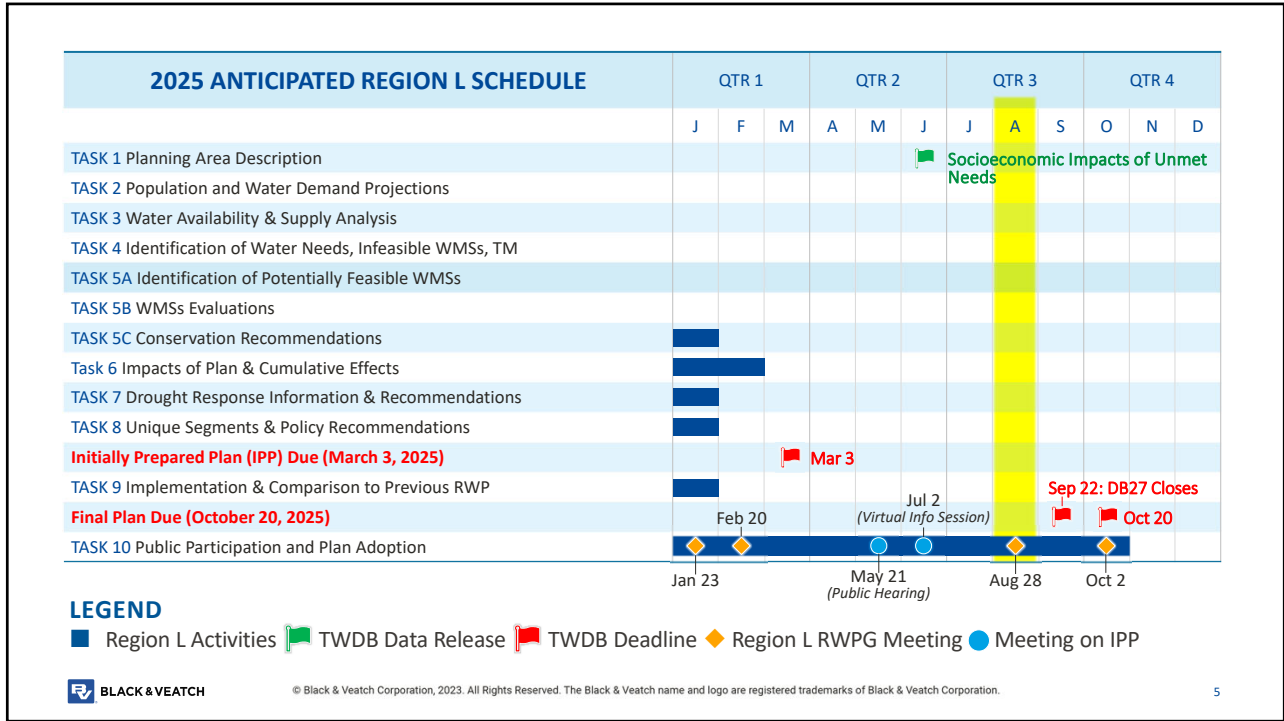
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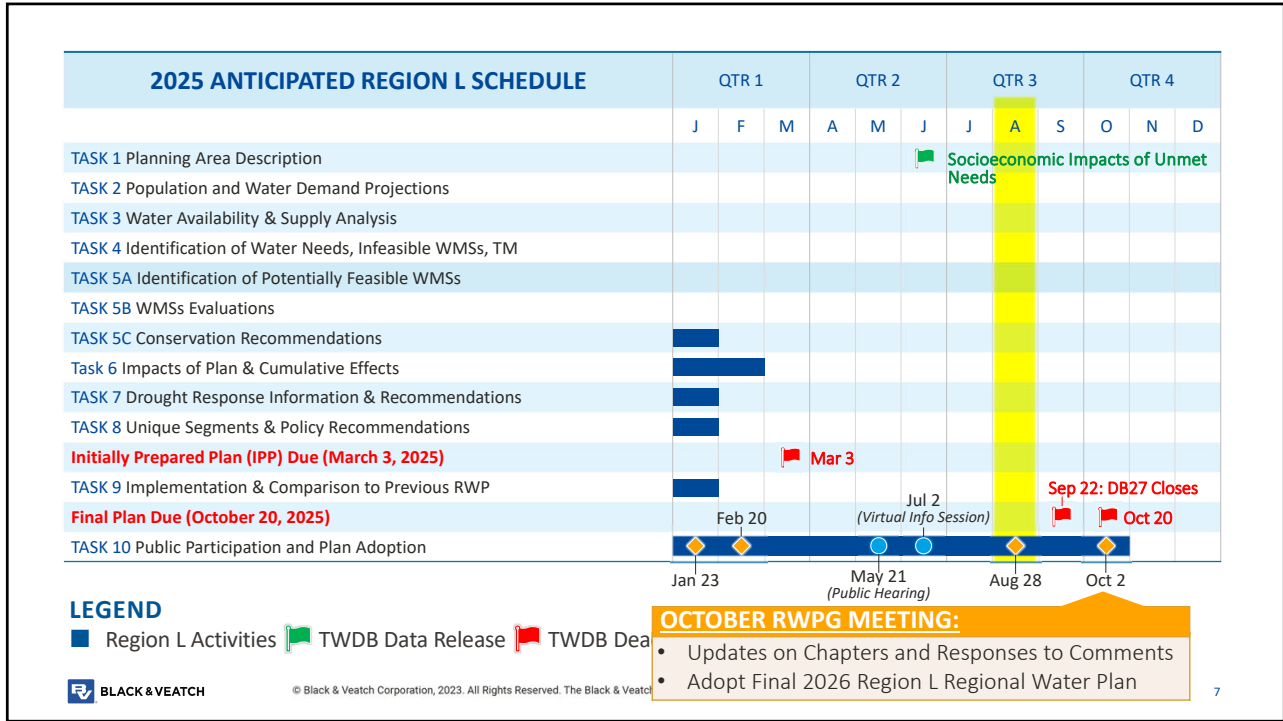
TOPIC A

- Schedule Progress

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TOPIC

B

- Updates on Completed, New, or Ongoing Efforts

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Update on Completed, New, or Ongoing Efforts

- Submitted Region L Initially Prepared Plan (IPP) to the Texas Water Development Board (TWDB) on March 3, 2025.
 - TWDB declared IPP Administratively Complete on March 5, 2025

- Held meetings to present IPP to the public:
 - May 21, 2025: Public Hearing
 - July 2, 2025: Virtual Informational Meeting
 - All materials and meeting recordings are available online at www.RegionLTexas.org

- Received Public and Agency Comments on IPP
 - Comments accepted between March 3 and July 20, 2025
 - Preparing proposed responses and addressing comments
 - Will present additional information on comments and proposed responses in subsequent agenda item

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Update on Completed, New, or Ongoing Efforts

- TWDB released the Region L Socioeconomic Impact Analysis of Projected Water Shortages report on June 25th
 - Will be included as Appendix 6A
 - Available at the QR code to the right and at: https://www.twdb.texas.gov/waterplanning/data/analysis/doc/2026/RegionL_2026RWP_SEIA.pdf



Scan to view 2026 Region L Socioeconomic Report

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Update on Completed, New, or Ongoing Efforts

- Updating Chapter 10: Public Outreach and Interregional Coordination Efforts (Task 10) and Continuing Outreach Efforts
 - Coordinating with adjacent regions, as needed
 - Updating Chapter 10 to incorporate comment period information
 - Will present additional information in subsequent agenda item
- Continuing TWDB Database (DB27) data entry
 - DB27 is open for revisions via TWDB; direct entry by RWPGs is not available
 - Coordinating with TWDB to make edits to address comments and update information

