REGION H
Water Planning Group

MEETING MATERIALS

January 8, 2020

San Jacinto River Authority

Common Region H Terms and Conversion Factors

List of Abbreviations

COA	Certificate of Adjudication
CRU	Collective Reporting Unit
DCP	Drought Contingency Plan
DFC	Desired Future Condition
DOR	Drought of Record
EA	Executive Administrator
EPA	Environmental Protection Agency
FWSD	Fresh Water Supply District
GAM	Groundwater Availability Model
GCD	Groundwater Conservation District
GMA	Groundwater Management Area
GPCD	Gallons Per Capita Per Day
GRP	Groundwater Reduction Plan
IPP	Initially Prepared Plan
MAG	Modeled Available Groundwater
MPC	Master Planned Community
MUD	Municipal Utility District
MWP	Major Water Provider
PDSI	Palmer Drought Severity Index
PWS	Public Water Supply
RHWPG	Region H Water Planning Group
ROR	Run-of-River
RWP	Regional Water Plan
RWPA	Regional Water Planning Area
RWPG	Regional Water Planning Group
SWIFT	State Water Implementation Fund for Texas
SWP	State Water Plan
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TPWD	Texas Parks and Wildlife Department
TWC	Texas Water Code
TWDB	Texas Water Development Board
UCM	Unified Costing Model
WAM	Water Availability Model
WCID	Water Control and Improvement District
WCP	Water Conservation Plan
WMS	Water Management Strategy
WRAP	Water Rights Analysis Package
WUD	Water Utility Database
WUG	Water User Group
WWP	Wholesale Water Provider

Water Measurements

1 acre-foot (AF) = 43,560 cubic feet = 325,851 gallons

1 acre-foot per year (ac-ft/yr) = 325,851 gallons per year = 893 gallons per day

1 gallon per minute (gpm) = 1,440 gallons per day = 1.6 ac-ft/yr

1 million gallons per day (mgd) = 1,000,000 gallons per day = 1120 ac-ft/yr

Region H Water Planning Group
10:00 AM Wednesday
January 8, 2020
San Jacinto River Authority Office
1577 Dam Site Rd, Conroe, Texas 77304

AGENDA

1. Call to order.
2. Introductions.
3. Review and approve minutes of November 6, 2019 meeting.
4. **Receive public comments on specific issues related to agenda items 5 through 10**. (Public comments limited to 3 minutes per speaker)
5. Discuss State Flood Planning process and consider taking action to direct the Consultant Team to submit input on Draft Rules for State Flood Planning and Funding on behalf of the RHWPG.
6. Receive update from Consultant Team regarding the schedule and milestones for the development of the 2021 Region H RWP.
7. Receive presentation from the Consultant Team regarding TWDB analysis of socioeconomic impacts of unmet water needs in the Region H Water Planning Area.
8. Receive presentation from the Consultant Team regarding the draft 2021 Region H Initially Prepared Regional Water Plan.
9. Receive report regarding recent and upcoming activities related to communications and outreach efforts on behalf of the RHWPG.
10. Agency communications and general information.
11. **Receive public comments**. (Public comments limited to 3 minutes per speaker)
12. Next Meeting: February 5, 2020.
13. Adjourn.

Persons with disabilities who plan to attend this meeting and would like to request auxiliary aids or services are requested to contact Sonia Zamudio at (936) 588-3111 at least three business days prior to the meeting so that appropriate arrangements can be made.

Agenda Item 3

Review and approve minutes of November 6, 2019 meeting.

REGION H
Water Planning Group

REGION H WATER PLANNING GROUP
MINUTES OF REGULAR MEETING
NOVEMBER 6, 2019

MEMBERS PRESENT: Gary Ashmore, David Bailey, John Bartos, Robert Bruner, Brad Brunett, James Comin, Mark Evans, Yvonne Forrest, Art Henson, Jace Houston, Ivan Langford, Glenn Lord, Marvin Marcell, Carl Masterson, William Teer, Michael Turco, and Pudge Willcox.

DESIGNATED ALTERNATES: Alisa Max for John Blount, Mike O'Connell for Bob Hebert, Jun Chang for Jimmie Schindewolf, and Bill Coulter for Kevin Ward.

MEMBERS ABSENT: W.R. Baker, Robert Istre, and James Morrison.

NON-VOTING MEMBERS PRESENT: Lann Bookout, Scott Hall, and Rusty Ray.

1. CALL TO ORDER

The meeting was called to order at 10:01 a.m.

2. INTRODUCTIONS

There were no introductions, however Mr. Houston announced the recent passing of Mr. Reed Eichelberger, former General Manager of the San Jacinto River Authority.

3. REVIEW AND APPROVE MINUTES OF SEPTEMBER 4, 2019 MEETING

Mr. Henson made a motion to approve the minutes of September 4, 2019. The motion was seconded by Mr. Chang and carried unanimously.

4. RECEIVE PUBLIC COMMENTS ON SPECIFIC ISSUES RELATED TO AGENDA ITEMS 5 THROUGH 14

There were no public comments.

5. DISCUSS VACANCIES ON THE REGION H WATER PLANNING GROUP AND CONSIDER TAKING ACTION TO APPROVE MEMBERS TO FILL VACANCIES ON THE PLANNING GROUP

Mr. Evans announced the vacancies for Electric Generating Utilities and Small Business. Mr. Langford spoke in favor of Mr. Carl Burch of NRG becoming the designated member of the Region H Planning Group representing Electric Generating Utilities. Mr. Henson made a motion to approve Mr. Carl Burch as a member of the Planning Group to represent Electric Generating Utilities. The motion was seconded by Mr. Masterson and carried unanimously.

6. RECEIVE UPDATE FROM CONSULTANT TEAM REGARDING THE SCHEDULE AND MILESTONES FOR THE DEVELOPMENT OF THE 2021 REGION H RWP

Mr. Taucer provided information related to the milestones for the development of the 2021 Region H Regional Water Plan by reviewing upcoming deadlines related to Water Management Strategies, Infrastructure Finance Report, and Project Prioritization. He provided upcoming due dates for scheduled events and tasks.

7. RECEIVE UPDATE FROM WATER MANAGEMENT STRATEGY COMMITTEE AND CONSULTANT TEAM REGARDING THE STATUS OF INVESTIGATION OF WATER SUPPLY ALTERNATIVES FOR THE 2021 REGION H RWP

Mr. Taucer provided an update regarding the status of investigation of water supply alternatives for the 2021 Region H RWP stating that there are 52 water management strategies, over 700 projects, and 327 WUGS. He stated that the projected capital costs for these projects exceed $10.1 billion and will rise as additional strategies are analyzed. He then explained the various needs met by water management strategies versus the remaining need that has no strategy because it cannot be sustained at an economically supportable level. He stated that agriculture is the only category identified with an unmet need. Mr. Taucer then reviewed the different sources of management strategies for the western and eastern regions, supply redundancy, and applied water management strategies. He provided an overview of the various new projects related to demand management, groundwater development, direct and indirect reuse, water treatment, major transmission and distribution, and reservoir development and other surface water. He then provided an overview of ongoing projects such as ASR and brackish groundwater, additional data related to cost estimation, strategy documentation, overall draft IPP, and major water provider identification.

8. RECEIVE UPDATE FROM WATER MANAGEMENT STRATEGY COMMITTEE AND CONSULTANT TEAM REGARDING DROUGHT MANAGEMENT AS A POTENTIAL WATER MANAGEMENT STRATEGY AND DISCUSS RECOMMENDATIONS

Mr. Taucer provided information related to drought management as a potential water management strategy. He explained that the analysis took into account the regional data from the 2011 drought, a comparison of that data to the demands, measures, and anticipated savings, as well as the removal of the overlap with conservation. He explained the various challenges versus the benefits to including drought management as a strategy. He stated that the Water Management Strategy Committee recommended the need to formalize it as a considered but not recommended strategy, document the analysis and results in the WMS technical memorandum, and re-emphasize advocacy of drought planning in Chapter 7. Discussion ensued. Mr. Houston made a motion to approve and accept the recommendations of the Water Management Strategy Committee. The motion was seconded by Mr. Lord and carried with 20 ayes, and one abstention (Mr. Masterson).