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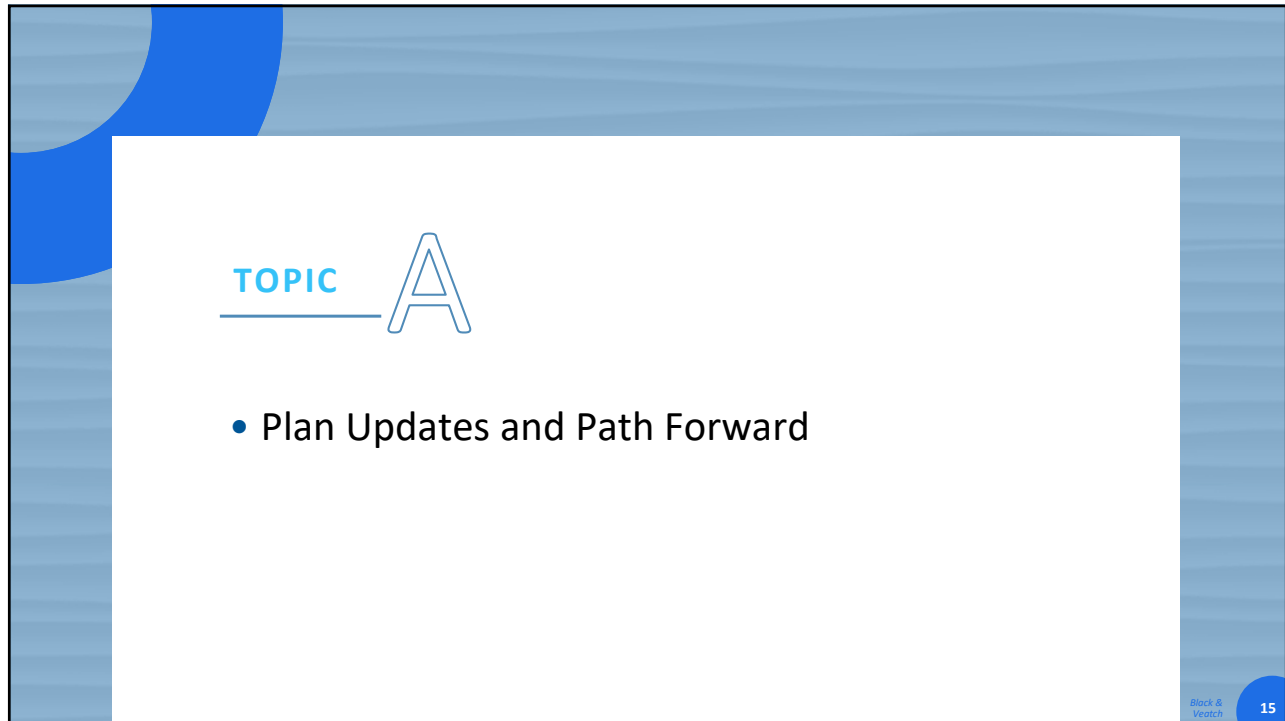
Discussion


AGENDA ITEM NO.7 – CONSIDERATION AND APPROPRIATE ACTION TO APPROVE PROPOSED RESPONSES REGARDING THE PUBLIC COMMENTS AND AGENCY COMMENTS RECEIVED ON THE INITIALLY PREPARED PLAN (IPP) FOR THE 2026 SOUTH CENTRAL TEXAS (REGION L) REGIONAL WATER PLAN

Agenda Item 7: Consideration and Appropriate Action to Approve Proposed Responses Regarding the Public Comments and Agency Comments Received on the Initially Prepared Plan (IPP) for the 2026 South Central Texas (Region L) Regional Water Plan

Responses to Comments on the Initially Prepared Plan – Overview

- A. Plan Updates and Path Forward
- B. Comments Summary and Response Requirements
- C. Texas Water Development Board (TWDB) Comments
- D. Agency and Public Comments
 - 1. Texas Parks and Wildlife Department (TPWD)
 - 2. Water User Groups (WUGs) or Wholesale Water Providers (WWPs)
 - 3. Public Comments Related to Gonzales County
 - 4. Other Public Comments




TOPIC 

- Plan Updates and Path Forward

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A. Plan Updates and Path Forward

- General Updates:
 - Continue DB27 updates and make necessary revisions or adjustments to the plan for consistency
 - Update Executive Summary for consistency across chapters
 - Format and perform accessibility checks
 - Compile and update tables of contents, appendices, figures, and tables
- Chapter Updates:
 - Chapter 5: Make necessary revisions to maps, costs, and add tables with customer allocations
 - Chapter 6: Include TWDB report of Socioeconomic Impacts of Not Meeting Needs; update Boerne Unmet needs to indicate they will not purchase from GBRA WaterSECURE to meet shortage
 - Chapter 10: Include information on IPP submittal, comments, responses, and adoption of Final Plan
- Updates to address IPP comments



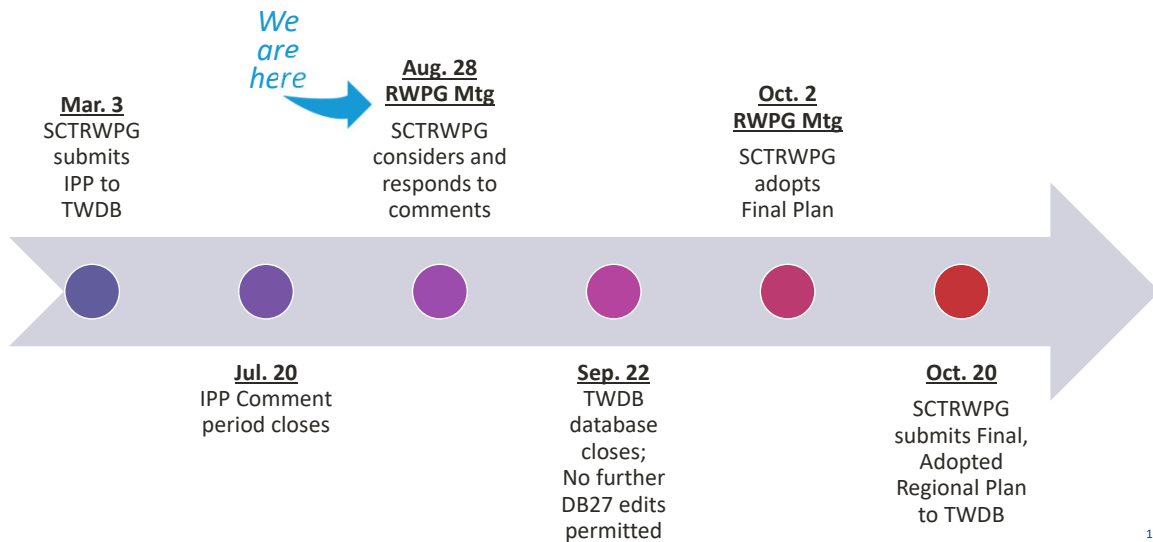
We'll provide updates and additional information on changes to the plan at the
October 2nd SCTRWPG meeting

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A. Plan Updates and Path Forward



See Handout A for
comments summary



TOPIC

B

- Comments Summary and Response Requirements

B. Comments Summary and Response Requirements

64 Written and **Zero** Oral Comments Received

47 TWDB Comments

17 Public and Other Agency Comments

27 Level 1

20 Level 2

1 State Agency

2 WUGs or
WWPs

14 Public
Stakeholders



Handout A – Summary of All Comments
Handout B – Proposed Responses to TWDB Comments
This Presentation – Proposed Responses to Public and Other Agency Comments

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B. Comments Summary and Response Requirements

TWDB requires RWPGs to consider timely agency and public comments. The final adopted plan must include the following:

TWDB Comments

- A copy of the TWDB's written comments on the IPP in their entirety
- Responses* to each TWDB comment explaining how the RWP was revised or why changes were not warranted
 - TWDB Level 1 Comments – must be sufficiently addressed for final plan
 - TWDB Level 2 Comments – can be addressed, but not required

Agency and Public Comments

- Summarize the comment or comments as a group, if they are the same general topic
- Respond to the comment or comment grouping, indicating resulting revisions or why changes are not warranted
- Comments may be addressed but no change is required

* RWPG responses to TWDB comments need approval by TWDB and by RWPG

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TOPIC

C

- Texas Water Development Board (TWDB) Comments

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C. Summary of TWDB Level 1 Comments by Chapter

See Attachment A in Handout A

Ch. No.	Chapter Name	No. of Comments	Comment Summary
1	Description of the Regional Water Planning Area	0	N/A – none
2	Population and Water Demand Projections	1	Correct water demand projection table
3	Water Availability and Existing Water Supplies	1	Provide clarifying information
4	Identification of Water Needs	1	Correct values inconsistent with DB27
5	Evaluation and Recommendation of Water Management Strategies	20	Corrections, clarification requests, additional information requests, implementation status
6	Impacts of the Regional Water Plan and Consistency with Protection of Resources	1	Correct values inconsistent with DB27
7	Drought Response Information, Activities, and Recommendations	0	N/A – none
8	Policy Recommendations and Unique Sites	0	N/A – none
9	Implementation and Comparison to the Previous Regional Water Plan	1	Correct values inconsistent with DB27
10	Public Participation and Plan Adoption	0	N/A – none
N/A	DB27 or Other	2	GIS, additional information requests
Total TWDB Level 1 Comments		27	

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C. TWDB Comments of Particular Interest (1 of 4)

Comment #11 – Advanced Metering Infrastructure Included in Water Use Reduction Strategies

TWDB Comment	Proposed SCTRWPG Response
<p>Section 5.2.1.2.2, Table 5.2.1.7, Table 5.2.1.7, and DB27. Municipal water use reduction and water loss mitigation strategies are recommended separately, however the plan states that advanced metering infrastructure (AMI) is included in water use reduction strategies. For regional water planning purposes, AMI is to be included under water loss mitigation strategies. Please revise the municipal conservation description, yields, cost information, and reconcile updates in DB27 as appropriate to correctly group AMI with water loss mitigation in the final, adopted regional water plan. [Contract Scope of Work, Task 5C; Contract Exhibit C, Section 2.5.2.5; Contract Exhibit D, Appendix 17]</p>	<p>The WMS Municipal Conservation - Water Loss Mitigation has been updated to include both AMI and Leak Detection and Repair. The WMS Municipal Conservation - Water Use Reduction has been updated to include non-capital cost conservation improvements. The descriptions, yields, cost information, and DB27 information has been updated to reflect these changes in Section 5.2.1.</p>

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C. TWDB Comments of Particular Interest (2 of 4)

Comment #4 – Unit Costs for Municipal Water Conservation

TWDB Comment	Proposed SCTRWPG Response
<p>Chapter 5 and DB27. Unit costs reported in DB27 appear high for the following strategies: Municipal Water Conservation - Water Use Reduction - Kendall County WCID 1 (\$43,305), and Municipal Water Conservation - Water Loss Mitigation - Sunko WSC (\$207,786). Please confirm that the calculated unit costs are correct in DB27, or correct as appropriate, and that costs were considered in strategy recommendations in the final, adopted regional water plan. [31 TAC § 357.34(e)(2)]</p>	<p>The Municipal Water Conservation – Water Use Reduction and Water Loss Mitigation strategies were revised as a result of TWDB Level 1, Comment 11, and the unit costs in DB27 have been updated accordingly. The calculated unit costs reflect full implementation of capital improvements associated with each strategy. The revised calculated unit costs for the WUGs identified in the TWDB's comment have been revised, as follows:</p> <ul style="list-style-type: none"> • Water Use Reduction – Kendall County WCID 1 (\$305/acft) • Water Loss Mitigation – Sunko WSC (\$30,163/acft) <p>The SCTRWPG strongly supports water conservation and considered costs when recommending strategies for the 2026 RWP. The Municipal Water Conservation WMS is a Recommended strategy for every municipal WUG in the SCTRWPA with a 2030 GPCD greater than 80. It is important to note that unit costs are calculated by dividing total strategy cost by the potential yield. Therefore, strategies with relatively low water yield and high capital costs will result in higher unit costs. This relationship was considered during the evaluation and recommendation of water management strategies.</p>

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C. TWDB Comments of Particular Interest (3 of 4)

Comment #5 – Quantitative Measure of Reliability

TWDB Comment	Proposed SCTRWPG Response
<p>Section 5.2. The plan does not appear to include a quantitative measure for assessing reliability of water supplies for water management strategy (WMS) evaluations. The matrix provided in Table 5.2-2 provides a qualitative rating of low to high. Additional reliability considerations presented in Table 5.2-3 only appear to be based on a quantified measure for the aquifer storage and recovery (ASR) strategies. Please provide a quantitative basis for reliability used in the evaluations of all water management strategies in the final, adopted regional water plan— ensuring that any recommended strategies provide a firm water supply throughout drought of record conditions. [31 TAC § 357.34(e)(3)(A)]</p>	<p>Section 5.2 regarding Reliability has been revised, as follows:</p> <p>"Reliability is an assessment of the availability of the specified water quantity to the user over time. Quantifiably, the water volumes presented in this plan for recommended strategies are firm supplies that are 100 percent reliable during Drought of Record conditions, per TWDB planning guidelines. Considering other factors that can affect long-term availability, such as potential future modeling or rule changes that are beyond the scope of this planning effort, the SCTRWPG developed additional qualified reliability reporting in the form of a reliability evaluation matrix (Table 5.2 2) that was used in conjunction with other implementation considerations to also qualify the reliability of WMSs shown in Table 5.2 3."</p> <p>Additionally, the qualitative reliability assessments for ASR projects in Table 5.2-3 have been revised, as follows:</p> <p>"Reliability is considered high. Successful ASR projects typically require extensive site-specific analyses, feasibility studies, and cycle testing prior to full implementation."</p>

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C. TWDB Comments of Particular Interest (4 of 4)