9. RECEIVE REPORT FROM CONSULTANT TEAM AND WATER MANAGEMENT STRATEGY COMMITTEE REGARDING OPTIONS FOR REMAINING TASK 5 FUNDS AND CONSIDER TAKING ACTION TO APPROVE A NOTICE-TO-PROCEED REQUEST AND AUTHORIZING THE CONSULTANT TEAM AND SAN JACINTO RIVER

AUTHORITY TO COORDINATE WITH TWDB AND EXECUTE THE SUBSEQUENT CONTRACT AMENDMENT ISSUED

Mr. Taucer provided an overview related to the remaining task 5 funds in the amount of $118,385. He stated that the Water Management Strategy Committee discussed and recommended to submit a notice-to-proceed to utilize the remaining funds for post IPP adjustments. Mr. Langford made a motion to approve the notice-to-proceed request and authorize the Consultant Team and the San Jacinto River Authority to submit the request to TWDB, coordinate with TWDB as needed on follow-up information, and execute the subsequent contract amendment issued. The motion was seconded by Mr. Bailey and carried unanimously.

10. RECEIVE UPDATE FROM CONSULTANT TEAM ON NEW LEGISLATIVE REQUIREMENTS FOR REGIONAL PLANNING AND DISCUSS RECOMMENDATIONS FOR ADDRESSING REQUIREMENTS IN THE 2021 REGION H RWP

Mr. Taucer provided information related to new legislative requirements, relative to House Bill 807, and discussed the processes to address same. He explained the new requirements for defining a threshold for significant identified needs that trigger an ASR. He stated that one approach is to align the threshold with the Major Water Provider (MWP) definition of 25,000 acre-feet. He explained the requirement of quantified GPCD goals, stating that Region H discussed taking a three-tiered approach, starting with a base level of the State goals, with further recommendations that the water system strive to achieve any additional savings, and strongly encourage systems to try to reach the per capita demands compatible with the management strategy. He went on to discuss the requirements for unnecessary or counterproductive variations in drought response strategies to be documented in Chapter 7, as well as an assessment of the progress of RWPA in cooperation and regionalization to be documented in Chapter 11.

11. RECEIVE UPDATE FROM THE REGION H LEGISLATIVE COMMITTEE AND CONSULTANT TEAM AND DISCUSS POTENTIAL LEGISLATIVE AND POLICY RECOMMENDATIONS FOR THE 2021 REGION H RWP

Mr. Taucer provided a brief overview of certain legislative and policy recommendations for quantitative environmental analysis, access to current Water Availability Models for surface water, availability of groundwater within jurisdictions of groundwater-regulating entities, and promoting OneWater approaches in regional planning. He also reviewed legislative recommendations related to interbasin transfers, funding for Texas Bays and Estuaries Program, Rule of Capture, Groundwater Conservation Districts, funding for Groundwater Availability Modeling, water supply project financing mechanisms, agricultural conservation funding, water conservation, water conservation research funding, flood liability of water supply reservoirs, technology advancements in projections, and ongoing RWPG activities. Mr. Taucer also provided information related to infrastructure finance.

12. RECEIVE PRESENTATION FROM THE REGION H LEGISLATIVE COMMITTEE AND CONSULTANT TEAM REGARDING THE STATUS OF ECOLOGICALLY UNIQUE STREAM SEGMENTS AND UNIQUE RESERVOIR SITES AND DISCUSS POTENTIAL RECOMMENDATIONS FOR THE 2021 REGION H RWP

Mr. Taucer provided information related to unique stream segments and stated that the recommendation is to retain the 2016 recommendations. He provided information related to unique reservoir sites stating that Allen's Creek was designated in 2016 RWP and the recommendation is to re-designate Allen's Creek for this cycle.

13. RECEIVE REPORT REGARDING RECENT AND UPCOMING ACTIVITIES RELATED TO COMMUNICATIONS AND OUTREACH EFFORTS ON BEHALF OF THE RHWPG

Mr. Taucer reported that an upcoming presentation on the Region H Water Plan to AlCheE South Texas Section will take place in May, 2020.

14. AGENCY COMMUNICATIONS AND GENERAL INFORMATION

Mr. Bookout provided an update related to the emergency interconnect letter authorized to be submitted to the Texas Water Development Board's Executive Administrator.

15. RECEIVE PUBLIC COMMENTS

There were no public comments.

16. NEXT MEETING: JANUARY 8, 2020

Mr. Evans announced that the next Region H Water Planning Group meeting would be January 8, 2020.

17. ADJOURN

Without objection, the meeting was adjourned at 11:51 a.m.

Agenda Item 5

Discuss State Flood Planning process and consider taking action to direct the Consultant Team to submit input on Draft Rules for State Flood Planning and Funding on behalf of the RHWPG.

REGION H
Water Planning Group

Agenda Item 5
State Flood Planning Process

- Comment period through January 13th
- RWP process as model
- Opportunity to share RWPG perspective

Agenda Item 5
State Flood Planning Process

Action:

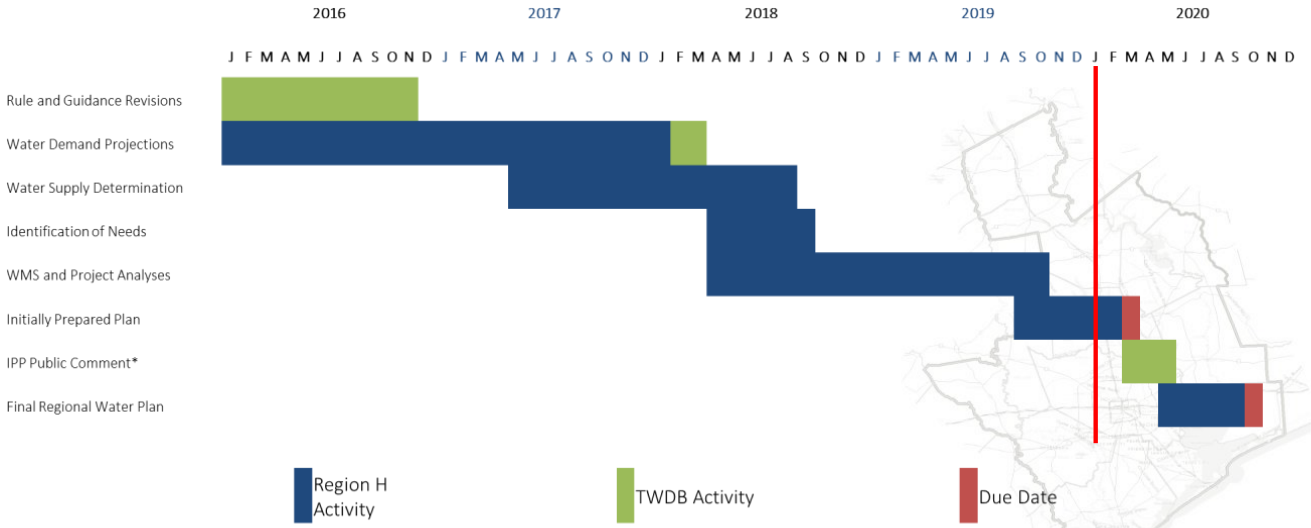
Direct the Consultant Team to submit input on Draft Rules for State Flood Planning and Funding on behalf of the RHWPG.

Agenda Item 6

Receive update from Consultant Team regarding the schedule and milestones for the development of the 2021 Region H RWP.