Comment #23 – Unallocated Recommended Strategy Volumes

TWDB Comment	Proposed SCTRWPG Response
<p>Sections 5.2.16, 5.2.17, 5.2.8, and 5.2.20. The plan does not appear to include explanations for the following recommended strategy volumes that remain 100% unallocated to any WUGs: Canyon Regional Water Authority (CRWA) - Expanded Brackish Carrizo-Wilcox, CRWA - Siesta Project, FE - CRWA Hays Caldwell WTP Expansion, and GBRA - Lower Basin New Appropriation. Please provide a specific explanation for why each of these strategies remaining 100% unallocated to WUGs in the final, adopted regional water plan. [Contract Exhibit C, Section 2.5.3]</p>	<p>Each strategy with unallocated recommended strategy volumes has been revised to add the following language in the Available Yield section:</p> <p>"All or a portion of yield from this WMS remains unallocated to a specific WUG because the project sponsor is a WWP and has chosen to instead have a surplus management supply. Surplus management supply is when the cumulative supply of the recommended WMSs is in excess of the amount needed to meet regional needs to allow for such things as uncertainty associated with long-term planning, problems with project implementation, changing weather conditions, flexibility of sponsors in choosing projects to implement, and changes in project viability. Rather than assigning volumes from a specific project to individual WUGs in the plan, the WWP contracts with customers from their general water supply portfolio or surplus. This approach allows for flexibility in meeting future demands and accommodating evolving customer needs. As such, the strategy volumes are included in the plan to reflect the WWP's capacity to meet regional needs, even though specific allocations to WUGs are not identified at this time."</p>

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TOPIC 

- Agencies and Public Comments
 1. Texas Parks and Wildlife Department (TPWD)
 2. Water User Groups (WUGs) and Wholesale Water Providers (WWPs)
 3. Public Comments Related to Gonzales County
 4. Other Public Comments

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D.1 Texas Parks and Wildlife Department



See Attachment B in Handout A

Region L received formal comments from 1 other agency (Texas Parks and Wildlife Department [TPWD]). Comment submitted by Marty Kelly, Water Resources Program Coordinator on July 20, 2025

- Commended Region L for its strong emphasis on water conservation, reuse, and drought contingency planning, and for designating five stream segments as ecologically unique.
- Raised concerns about increased groundwater development and new surface water appropriations and their potential adverse impacts on small springs, groundwater-surface water interactions, and instream flows and freshwater inflows.
- Included recommendations to project sponsors:
 - To address concerns about declining freshwater mussel populations, coordinate with TPWD to develop plans to avoid impacts to aquatic resources or relocate aquatic resources outside of a project area.
 - To prevent the transmission of invasive species, avoid transporting water from affected water bodies or enact mitigative measures to prevent transfer of invasive species.
- Included recommendations to the SCTRWPG, shown on subsequent slides

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D.1 Texas Parks and Wildlife Department



See Attachment B in Handout A

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TPWD Comment to SCTRWPG	Proposed SCTRWPG Response
<p>1. Update tables in Chapter 5 and Appendix 5D with the lists of federal and state listed species and Species of Greatest Conservation Need (TPWD updated the state lists in January 2025).</p>	<p>The evaluations of environmental factors for WMSs, as presented in Chapter 5, Appendix 5D, and Chapter 6 were conducted between June and November 2024 using the best available data at that time. As with previous planning cycles, we have maintained consistency by basing our assessments on the data current during the evaluation period. Because TPWD’s updated species data was released after completion of these evaluations, the WMS evaluations and subsequent summaries in Appendix 5D and Chapter 6 have not been revised to reflect the lists updated by TPWD in January 2025. The SCTRWPG remains committed to incorporating the most current TPWD lists available for WMS evaluations in the next cycle, anticipated to start in late 2028 through 2029.</p> <p>It is also important to note that individual project sponsors will conduct more detailed environmental reviews during the feasibility, design, permitting, funding, and implementation phases of each project. Their reviews will incorporate the most current data and regulatory guidance available at that time.</p>

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D.1 Texas Parks and Wildlife Department



See Attachment B in Handout A

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TPWD Comment to SCTRWPG	Proposed SCTRWPG Response
<p>2. For any WMSs that involve the transfer of surface water, address the threat of the spread of invasive exotic species and their potential negative environmental impacts.</p>	<p>The 2026 RWP does not include any WMSs that involve the transfer of surface water to another water body. As such, WMS evaluations have not been revised to specifically address the threat of invasive species in that context. However, Section 6.1.4.1 of Chapter 6 includes extensive narrative on invasive species, recognizing their potential ecological and economic impacts and the importance of monitoring and mitigation.</p>

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D.1 Texas Parks and Wildlife Department



See Attachment B in Handout A

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TPWD Comment to SCTRWPG	Proposed SCTRWPG Response
<p>3. Include additional language regarding invasive species, such as identification of infested water bodies and inclusion of mitigation measures to prevent the spread of invasive species through water transfers.</p>	<p>The 2026 RWP has not been revised to include this additional language, as there is already an extensive narrative in Section 6.1.4.1 of Chapter 6. For example, the 2026 RWP includes the following:</p> <p>“The zebra mussel was confirmed within Lake Texoma in April 2009 and has since spread south to other parts of Texas. The species was first detected in Lake Belton in 2013 and has continued its steady progression south. TPWD indicates 21 Texas lakes are classified as infested (established, reproducing populations); including Canyon Lake in Comal County. TPWD currently identifies zebra mussel positive lakes (adults or larvae are detected) at nine locations, including Lakes Dunlap, McQueeney, and Placid in Guadalupe County. TPWD maintains a regularly updated webpage with map showing lakes with positive zebra mussel identifications and maps, located at https://tpwd.texas.gov/huntwild/wild/species/exotic/zebramusselmap.phtml.”</p>

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D.2 Water User Groups (WUGs) and Wholesale Water Providers (WWPs)



See Attachment C and Attachment D

Region L received formal comments from 2 WUGs and/or WWPs. Comment summaries and proposed responses are included on subsequent slides.

No.	WUG and/or WWP Providing Comment	Commenter Name and Title	Date Received
1	Aqua Water Supply Corporation (WSC)	Emily O'Leary, Manager of Engineering	May 21, 2025
2	Canyon Regional Water Authority (CRWA)	Chelsea Hawkins, Water Resources Manager	July 18, 2025



CRWA's comments will be presented and discussed in Agenda Item No. 8

D.2 Water User Groups (WUGs) or Wholesale Water Providers (WWPs)



See Attachment C in
Handout A

Aqua WSC Comment to SCTRWPG	Proposed SCTRWPG Response
<ol style="list-style-type: none"> Polonia WSC has merged with Aqua WSC. Update potential emergency interconnects table to show interconnect with Aqua Texas, not Aqua WSC. Update the Potentially Feasible WMS table (Appendix 5B) to include large-scale marine seawater or brackish groundwater development. 	<ol style="list-style-type: none"> The Water User Group (WUG) list for the 2026 South Central Texas Regional Water Plan was finalized at the May 5, 2022, meeting and submitted to the TWDB on July 28, 2022. This information and other WUG name revisions will be updated in the 2031 cycle. The SCTRWPG acknowledges the comment and recommends no changes to the 2026 RWP. In response to your comment, Table 7B-2 in Appendix 7B has been updated to indicate that the potential emergency interconnection should be with Hays County-Other (Aqua Texas). The SCTRWPG identified potentially feasible WMSs in late 2023 and early 2024, forming the basis for the Task 5B Scope of Work and associated funding. Adding a new WMS, such as large-scale marine seawater or brackish groundwater development, would require SCTRWPG approval and subsequent evaluation of the strategy for inclusion of the plan, which is not feasible at this stage of the planning process. However, in response to your comment, a note has been added to the Potentially Feasible WMS table (Appendix 5B) stating that Region K evaluated and recommended one or more brackish groundwater development strategies that benefits Aqua WSC.

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D.3 Public Comments Related to Gonzales County

Region L received 11 comments from 10 members of the public, opposing proposed groundwater projects within the Carrizo-Wilcox Aquifer in Gonzales County

No.	Commenter	Date Received
1	Ted Boriack	5/22/25
2	T Carroll	7/11/25
3	Anonymous	7/12/25
4	Lori Benes	7/15/25
5	Deidra D. Voigt	7/15/25
6	Michael Oakes	7/17/25
7	Jeanette Soefje	7/18/25
8	Mary Ann Menning	7/19/25
9	Ted Boriack	7/20/25
10	Nancy Foster	7/20/25*
11	Jim Holster	7/20/25*

*Comment received after the July 20, 2025, 5 p.m. deadline

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D.3 Public Comments Related to Gonzales County



See Section 2.4 and Attachment E in Handout A

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Summary of Public Stakeholders' Comments to SCTRWPG	Proposed SCTRWPG Response
<p>Comments expressed concerns regarding:</p> <ol style="list-style-type: none"> 1. Over-permitting of groundwater; 2. Potential water quality degradation from Aquifer Storage and Recovery (ASR) projects; and 3. The lack of direct representation from Gonzales County on the Region L Water Planning Group. 	<p>Thank you for sharing your concerns; the SCTRWPG appreciates stakeholder engagement and encourages continued involvement in regional water planning efforts. The SCTRWPG acknowledges the comments and recommends no changes to the 2026 RWP at this time. The following provides additional information and resources in response to your comments.</p> <ol style="list-style-type: none"> 1. Groundwater management and permitting authority reside with local Groundwater Conservation Districts (GCDs). In Gonzales County, the Gonzales County Underground Water Conservation District (GCUWCD) regulates groundwater through permitting processes; all permitting comments may be directed to them. 2. ASR projects are subject to review and regulatory oversight by local and state agencies to ensure that stored water does not compromise the integrity of or adversely affect water quality in an aquifer. 3. Gonzales County is represented in the SCTRWPG through at-large members who serve the entire region, as well as through interest categories like the Public, Environment, Counties, and others. Specifically, Gonzales County has direct representation via its Groundwater Management Area (GMA 13), which ensures local groundwater interests are included in the planning process.

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D.4 Other Public Comments



See Section 2.4 in Handout A

Region L Received 3 written comments from 2 members of the public. Comment summaries and proposed responses are included on subsequent slides.

No.	Commenter Name	Date Received
1	Francis Comeaux	May 13, 2025
2	Francis Comeaux	May 27, 2025
3	Milan J. Michalec	July 20, 2025

D.4 Other Public Comments



See Section 2.4 in
Handout A

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Francis Comeaux (May 13, 2025)	Proposed SCTRWPG Response
<p>I would like the Executive Summary of the 2026 IPP to include columns:</p> <ol style="list-style-type: none"> 1. List of affected water district(s) 2. Project Start Date, or if already started, % complete 3. Target Date for water availability, near completion date 4. Project acre-ft/year <p>Thank you, Francis</p>	<p>The Executive Summary meets TWDB requirements for content and the 30-page limit, as outlined in Exhibit C, Section 1.4. Given space constraints and that the information is already included in the 2026 RWP, the SCTRWPG acknowledges the comment and recommends no changes at this time.</p> <p>Additionally, the TWDB's Interactive State Water Plan provides a useful resource for reviewing, compiling, and comparing WUGs, WMSs, and associated projects. The Interactive State Water Plan is available at: https://2027.texasstatewaterplan.org/.</p>

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D.4 Other Public Comments



See Attachment F in
Handout A

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Francis Comeaux (May 27, 2025)	Proposed SCTRWPG Response
<ol style="list-style-type: none"> 1. Revisions to the Executive Summary, including adding voting member affiliations and additional data summaries; 2. Clarification as to existing supply data differences between Chapter 3 and Appendix 3A for Canyon Lake Water Service (Texas Water Company); 	<ol style="list-style-type: none"> 1. Composition of the SCTRWPG follows all applicable statutes, TWDB rules, SCTRWPG bylaws, and the group's Guiding Principles. While each county commissioners court is not individually represented on the SCTRWPG, Counties as a whole are represented through designated interest categories, and all members are responsible for considering the needs of the entire region. In response to your comment, voting member affiliations have been added to Chapter 10 for reference. 2. The differences noted for Canyon Lake Water Service (Texas Water Company) between Chapter 3 and the DB27 reports in Appendix 3A are due to the WUG's service area spanning both the Guadalupe and San Antonio basins in Comal County. The table in your letter includes only the existing supplies in the Guadalupe basin, which accounts for the discrepancy.

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D.4 Other Public Comments



See Attachment F in Handout A

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Francis Comeaux (May 27, 2025)	Proposed SCTRWPG Response
3. Clarification of volumes of water allocated to customers for the GBRA WaterSECURE WMS	3. Canyon Lake Water Service (Texas Water Company) is shown in the RWP as purchasing 12,000 acft/yr from the GBRA WaterSECURE WMS. Yield allocation volumes are provided to the SCTRWPG by project sponsors and customers, and are typically based on agreements between the seller and purchaser, reflecting factors such as demand, infrastructure capacity, and other relevant considerations.
4. Revisions to Table 5.1-2 regarding WMSs for WUGs	4. Customer yield allocations have already been included in the final, adopted plan; however, Table 5.1-2 has not been modified as it is meant to refer the reader to individual WMSs for additional information.
5. Revisions to Table 9-1 regarding hydrologic assumptions	5. In response to your comment, Table 9-1, has been updated with bold text to visually highlight changes in hydrologic assumptions between the 2021 and 2026 plans.

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D.4 Other Public Comments



See Attachment G in Handout A

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Milan J. Michalec (July 20, 2025)	Proposed SCTRWPG Response
Revise the definitive statement of “Boerne will purchase water from GBRA’s WaterSECURE Project” to state “Boerne may purchase water from GBRA’s WaterSECURE Project.”	Boerne has separately requested removal of the water purchase from the GBRA WaterSECURE project, resulting in changes to Chapters 5 and 6.
He raised similar concerns about definitive language used for other water purchases and recommended verifying written commitments from these entities and revising the language accordingly until formal participation has been confirmed.	Yield allocation volumes are provided to the SCTRWPG by project sponsors and customers, and are typically based on agreements between the seller and the purchaser, reflecting factors such as demand, infrastructure capacity, and other relevant considerations. The SCTRWPG verifies the sale with the applicable customers and sellers that they wish for the purchase and sale to be shown in the RWP. Therefore, the SCTRWPG acknowledges the comment and recommends no changes at this time.

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Consideration and Appropriate Action to:



Approve proposed SCTRWPG responses to comments that were submitted by TWDB, TPWD, Aqua WSC, and the public.



Approve incorporation of proposed responses into the Final 2026 Region L Regional Water Plan.