REGION H
Water Planning Group

Agenda Item 6
2021 RWP Schedule

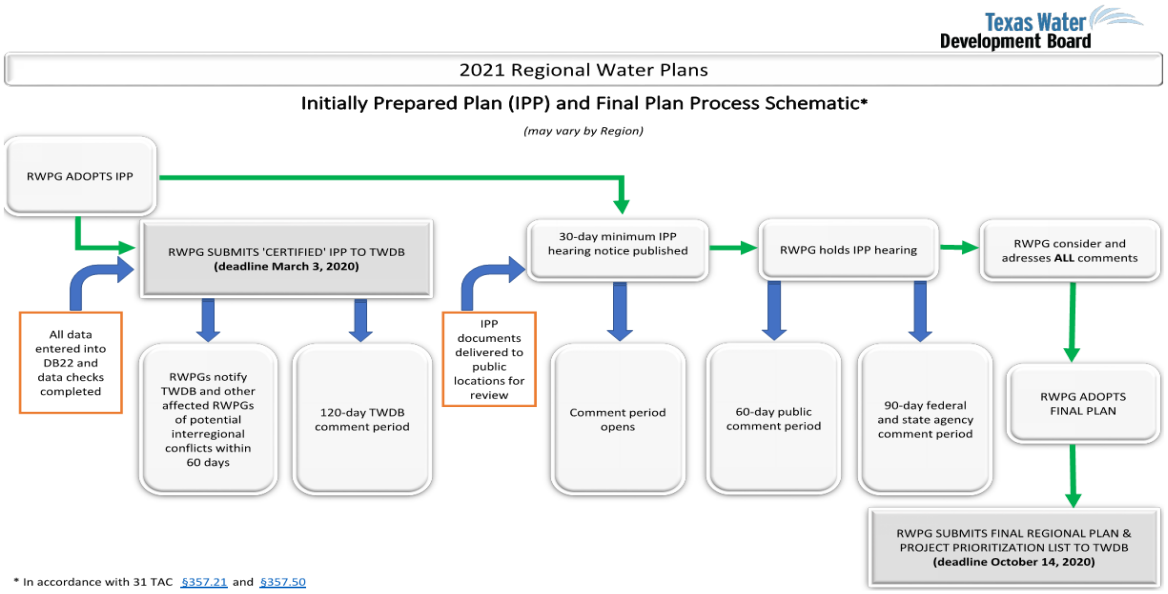


*Region H accepts public comment throughout the planning cycle and at each RWPG and committee meeting.

Agenda Item 6
2021 RWP Schedule

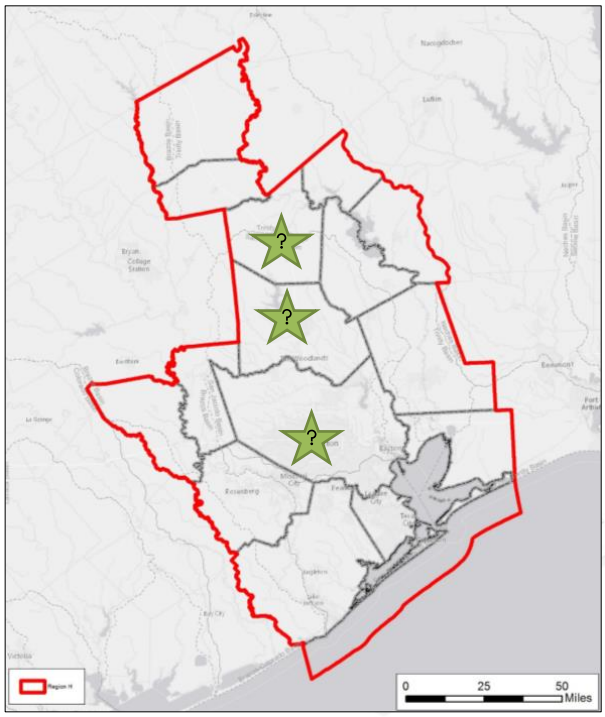
Date	Scheduled Events/Tasks
01/2020	RWPG Meeting
02/2020	RWPG Meeting
03/2020	DUE DATE: Initially Prepared Plan
Q2/2020	Public Hearings and Comment Period
10/2020	DUE DATE: FINAL RWP

Agenda Item 6
2021 RWP Schedule



Agenda Item 6
2021 RWP Schedule

- Minimum of one public hearing
- Region H usually holds several
- Typically ≈one month after IPP delivery
- Early to mid-April?
- Target areas?

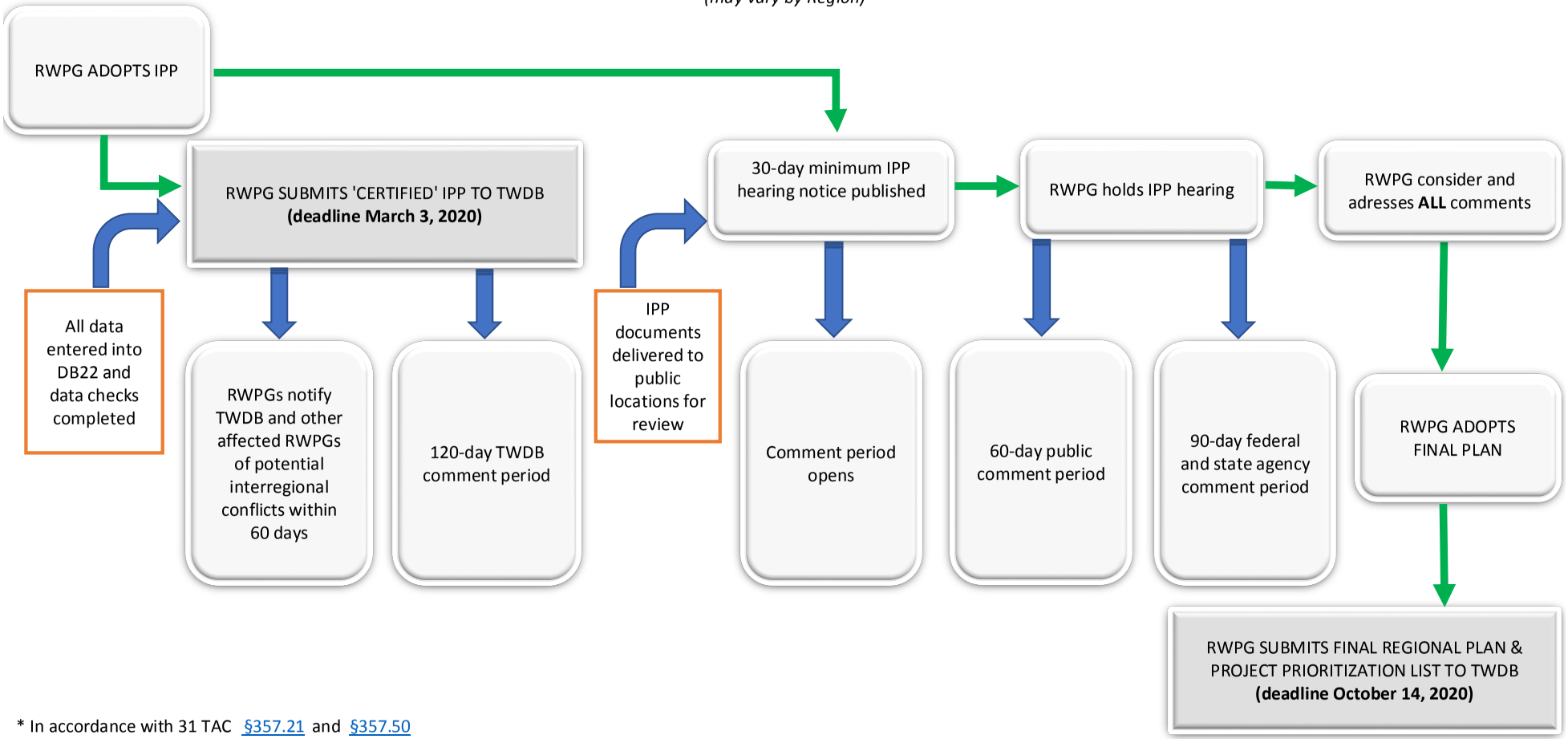


Texas Water Development Board

2021 Regional Water Plans

Initially Prepared Plan (IPP) and Final Plan Process Schematic*

(may vary by Region)



* In accordance with 31 TAC §357.21 and §357.50

updated October 2019

Texas Water Development Board

2021 Regional Water Plans

Summary of Posting Requirements for Public Hearings for Initially Prepared Plans (IPP), Adoption of IPPs, and Adoption of Final Plans