Next Steps



Revise Plan

- Update DB27 by Sept. 22
- Update Chapters



October RWPG Meeting:

- Review plan updates
- Review response updates
- Adopt Final Plan



Submit Final, Adopted Plan

- Submit plan and supporting documents to TWDB by October 20, 2025

AGENDA ITEM NO.8 – DISCUSSION AND APPROPRIATE ACTION REGARDING PROPOSED UPDATE TO
CRWA WELLS RANCH III PROJECT AS PRESENTED IN SCTRWPG 2025 IPP

Agenda Item 8: Discussion and Appropriate Action Regarding Proposed Update to CRWA Wells Ranch III Project as Presented in SCTRWPG 2025 IPP

18. CRWA Wells Ranch 3 (Phase 2) Project

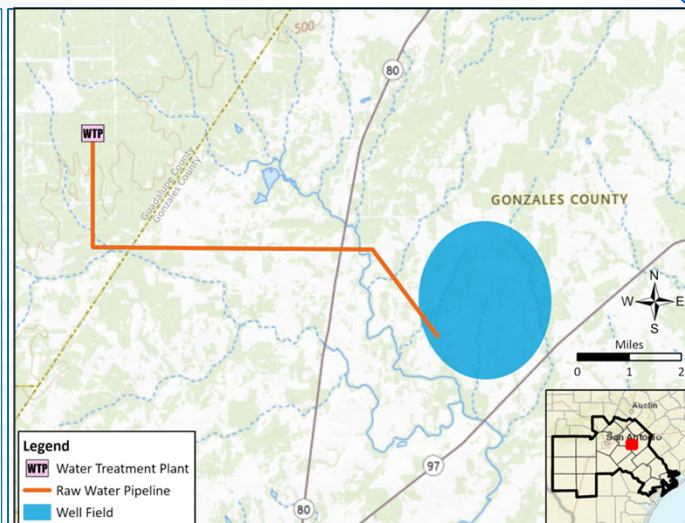
This slide was presented to the SCTRWPG on November 7, 2024.

Red text indicates change from 2021 Plan

Project Description

Expansion of existing Wells Ranch Project. Includes a new well field in the Carrizo-Wilcox Aquifer in Gonzales County.

- **Project Sponsor:** CRWA
- **Source:** Groundwater from Carrizo-Wilcox Aquifer in **Gonzales County**
- **Yield:** **MAG-limited**
 - Firm: 6,941 – 8,395 acft/yr
 - Requested: 14,500 acft/yr
- **Implementation Decade:** 2030
- **Components:**
 - Well field (6 wells, pumps, pipelines)
 - Pump stations
 - Transmission pipeline (10 miles)
 - Storage tanks
 - Water treatment plant expansion (13 MGD)



Draft

CRWA Comments on IPP



See Attachment D in
Handout A

- March 2025: Submitted IPP to TWDB
- May 2025: CRWA requested revisions to the Wells Ranch (Phase 3) WMS; SCTRWPG identified inconsistency between DB27 and the IPP
- July 2025: CRWA submitted a comment letter to the SCTRWPG requesting to:
 1. Correct Modeled Available Groundwater (MAG)-constrained yields in the Wells Ranch (Phase 3) WMS
 2. Update cost estimates using sponsor-supplied data for the Wells Ranch (Phase 3) WMS
 3. Revise customer allocations for the Wells Ranch (Phase 3) WMS
 4. Revise Major Water Providers (MWP) definition and identify CRWA as a MWP
- July to August 2025: Met to discuss options and path forward
- August 2025: Executive Committee met and provided recommendations (more information on subsequent slides)

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Executive Committee Meeting – August 30, 2025

The SCTRWPG Executive Committee met and considered updates to the CRWA Wells Ranch (Phase 3) WMS.

- The Executive Committee evaluated two options to correct the inconsistency:
 - Hybrid Option: Project is in both Guadalupe and Gonzales Counties; no redistribution of MAG-constrained yields for projects in these counties
 - Gonzales-only Option: Project is in Gonzales County only; redistribution of MAG-constrained yields in Gonzales County only

Executive Committee Recommendation

The SCTRWPG Executive Committee recommended that the SCTRWPG pursue the Gonzales-only Option to address the inconsistency

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Proposed SCTRWPG Responses to CRWA Comments on IPP

Based on the Executive Committee recommendations and regional water planning processes, the following slides include *proposed* SCTRWPG responses to CRWA's comments on the IPP.

CRWA Comment to SCTRWPG	Proposed SCTRWPG Response
1. Correct Modeled Available Groundwater (MAG)-constrained yields in the Wells Ranch (Phase 3) WMS	1. In response to your comment, the 2026 RWP has been revised to update the MAG-constrained yields for the Wells Ranch (Phase 3) WMS and to ensure consistency between the RWP and DB27.

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Proposed SCTRWPG Responses to CRWA Comments on IPP

→ Continued from Previous Slide

CRWA Comment to SCTRWPG	Proposed SCTRWPG Response
2. Update cost estimates using sponsor-supplied data for the Wells Ranch (Phase 3) WMS 3. Revise customer allocations for the Wells Ranch (Phase 3) WMS <ol style="list-style-type: none"> a) Remove three customers: <ol style="list-style-type: none"> 1) Converse, 2) Marion, and 3) Martindale WSC b) Add five customers: <ol style="list-style-type: none"> a) County Line SUD* b) East Central SUD c) Green Valley SUD d) Maxwell SUD e) Springs Hill WSC <p>* On 5/21/2025, CRWA updated its request to exclude County Line SUD from the customer additions.</p>	2 and 3. The SCTRWPG required all project sponsors submit new project requests and provide project details by established deadlines to allow sufficient time for review and evaluation of WMSs. The deadline for submitting external cost estimates and customer allocation changes was September 2, 2024. Since the information was submitted after this deadline and due to time constraints at this stage of plan development, the SCTRWPG acknowledges the comment and recommends no changes to the 2026 RWP at this time.

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Proposed SCTRWPG Responses to CRWA Comments on IPP

→ Continued from Previous Slide

CRWA Comment to SCTRWPG	Proposed SCTRWPG Response
<p>4. Revise Major Water Providers (MWP) definition and identify CRWA as a MWP</p>	<p>4. Major Water Providers (MWPs) are defined as a WUG or WWP of particular significance to the region’s water supply, as determined by the regional water planning group. The SCTRWPG reviewed and considered multiple options for defining MWPs at its August 1, 2024, meeting and voted to adopt a MWP definition as any WUG or WWP with 2080 demands greater than 30,000 acft/yr. CRWA does not meet the current criteria for MWP designation because the WWP has contract demands of ~21,000 acft/yr in 2080.</p> <p>The SCTRWPG recognizes the importance of CRWA’s role in regional water supply and will revisit the MWP definition in the next planning cycle. Stakeholder input, including from CRWA, will be considered during that process to ensure the definition reflects evolving regional needs.</p>

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Consideration and Appropriate Action to:



Approve the recommendation from the Executive Committee to pursue the Gonzales-only Option for the CRWA Wells Ranch (Phase 3) Project.




Approve proposed SCTRWPG responses to the comments submitted by CRWA.



Approve incorporation of the proposed responses to CRWA comments into the Final 2026 Region L Regional Water Plan.