See the document below for detailed posting information:

http://www.twdb.texas.gov/waterplanning/rwp/planningdocu/2021/doc/current_docs/admin_docs/public_notice_quick_ref.pdf

Posting Requirements	Public Hearing for IPP	Adoption of IPP and Adoption of Final Plan
Minimum Notice:		
72 hours prior the meeting		✓
30+ days prior the hearing	✓	
Notice Must Contain:		
Date, time, and location of the public meeting or hearing; summary of the proposed action to be taken; the name, telephone number, and address of a RWPG contact to whom questions or requests for additional information may be submitted	✓	✓
Information that the RWPG will accept written and oral comments at the meeting or hearing; how the public may submit written comments separately; and a specific deadline for submission of written public comments	✓	
Locations of IPPs available for public inspection	✓	
Comment Period:		
30 days prior to the hearing; until 60 days after hearing (public); until 90 days after hearing (federal and state agencies); TWDB issues comments within 120 days after IPP receipt	✓	
Entities Notified:		
All voting and non-voting RWPG members	✓	✓
Any person or entity who has requested notice of RWPG activities	✓	✓
Each RWPG where a recommended or alternative WMS being considered would be located	✓	
Each mayor of a municipality, located in whole or in part in the RWPA, with a population of 1,000 or more or which is a county seat	✓	
Each county judge of a county located in whole or in part in the RWPA	✓	
Each special or general law district or river authority with responsibility to manage or supply water in the RWPA (use list obtained from TCEQ)	✓	
Each Retail Public Utility, defined as a community water system, that serves any part of the RWPA or receives water from the RWPA (use list obtained from TCEQ)	✓	
Each holder of record of a water right for the use of surface water the diversion of which occurs in the RWPA (use list obtained from TCEQ)	✓	
Posting Venues:		
On the website of the RWPG or host Political Subdivision (must post notice and agenda). In lieu of posting the meeting notice and agenda on the website of the RWPG or host Political Subdivision, the notice and agenda may be provided, in writing, to the County Clerk of each county in the RWPA	✓	✓
Texas Secretary of State website	✓	✓
In the Texas Register	✓	
Publish in a newspaper of general circulation in each county located in whole or part in the RWPA	✓	

Posting Requirements	Public Hearing for IPP	Adoption of IPP and Adoption of Final Plan
Document Provision:		
Documents to be made available on the internet or in hard copy for public inspection prior to and following the meeting include: 1) meeting agenda, and 2) copies of all materials, reports, and/or plans presented or discussed at the meeting	✓	✓
Copies of the IPPs must be available for public inspection in: 1) at least one public library in each county, **and** 2) either the county courthouse's law library, the county clerk's office, or some other accessible place within the county courthouse of each county having land in the RWPA. According to the capabilities of the facility, the RWPG may provide copies electronically, on electronic media, through an internet web link, or in hard copy	✓	
OMA and PIA:		
Each RWPG and any committee or subcommittee of an RWPG are subject to Chapters 551 [Open Meetings Act] and 552 [Public Information Act], Government Code. A copy of all materials presented or discussed at an open meeting shall be made available for public inspection prior to and following the meetings and shall meet the additional notice requirements when specifically referenced as required under subsections	✓	✓

Agenda Item 7

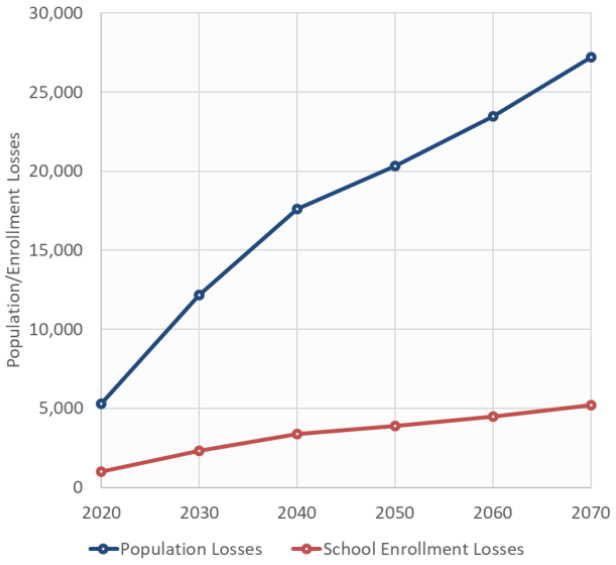
Receive presentation from the Consultant Team regarding TWDB analysis of socioeconomic impacts of unmet water needs in the Region H Water Planning Area.

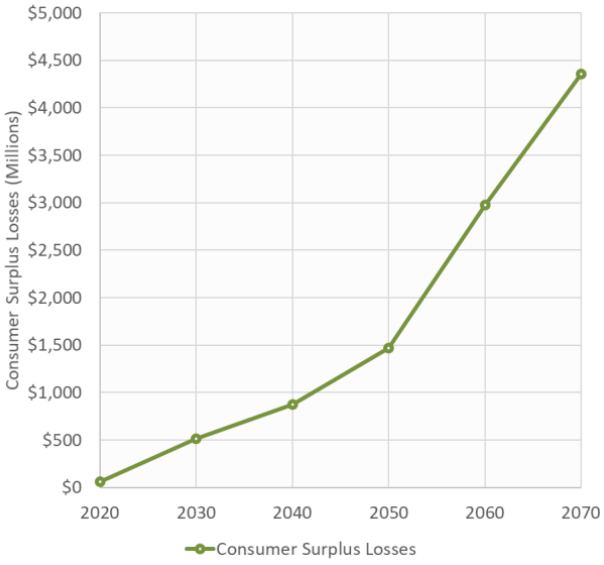
REGION H
Water Planning Group

Agenda Item 7
Socioeconomic Impacts

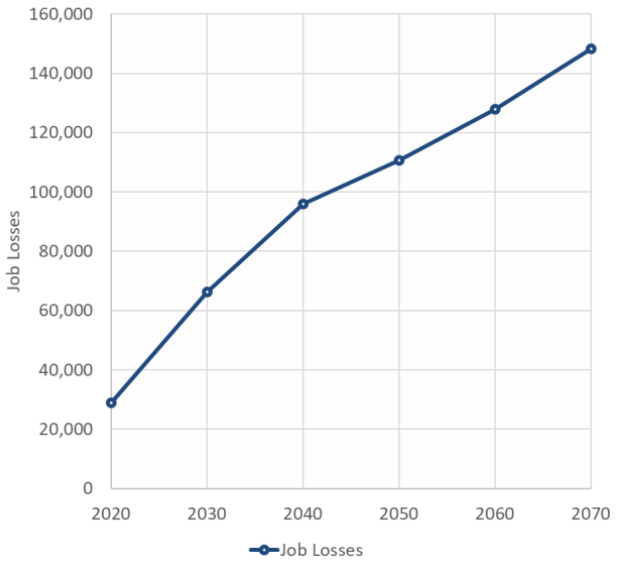
- Impacts of not meeting needs
  - Social
  - Economic
  - Financial Transfers
- TWDB study by request
- Impact for Planning Analysis (IMPLAN)
- Snapshot of first year of drought

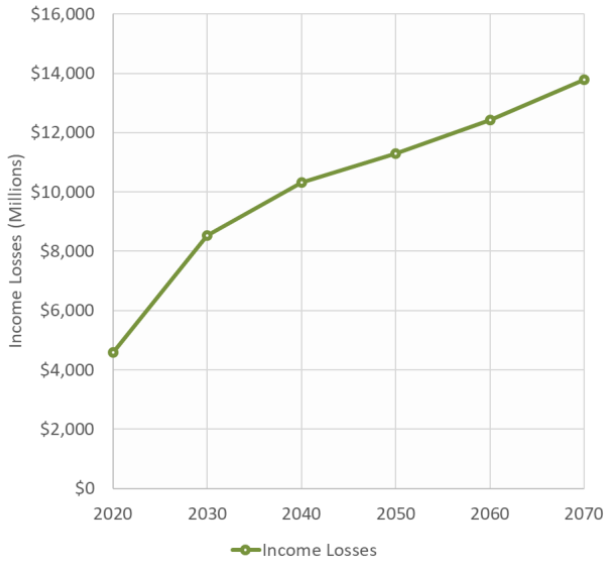
Agenda Item 7
Socioeconomic Impacts – Social Impacts



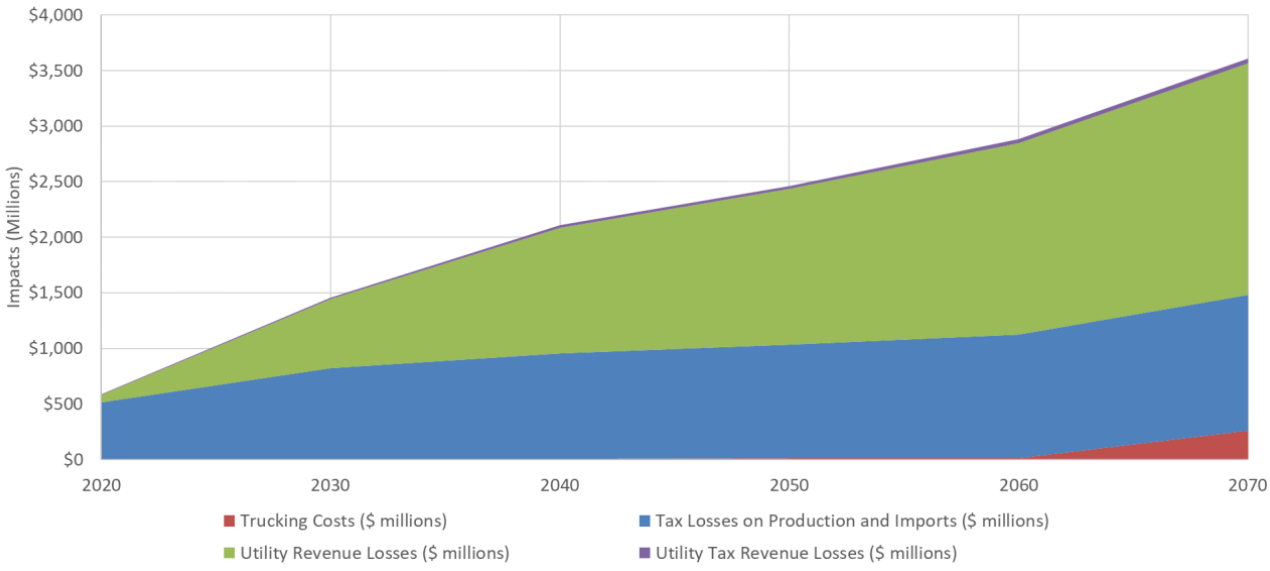


Agenda Item 7
Socioeconomic Impacts – Regional Economy





Agenda Item 7
Socioeconomic Impacts – Financial Transfers



Socioeconomic Impacts of Projected Water Shortages for the Region H Regional Water Planning Area

Prepared in Support of the 2021 Region H Regional Water Plan

Texas Water Development Board

Dr. John R. Ellis
Water Use, Projections, & Planning Division
Texas Water Development Board

November 2019

Table of Contents

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 Region H Regional Water Planning Group (Region H).

Based on projected water demands and existing water supplies, Region H 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 job losses are estimated within each planning decade (2020 through 2070). 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 H generated more than $510 billion in GDP (2018 dollars) and supported roughly 4.1 million jobs in 2016. The Region H estimated total population was approximately 7 million in 2016.

It is estimated that not meeting the identified water needs in Region H would result in an annually combined lost income impact of approximately $4.6 billion in 2020, increasing to $13.8 billion in 2070 (Table ES-1). In 2020, the region would lose approximately 29,000 jobs, and by 2070 job losses would increase to approximately 149,000 if anticipated needs are not mitigated.

All impact estimates are in year 2018 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 H socioeconomic impact summary

Regional Economic Impacts	2020	2030	2040	2050	2060	2070
Income losses ($ millions)*	$4,600	$8,521	$10,313	$11,301	$12,437	$13,784
Job losses	28,805	66,183	95,862	110,604	127,869	148,164
Financial Transfer Impacts	**2020**	**2030**	**2040**	**2050**	**2060**	**2070**
Tax losses on production and imports ($ millions)*	$507	$815	$944	$1,021	$1,115	$1,226
Water trucking costs ($ millions)*	$4	$3	$8	$10	$13	$258
Utility revenue losses ($ millions)*	$72	$626	$1,134	$1,403	$1,722	$2,085
Utility tax revenue losses ($ millions)*	$1	$12	$22	$27	$33	$40
Social Impacts	**2020**	**2030**	**2040**	**2050**	**2060**	**2070**
Consumer surplus losses ($ millions)*	$59	$515	$878	$1,469	$2,980	$4,359
Population losses	5,289	12,151	17,600	20,307	23,477	27,203
School enrollment losses	1,012	2,324	3,366	3,884	4,491	5,203

* Year 2018 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.

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 Water Use, Projections, & Planning Division designed and conducted this analysis in support of Region H, 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 H Regional Water Planning Area generated more than $510 billion in gross domestic product (2018 dollars) and supported roughly 4.1 million jobs in 2016, according to the IMPLAN dataset utilized in this socioeconomic analysis. This activity accounted for nearly 30 percent of the state's total gross domestic product of 1.73 trillion dollars for the year based on IMPLAN. Table 1-1 lists all economic sectors ranked by the total value-added to the economy in Region H. The manufacturing and mining sectors (including oil and gas extraction and petroleum refineries) generated more than 25 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 public administration, health care, and retail trade sectors. Region H's estimated total population was close to 7 million in 2016, comprising 25 percent of the state's total.

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.

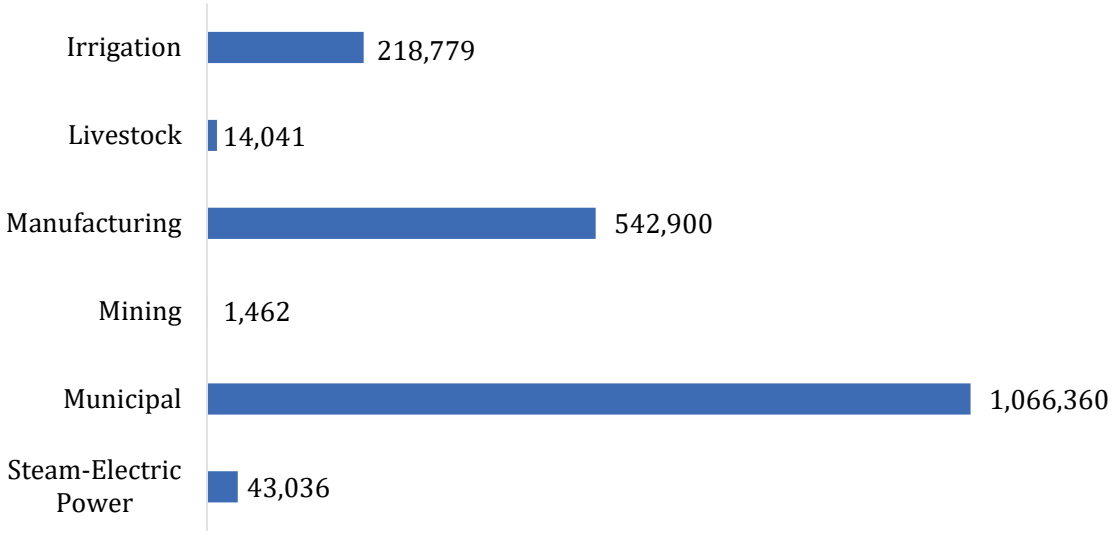
Table 1-1 Region H regional economy by economic sector*