Supplemental Information:

Options Proposed to Address Inconsistency with MAG-Constrained Yields for the CRWA Wells Ranch (Phase 3) WMS



Hybrid Option (7/11/2025) WMS in Guadalupe & Gonzales Counties; No Redistribution

- Revise the current Canyon Regional Water Authority (CRWA) Wells Ranch (Phase 3) Project water management strategy (WMS) to include infrastructure in both Guadalupe County AND Gonzales County (instead of just Guadalupe). Due to the scope of changes required to expand the geographic footprint, updates will be limited strictly to those necessary for this purpose. Anticipated revisions to the CRWA WMS description in Section 5.2.18 include the following items:
 - Approximate project location map* (see note below for information request)
 - Narrative summary of infrastructure and locations.
 - Additional environmental and cultural impacts analyses
 - Costing model and costing summary table. Include additional infrastructure (sized for the envisioned yield) using default cost estimates (not external costs) and update MAG-Constrained Yield.
 - Available yield section:
 - Revise Table 5.2.18-1 to show the Envisioned and MAG-Constrained Yields for both Guadalupe County AND Gonzales County (see DRAFT Revised Table 5.2.18-1 below). Allocate remaining groundwater availability volumes after existing WMSs. This does not result in redistribution of pro rata reductions for existing WMSs in Gonzales County.
 - Include additional narrative to explain the alternative methodology used for this WMS to calculate the MAG-constrained yield.
- Enables CRWA to apply for TWDB funding for infrastructure in either or both Guadalupe and Gonzales Counties
- Later (around 2027-2028), if new modeled available groundwater (MAG) estimates released by the TWDB indicate availability estimates can increase, CRWA could amend the plan to substitute the alternative portion(s) of the project as

Hybrid Option (7/11/2025)

WMS in Guadalupe & Gonzales Counties; No Redistribution


Table 5.2.18-1 Envisioned and MAG-Constrained Yields for the CRWA Wells Ranch (Phase 3) Project (acft/yr)

County and Yield Type	2030	2040	2050	2060	2070	2080
Gonzales County – Envisioned Yield	13,710	13,710	13,710	13,710	13,710	13,710
Guadalupe County – Envisioned Yield	790	790	790	790	790	790
Total Envisioned Yield	14,500	14,500	14,500	14,500	14,500	14,500
Gonzales County – MAG-Constrained Yield	8,341	0	1,115	1,489	2,449	0
Guadalupe County – MAG-Constrained Yield	790	790	790	790	790	790
Total MAG-Constrained Yield	9,131	790	1,905	2,279	3,239	790

Gonzales-only Option (7/30/2025)

WMS in Gonzales County; Redistribution in Gonzales County

- Update the current CRWA Wells Ranch (Phase 3) Project WMS write-up to include the corrected MAG-Constrained yields for Gonzales County (instead of just Guadalupe County, as shown in the IPP).
 - To accommodate the additional Envisioned Yield in Gonzales County, all other projects in the County/Basin/Aquifer unit (Gonzales County/Guadalupe Basin/Carrizo-Wilcox Aquifer) will need to be redistributed in order to not exceed the MAG estimate.
 - Changes to the CRWA WMS write-up will be limited to the MAG-Constrained Yield:
 - Available Yield Section: Revise Table 5.2.18-1 to show the Envisioned and MAG-Constrained Yields for Gonzales County (see DRAFT Revised Table 5.2.18-1 below).
 - Engineering and Costing Section: Revise cost estimates (unit costs) and cost estimate summary table for CRWA
 - Because other projects in the Gonzales County/Guadalupe Basin/Carrizo-Wilcox Aquifer unit will need to be redistributed. To minimize impacts of the redistribution, yield distribution for the Gonzales & Guadalupe Brackish Partnership Project was shifted to Guadalupe County.
 - Changes to MAG-Constrained Yields for other projects requires revisions to each project's write-ups to adjust the MAG-Limited Yield and costs. A table of impacted projects is shown in subsequent slides
 - DB27 will be updated to revise the yields and cost estimates for projects in the Gonzales County/Guadalupe Basin/Carrizo-Wilcox Aquifer unit, as necessary.





Gonzales-only Option (7/30/2025)

WMS in Gonzales County; Redistribution in Gonzales County

Table 5.2.18-1 Envisioned and MAG-Constrained Yields for the CRWA Wells Ranch (Phase 3) Project (acft/yr)

County and Yield Type	2030	2040	2050	2060	2070	2080
Gonzales County – Envisioned Yield	14,500	14,500	14,500	14,500	14,500	14,500
Gonzales County – MAG-Constrained Yield	8,341	7,182	10,820	10,938	11,239	8,869


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Gonzales-only Option (7/30/2025)

WMS in Gonzales County; Redistribution in Gonzales County

With this option, projects within the Gonzales County/Guadalupe Basin/Carrizo-Wilcox Aquifer unit will be revised, as follows:

WMS Name	County and Yield Type	2030	2040	2050	2060	2070	2080
GBRA WaterSecure (Brackish GW Project)	Envisioned Yield	15,000	15,000	15,000	15,000	15,000	15,000
	MAG-Constrained Yield in IPP	0	10,289	15,000	15,000	15,000	12,707
	MAG-Constrained Yield with Gonzales-only Option	0	7,429	11,194	11,315	11,627	9,175
Gonzales & Guadalupe Brackish Partnership Project	Envisioned Yield	0	5,331	5,331	5,331	5,331	5,331
	MAG-Constrained Yield in IPP	0	4,571	6,664	6,664	6,664	5,647
	MAG-Constrained Yield with Gonzales-only Option	0	2,640	3,978	4,020	4,134	3,261
SSLGC Expanded Brackish Wilcox Project	Envisioned Yield	0	5,000	5,000	5,000	5,000	5,000
	MAG-Constrained Yield in IPP	0	3,430	5,000	5,000	5,000	4,236
	MAG-Constrained Yield with Gonzales-only Option	0	2,476	3,732	3,772	3,876	3,058


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Supplemental Information:

Guiding Principles of the South Central Texas Regional Water Planning Group (SCTRWPG)

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Guiding Principles

- Initially established during the 2021 Regional Water Planning Cycle
- Updated during this (2026) cycle
- Includes three (3) Guiding Principles related to WMSs:
 - PRINCIPLE VII: Minimum Standards for Water Management Strategies
 - PRINCIPLE VIII: Recommended Water Management Strategies
 - PRINCIPLE IX: Management Supply

South Central Texas Regional Water Planning Group Bylaws and Guiding Principles¹



¹These Bylaws and Guiding Principles are current as of February 17, 2022

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Region L Guiding Principles

In 2015, the SCTRWPG began the 2021 Plan Enhancement Process to improve and clarify the principles that guide SCTRWPG decisions. They established 11 SCTRWPG Guiding Principles:

1. Appropriateness and adequacy of how demand and need are determined
2. Role of Regional Water Planning Groups in influencing population growth and land use
3. Conflicts of interests with respect to planning group members
4. The role of the planning group in influencing water development plans of water suppliers
5. The role of the planning group in influencing permitting entities
6. The adequacy of evaluating the plan's effects on freshwater inflows to San Antonio Bay, and the adequacy of environmental assessments of individual water management strategies (WMSs)
7. Minimum Standards for WMSs
8. Recommended WMSs
9. Management Supply
10. The role of reuse within the Regional Water Plan
11. Identifying special studies or evaluations deemed important to enhance the 2021 plan, the identification of outside funding sources, and the extent to which innovative strategies should be used.


Guiding Principles are included as Supplemental Information in the Agenda Packet



PRINCIPLE I

Appropriateness and Adequacy of How Demand and Need are Determined

The SCTRWPG generally defers to the TWDB on matters related to population and water demand projections. However, the SCTRWPG retains the duty to review TWDB projections on a case by case basis. Where the SCTRWPG finds a discrepancy in TWDB's projections, and can adequately justify its findings by verifying one or more of the "criteria for adjustment," TWDB – in consultation with TDA, TCEQ, and TPWD – may adjust population and/or water demand projections accordingly (see *generally General Guidelines for Development of the 2026 Regional Water Plan*). Consistent with Chapter 8 of the 2021 Regional Water Plan for Region L, the SCTRWPG supports greater TWDB flexibility through relaxation of current methodological assumptions holding regional and state population projection totals fixed (see Chapter 8.9.3 *Population and Water Demand Projections*). Water demand projections used in developing the Regional Water Plan should be consensus figures arrived at by using TWDB data along with local input from the cities, counties, and groundwater districts.