Economic sector	Value-added ($ millions)	Tax ($ millions)	Jobs
Manufacturing	$77,054.9	$2,445.7	245,107
Mining, Quarrying, and Oil and Gas Extraction	$53,253.7	$4,778.1	134,003
Real Estate and Rental and Leasing	$49,060.4	$5,941.4	181,440
Professional, Scientific, and Technical Services	$43,742.8	$829.6	347,563
Wholesale Trade	$41,208.9	$5,398.2	183,641
Public Administration	$37,764.0	$(116.3)	405,515
Construction	$34,660.2	$357.4	323,162
Health Care and Social Assistance	$24,613.3	$295.0	377,106
Finance and Insurance	$22,571.0	$947.7	202,699
Retail Trade	$22,251.1	$4,857.3	360,968
Administrative and Support and Waste Management and Remediation Services	$19,943.8	$416.7	311,499
Transportation and Warehousing	$18,819.0	$1,509.6	183,611
Utilities	$14,459.5	$1,798.7	18,945
Other Services (except Public Administration)	$13,458.3	$1,253.2	284,129
Accommodation and Food Services	$13,036.2	$1,874.1	321,732
Management of Companies and Enterprises	$8,740.2	$133.9	47,545
Information	$8,620.3	$2,064.9	45,803
Educational Services	$3,388.3	$114.5	73,245
Arts, Entertainment, and Recreation	$3,025.3	$374.5	62,813
Agriculture, Forestry, Fishing and Hunting	$660.5	$27.8	29,892
Grand Total	$510,331.9	$35,301.9	4,140,419

*Source: 2016 IMPLAN for 536 sectors aggregated by 2-digit NAICS (North American Industry Classification System)

Figure 1-1 illustrates Region H's breakdown of the 2016 water use estimates by TWDB water use category. The categories with the highest use in Region H in 2016 were municipal (56 percent) and manufacturing (29 percent). Notably, more than 50 percent of the state's manufacturing water use occurred within Region H.

Figure 1-1 Region H 2016 water use estimates by water use category (in acre-feet)



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

1.2 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 H 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). 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. 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 by WUG and county appears in Chapter 4 of the 2021 Region H Regional Water Plan.

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

Water Use Category		2020	2030	2040	2050	2060	2070
Irrigation	water needs (acre-feet per year)	84,455	84,455	84,455	84,455	84,455	84,538
	% of the category's total water demand	25%	25%	25%	25%	25%	25%
Livestock	water needs (acre-feet per year)	1,276	1,659	1,913	1,912	1,911	1,919
	% of the category's total water demand	9%	12%	14%	13%	13%	14%
Manufacturing	water needs (acre-feet per year)	31,431	62,474	63,994	65,314	65,339	65,405
	% of the category's total water demand	5%	9%	9%	9%	9%	9%
Mining	water needs (acre-feet per year)	3,340	4,236	4,034	4,048	4,248	4,582
	% of the category's total water demand	22%	26%	26%	28%	30%	34%
Municipal*	water needs (acre-feet per year)	24,239	217,667	386,593	474,367	578,028	694,876
	% of the category's total water demand	2%	16%	26%	29%	33%	36%
Steam-electric power	water needs (acre-feet per year)	4,968	4,968	4,968	4,968	4,968	4,968
	% of the category's total water demand	5%	5%	5%	5%	5%	5%
Total water needs (acre-feet per year)		**149,709**	**375,459**	**545,957**	**635,064**	**738,949**	**856,288**

***** 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.
Job losses	Number of part-time and full-time jobs 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.
Population losses	Population losses accompanying job losses.
School enrollment losses	School enrollment losses (K-12) accompanying job losses.

2.1 Regional Economic Impacts

The two key measures used to assess regional economic impacts are income losses and 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.

Job Losses

The number of jobs 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, job loss estimates are not calculated for the steam-electric power category.

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 $35,000[1] 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 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 taxes. 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

[1] Based on staff survey of water hauling firms and historical data concerning transport costs for potable water in the recent drought in California for this estimate. There are many factors and variables that would determine actual water trucking costs including distance to, cost of water, and length of that drought.

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.

Population and School Enrollment Losses

Population loss due to water shortages, as well as the associated decline in school enrollment, are based upon the job loss estimates discussed in Section 2.1. A simplified ratio of job and net population losses are calculated for the state as a whole based on a recent study of how job layoffs impact the labor market population.[2] For every 100 jobs lost, 18 people were assumed to move out of the area. School enrollment losses are estimated as a proportion of the population lost based upon public school enrollment data from the Texas Education Agency concerning the age K-12 population within the state (approximately 19%).

[2] 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 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 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 536 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 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

Input-Output analysis using the IMPLAN software package was the primary means of estimating the value-added, jobs, and tax related impact measures. This analysis employed regional level models to determine key economic impacts. IMPLAN is an economic impact model, 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 Minnesota IMPLAN Group (MIG Inc.) which collects and sells county and state specific data and software. The year 2016 version of IMPLAN, employing data for all 254 Texas counties, was used to provide estimates of value-added, jobs, and taxes on production for the economic sectors associated with the water user groups examined in the study. IMPLAN uses 536 sector-specific Industry Codes, and those that rely on water as a primary input were assigned to their appropriate planning water user categories (irrigation, livestock, manufacturing, mining, and municipal). Estimates of value-added for a water use category were obtained by summing value-added estimates across the relevant IMPLAN sectors associated with that water use category. These calculations were also performed for job losses as well as tax losses on production and imports.

The adjusted value-added estimates used as an income measure in this analysis, as well as the job and tax estimates from IMPLAN, include 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.

Input-output models such as IMPLAN only capture backward linkages and do not include forward linkages in the economy.

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 livestock 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 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)

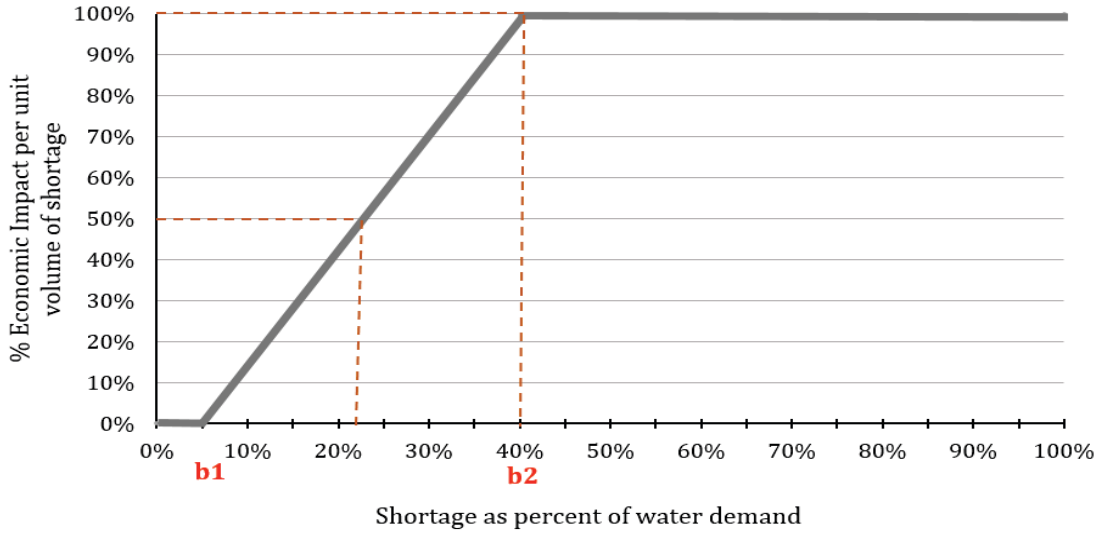


Table 3-1 Economic impact elasticity function lower and upper bounds

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., 2020, 2030, 2040, 2050, 2060, and 2070). 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. In other words, growth occurs and future shocks are imposed on an economy at 10-year intervals, and the resulting impacts are estimated. 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. Input-output models such as IMPLAN rely on a static profile of the structure of the economy as it appears today. 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.

4. 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.

5. All monetary values originally based upon year 2016 IMPLAN and other sources are reported in constant year 2018 dollars to be consistent with the water management strategy requirements in the State Water Plan.

6. 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.

7. 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.

8. 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.

9. 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 losses 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.

10. 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.

11. 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.

12. 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 population and school enrollment changes are based on regional evaluations and therefore do not necessarily reflect what might occur on a statewide basis.

13. **The results must be interpreted carefully. It is the general and relative magnitudes of 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.

14. 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.

15. 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

Five of the 15 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 in Region H

Impact measure	2020	2030	2040	2050	2060	2070
Income losses ($ millions)*	$16	$16	$16	$16	$16	$16
Job losses	398	398	398	398	398	398

* Year 2018 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

Five of the 15 counties in the region are projected to experience water shortages in the livestock water use category one or more decades within the planning horizon. Estimated impacts to this water use category appear in Table 4-2.

Table 4-2 Impacts of water shortages on livestock in Region H

Impact measure	2020	2030	2040	2050	2060	2070
Income losses ($ millions)*	$47	$66	$79	$79	$79	$79
Jobs losses	1,818	2,425	2,831	2,831	2,831	2,831
Tax losses on production and imports ($ millions)*	$3	$3	$4	$4	$4	$4

* Year 2018 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 15 counties in the region 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 in Region H

Impacts measure	2020	2030	2040	2050	2060	2070
Income losses ($ millions)*	$1,214	$3,190	$3,262	$3,332	$3,334	$3,342
Job losses	5,997	16,195	16,518	16,841	16,840	16,860
Tax losses on production and Imports ($ millions)*	$89	$220	$225	$230	$230	$231

* Year 2018 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

Mining water shortages in the region are projected to occur in nine of the 15 counties in the region for one or more decades within the planning horizon. Estimated impacts to this water use type appear in Table 4-4.

Table 4-4 Impacts of water shortages on mining in Region H

Impacts measure	2020	2030	2040	2050	2060	2070
Income losses ($ millions)*	$2,947	$3,317	$3,067	$3,062	$3,109	$3,182
Job losses	18,787	21,185	19,706	19,787	20,176	20,760
Tax losses on production and Imports ($ millions)*	$406	$456	$419	$415	$419	$426

* Year 2018 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

Nine of the 15 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 $35,000 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 in Region H

Impacts measure	2020	2030	2040	2050	2060	2070
Income losses[1] ($ millions)*	$116	$1,672	$3,630	$4,552	$5,639	$6,906
Job losses[1]	1,805	25,979	56,408	70,747	87,624	107,315
Tax losses on production and imports[1] ($ millions)*	$9	$137	$297	$372	$461	$564
Trucking costs ($ millions)*	$4	$3	$8	$10	$13	$258
Utility revenue losses ($ millions)*	$72	$626	$1,134	$1,403	$1,722	$2,085
Utility tax revenue losses ($ millions)*	$1	$12	$22	$27	$33	$40

[1] Estimates apply to the water-intensive portion of non-residential municipal water use.
* Year 2018 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 Water Shortages

Steam-electric water shortages in the region are projected to occur in two of the 15 counties in the region for one or more decades within the planning horizon. Estimated impacts to this water use category appear in Table 4-6.

Note that estimated economic impacts to steam-electric 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 in Region H

Impacts measure	2020	2030	2040	2050	2060	2070
Income Losses ($ millions)*	$260	$260	$260	$260	$260	$260

* Year 2018 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 in Region H

Impacts measure	2020	2030	2040	2050	2060	2070
Consumer surplus losses ($ millions)*	$59	$515	$878	$1,469	$2,980	$4,359
Population losses	5,289	12,151	17,600	20,307	23,477	27,203
School enrollment losses	1,012	2,324	3,366	3,884	4,491	5,203

* Year 2018 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 Estimated Economic Impacts for Region H

County level summary of estimated economic impacts of not meeting identified water needs by water use category and decade (in 2018 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 (Million $)*						Job losses					
County	Water Use Category	2020	2030	2040	2050	2060	2070	2020	2030	2040	2050	2060	2070
AUSTIN	MINING	-	$17.00	$11.45	$4.98	-	-	-	134	91	39	-	-
AUSTIN	MUNICIPAL	-	$0.07	$0.85	$2.58	$4.96	$6.85	-	1	13	40	77	106
AUSTIN Total		**-**	**$17.07**	**$12.30**	**$7.56**	**$4.96**	**$6.85**	**-**	**136**	**104**	**80**	**77**	**106**
BRAZORIA	IRRIGATION	$12.64	$12.64	$12.64	$12.64	$12.64	$12.66	315	315	315	315	315	316
BRAZORIA	MANUFACTURING	$808.53	$1,206.91	$1,206.91	$1,206.91	$1,206.91	$1,211.99	3,556	5,307	5,307	5,307	5,307	5,330
BRAZORIA	MINING	-	$19.93	$70.72	$148.21	$203.02	$270.15	-	149	529	1,109	1,520	2,022
BRAZORIA	MUNICIPAL	-	$2.58	$27.93	$77.52	$119.17	$164.21	-	40	434	1,205	1,852	2,552
BRAZORIA Total		**$821.17**	**$1,242.07**	**$1,318.20**	**$1,445.29**	**$1,541.75**	**$1,659.01**	**3,871**	**5,812**	**6,586**	**7,937**	**8,994**	**10,219**
CHAMBERS	IRRIGATION	$0.21	$0.21	$0.21	$0.21	$0.21	$0.21	6	6	6	6	6	6
CHAMBERS	MANUFACTURING	$279.79	$392.92	$392.92	$392.92	$392.92	$392.92	1,414	1,986	1,986	1,986	1,986	1,986
CHAMBERS	MUNICIPAL	$2.12	$6.90	$13.68	$18.72	$24.34	$30.28	33	107	213	291	378	471
CHAMBERS	STEAM ELECTRIC POWER	$72.71	$72.71	$72.71	$72.71	$72.71	$72.71	-	-	-	-	-	-
CHAMBERS Total		**$354.84**	**$472.74**	**$479.53**	**$484.57**	**$490.19**	**$496.13**	**1,453**	**2,099**	**2,204**	**2,283**	**2,370**	**2,462**
FORT BEND	MANUFACTURING	-	$345.35	$345.35	$345.35	$345.35	$345.35	-	1,948	1,948	1,948	1,948	1,948
FORT BEND	MINING	$0.03	$1.21	$0.74	$0.50	$0.54	$0.16	0	11	6	4	5	1
FORT BEND	MUNICIPAL	$20.07	$722.38	$973.25	$1,133.02	$1,263.81	$1,379.76	312	11,226	15,125	17,607	19,640	21,442
FORT BEND Total		**$20.11**	**$1,068.94**	**$1,319.34**	**$1,478.87**	**$1,609.70**	**$1,725.27**	**312**	**13,184**	**17,079**	**19,559**	**21,592**	**23,391**
GALVESTON	IRRIGATION	$1.58	$1.58	$1.58	$1.58	$1.58	$1.58	40	40	40	40	40	40
GALVESTON	LIVESTOCK	$7.03	$7.03	$7.03	$7.03	$7.03	$7.03	315	315	315	315	315	315
GALVESTON	MANUFACTURING	-	$740.73	$745.90	$750.90	$756.31	$761.33	-	3,104	3,126	3,147	3,169	3,190
GALVESTON	MINING	$206.20	$221.23	$243.48	$262.72	$281.35	$300.59	1,621	1,739	1,914	2,065	2,212	2,363
GALVESTON	MUNICIPAL	$43.85	$63.34	$65.09	$68.35	$73.34	$79.13	681	984	1,012	1,062	1,140	1,230
GALVESTON Total		**$258.66**	**$1,033.90**	**$1,063.08**	**$1,090.57**	**$1,119.61**	**$1,149.66**	**2,657**	**6,182**	**6,406**	**6,629**	**6,876**	**7,138**