PRINCIPLE II

Role of Regional Water Planning Groups in Influencing Population Growth and Land Use

Where the concepts of population growth and land use necessarily interrelate with the Regional Water Plan, the SCTRWPG shall, to the greatest extent possible, develop strategies to meet future projected demands. However, it is neither the role, nor the responsibility of the SCTRWPG to influence population growth or land use. While the SCTRWPG has a duty to remain cognizant of the sensitive relationship between the Regional Water Plan, population growth and land use, decisions concerning permitting and influencing population growth are inherently local, and remain wholly independent from the regional water planning process.

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PRINCIPLE III

Conflicts of Interests with Respect to Planning Group Members

a) Active Planning Group Members


All disclosures pursuant to Article V, Section 6 of the SCTRWPG Bylaws, are the responsibility of the planning group member or designated alternate who has the potential conflict of interest. Therefore, disclosures are the responsibility of the planning group member or designated alternate. If the voting member chooses to abstain from participation in deliberations, decisions, or voting, pursuant to Article V, Section 6 of the SCTRWPG Bylaws, the reason for abstention shall be noted in the minutes.

b) Nomination Process

Where the SCTRWPG is soliciting nominations to fill vacancies on the planning group, nominators shall provide information regarding the nominee's current employer, and provide a description of the nominee's experience that qualifies him/her for the position in the interest group being sought to represent.

Additionally, nominees shall agree to abide by the Code of Conduct, which is incorporated in the SCTRWPG Bylaws (see SCTRWPG Bylaws, Article V, Section 6). As per the Bylaws, the Executive Committee will conduct an interview process whereby nominees will be evaluated. Prior to the interview, nominees will be provided a copy of the Bylaws. During the interview process, nominees will be asked if they are willing to agree to the Bylaws, and specifically, if they are willing to comply with the Code of Conduct.


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PRINCIPLE IV
Role of the Planning Group in Influencing Water Development Plans of Water Suppliers

The role of the SCTRWPG is to ensure water needs are met with identified potentially feasible water management strategies. It is not the role of the SCTRWPG to influence or interfere with local water planning decisions. In the absence of a planning group recommended potentially feasible water management strategy to meet an identified need, the SCTRWPG may evaluate and report, as required, the social, environmental and economic impacts of not meeting the identified need.


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PRINCIPLE V
Role of the Planning Group in Influencing Permitting Entities

Decisions made at the planning group level are non-regulatory, and are intended for planning purposes only. While some decisions made by the SCTRWPG could inevitably affect some decisions made by the governing boards of permitting entities, it is neither the responsibility, nor the role of the SCTRWPG to influence or interfere with the regulatory decisions made by the governing boards of permitting entities.

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PRINCIPLE VI


Adequacy of Evaluating the Plan's Effects on Freshwater Inflows to San Antonio Bay, and the Adequacy of Environmental Assessments of Individual Water Management Strategies

The SCTRWPG's evaluation of the Plan's effect on instream flows and freshwater inflows to the San Antonio Bay, and Plan's environmental assessments of individual water management strategies are currently meeting the regulations and statutes for regional water planning. The SCTRWPG believes a structural reorganization of the data presented will benefit the understanding of the Plan's environmental assessments. The SCTRWPG will:

- Initiate environmental assessments earlier into the regional planning process;
- Eliminate environmental assessment comparisons of current plan to past plans;
- Consolidate threatened and endangered species information into the appendix rather than repeating in each water management strategy write-up;
- Update baseline year data to most current for potential impacts to vegetation and terrestrial habitat;
- Adjust distances for cultural resource sites;
- Include current conditions and streamflow protected by environmental flow standards in updated tabular form improving the way in which the data is presented;
- Include target flow regimes based on environmental freshwater inflow standards in updated tabular form improving the way in which the data is presented; and
- Include high level narrative of climate variability.

The SCTRWPG believes this environmental assessment structural reorganization will reflect realistic environmental impacts of the recommended water management strategies for both the public and planning group members.

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PRINCIPLE VII

Minimum Standards for Water Management Strategies

For a proposed strategy to be designated by the SCTRWPG as a water management strategy in the regional water plan, the proposed strategy must:

- supply water, reduce water demands, or otherwise satisfy one or more identified needs;
- include an evaluation and description consistent with standards used by the SCTRWPG and its technical consultants as required by TWDB Rules;
- satisfy all relevant requirements established by the TWDB, including environmental flow standards;
- identify one or more entities, with sufficient ability and willingness to implement the strategy, as being the strategy's sponsor(s);
- identify all entities, as reasonably possible, who own any existing or planned infrastructure or existing permit that could be affected by the proposed strategy as being strategy participants; and
- identify groundwater conservation districts or TCEQ with jurisdiction over the proposed strategy.

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PRINCIPLE VIII
Recommended Water Management Strategies

The SCTRWPG strives to develop a regional water plan that recommends water management strategies sufficient to supply water to all identified needs projected in the planning horizon for the region.

The SCTRWPG prefers designating water management strategies as recommended or alternative using a consensus approach while respecting the strategy sponsor(s)' wishes.

Prior to designating any water management strategies as recommended, the SCTRWPG will review the water management strategies to evaluate costs and environmental sensitivity of each water management strategy per TWDB Rules.

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PRINCIPLE IX
Management Supply


The cumulative supply of the recommended water management strategies may include an amount of supply in excess of the amount needed to meet regional needs as considered necessary by the SCTRWPG to allow for such things as uncertainty associated with long-term planning, problems with project implementation, changing weather conditions, flexibility of sponsors in choosing projects to implement, and changes in project viability.

Identified Needs without a Recommended Water Management Strategy
For water needs that are not satisfied by recommended water management strategies, the SCTRWPG will provide a narrative explaining why the need is not satisfied.

Alternative Strategies in the Regional Water Plan
The SCTRWPG will include alternative water management strategies that sponsors wish to have identified as alternatives to one or more of their recommended water management strategies.

Conceptual Approaches (Water Management Strategies Needing Further Study) in the Regional Water Plan
The SCTRWPG will acknowledge conceptual and innovative approaches to developing water supplies, reducing water demand, and increasing efficiency of supplying water as may be proposed by others, but need further study.

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PRINCIPLE X
**Role of Reuse
 Within the
 Regional Water
 Plan**

The SCTRWPG generally defers to the TWDB rules for regional water planning as contained in the TAC on matters related to surface water supply analysis. For surface water supply analysis, the SCTRWPG will use the most current Water Availability Models from the TCEQ to evaluate supplies, as required by section 357.32 (c) of the TAC. As per section 357.32 of the TAC, the SCTRWPG will assume full utilization of existing water rights and no return flows when using Water Availability Models.

The SCTRWPG agrees that effluent will be depicted in the Regional Water Plan only in cases of direct and/ or indirect reuse water management strategies, or where a preexisting contract for the supply of reuse is in place. Additionally, the SCTRWPG will not use effluent in the estimates of cumulative effects absent a direct and/or indirect reuse water management strategy or a preexisting contract

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PRINCIPLE XI
**Identifying Special
 Studies or Evaluations
 Deemed Important to
 Enhance the 2026 Plan,
 the Identification of
 Outside Funding
 Sources, and the
 Extent to Which
 Innovative Strategies
 Should Be Used**

The SCTRWPG recognizes that there are no identifiable outside funding sources for special studies or evaluations. However, the SCTRWPG remains willing to consider evaluating any proposed water management strategies and special studies allowable under section 357.34 of the TAC.

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