		Income losses (Million $)*						Job losses					
County	Water Use Category	2020	2030	2040	2050	2060	2070	2020	2030	2040	2050	2060	2070
HARRIS	LIVESTOCK	$24.22	$43.39	$56.20	$56.20	$56.20	$56.20	767	1,375	1,781	1,781	1,781	1,781
HARRIS	MANUFACTURING	-	$84.55	$159.34	$231.81	$231.81	$231.81	-	421	793	1,154	1,154	1,154
HARRIS	MINING	$2,740.78	$2,723.10	$2,674.73	$2,644.96	$2,621.70	$2,603.09	17,166	17,056	16,753	16,566	16,420	16,304
HARRIS	MUNICIPAL	$24.06	$729.84	$2,241.51	$2,721.03	$3,325.02	$4,032.88	374	11,342	34,834	42,285	51,672	62,672
HARRIS	STEAM ELECTRIC POWER	$187.72	$187.72	$187.72	$187.72	$187.72	$187.72	-	-	-	-	-	-
HARRIS Total		**$2,976.78**	**$3,768.60**	**$5,319.50**	**$5,841.72**	**$6,422.46**	**$7,111.71**	**18,308**	**30,193**	**54,160**	**61,786**	**71,027**	**81,911**
LEON	MANUFACTURING	-	$9.25	$9.25	$9.25	$9.25	$9.25	-	74	74	74	74	74
LEON Total		**-**	**$9.25**	**$9.25**	**$9.25**	**$9.25**	**$9.25**	**-**	**74**	**74**	**74**	**74**	**74**
LIBERTY	IRRIGATION	$1.46	$1.46	$1.46	$1.46	$1.46	$1.46	37	37	37	37	37	37
LIBERTY	LIVESTOCK	$15.29	$15.29	$15.29	$15.29	$15.29	$15.29	735	735	735	735	735	735
LIBERTY	MINING	-	-	-	$0.30	$2.41	$8.40	-	-	-	2	20	70
LIBERTY	MUNICIPAL	-	$0.01	$0.12	$0.35	$0.69	$1.15	-	0	2	5	11	18
LIBERTY Total		**$16.75**	**$16.75**	**$16.87**	**$17.40**	**$19.84**	**$26.30**	**773**	**773**	**775**	**781**	**803**	**860**
MADISON	MINING	-	$334.73	$66.03	-	-	-	-	2,096	414	-	-	-
MADISON Total		**-**	**$334.73**	**$66.03**	**-**	**-**	**-**	**-**	**2,096**	**414**	**-**	**-**	**-**
MONTGOMERY	MANUFACTURING	$125.73	$410.57	$401.83	$394.63	$391.76	$388.91	1,028	3,356	3,284	3,225	3,202	3,179
MONTGOMERY	MUNICIPAL	$25.06	$143.84	$302.37	$523.97	$817.63	$1,197.57	389	2,235	4,699	8,143	12,706	18,610
MONTGOMERY Total		**$150.78**	**$554.41**	**$704.21**	**$918.60**	**$1,209.39**	**$1,586.48**	**1,417**	**5,591**	**7,983**	**11,368**	**15,908**	**21,789**
WALLER	MUNICIPAL	$0.97	$2.77	$5.03	$6.93	$9.54	$13.78	15	43	78	108	148	214
WALLER Total		**$0.97**	**$2.77**	**$5.03**	**$6.93**	**$9.54**	**$13.78**	**15**	**43**	**78**	**108**	**148**	**214**
REGION H Total		**$4,600.06**	**$8,521.23**	**$10,313.32**	**$11,300.76**	**$12,436.69**	**$13,784.42**	**28,805**	**66,183**	**95,862**	**110,604**	**127,869**	**148,164**

Agenda Item 8

Receive presentation from the Consultant Team regarding the draft 2021 Region H Initially Prepared Regional Water Plan.

REGION H
Water Planning Group

Agenda Item 8
Draft IPP

- DRAFT document
- Two Volumes
- Brief summary of chapters
- No action today
- Open for comment

Agenda Item 8
Draft IPP

Agenda Item 8
Draft IPP – Chapter 1

Description of Region

Chapter	Support
▪ Regional water planning in Texas ▪ Description of region ▪ Population and water demand ▪ Water sources and providers ▪ Water quality and natural resources ▪ Existing water planning efforts	▪ Reference list

Agenda Item 8
Draft IPP – Chapter 2

Projected Population and Water Demands

Chapter	Support
▪ Non-population demands ▪ Population demands ▪ Methodology and baseline conservation ▪ MWP demands and contracts	▪ MWP summaries ▪ DB22 tables

Agenda Item 8
Draft IPP – Chapter 3

Analysis of Current Water Supplies

Chapter	Support
▪ Sources and analysis methods ▪ Total regional water availability ▪ MWPs and major supply contracts ▪ Detailed assignment of sources	▪ MPF documentation ▪ Model and right data ▪ MWP summaries ▪ DB22 tables

Agenda Item 8
Draft IPP – Chapter 4

Analysis of Needs

Chapter	Support
▪ Identification of needs ▪ Summary of needs ▪ Locations	▪ MWP summaries ▪ DB22 tables

Agenda Item 8
Draft IPP – Chapter 5

Water Management Strategies

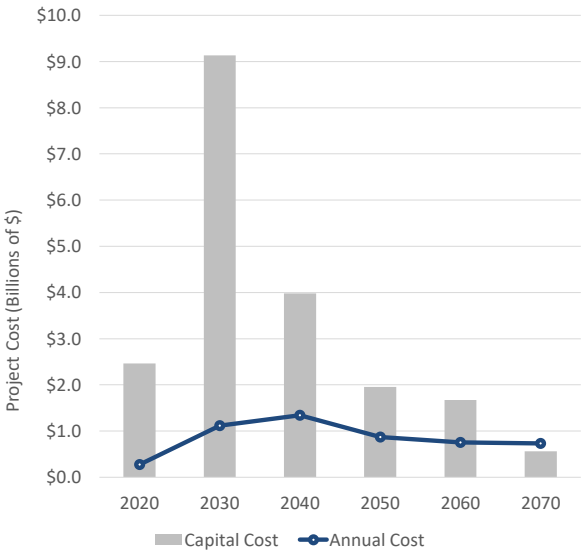
Chapter

- Requirements
- Evaluation methodology and selection process
- Potentially feasible WMS and projects
- Recommendations, relationships, and MSF
- Unmet needs

Support

- WMS tables
- Tech memos
- Socioeconomic report
- DB22 tables

Agenda Item 8
Draft IPP – Chapter 5



- $19.8 billion
- Change over time
- Increased project estimates
- New large projects
- Treatment and pump station
- Land cost
- Inclusive WUG infrastructure

Agenda Item 8
Draft IPP – Chapter 5

Potential Additions and Refinement

- City of Houston GRP Transmission
- LNVA Neches-Trinity Basin Interconnect
- Cedar Bayou Area Desalination
- Lower Basin Industrial Reuse
- Willis Brackish Groundwater

Agenda Item 8
Draft IPP – Chapter 5B

Conservation Recommendations

Chapter	Support
▪ Challenges ▪ Importance of conservation ▪ RWPG recommended conservation ▪ Current efforts in region ▪ WCP suggestions	▪ Water loss savings ▪ Advanced savings ▪ GPCD goals

Agenda Item 8
Draft IPP – Chapter 6

Impacts of the Regional Water Plan

Chapter	Support

▪ Impacts on water quality
▪ Impacts of moving water from rural and ag areas
▪ Consistency with resource protection
  ▪ Water
  ▪ Agriculture
  ▪ Natural resources
  ▪ Navigation
	▪ 303(d) list
	▪ Ag Census
	▪ Land trends
	▪ T&E list

Agenda Item 8
Draft IPP – Chapter 7

Drought Response

Chapter	Support
▪ Drought of record ▪ Current preparations in region ▪ Existing and potential interconnects ▪ Emergency responses ▪ Region-specific recommendations ▪ Drought management WMS discussion ▪ Other recommendations	▪ Preparation table ▪ Interconnects ▪ Potential responses ▪ Model DCPs

Agenda Item 8
Draft IPP – Chapter 8

USS, URS, and Other Recommendations

Chapter	Support

▪ Unique stream segments
▪ Unique reservoir sites
▪ Other recommendations
  ▪ Regulatory
  ▪ Administrative
  ▪ Legislative
  ▪ Infrastructure finance
	▪ Recommendation details

Agenda Item 8
Draft IPP – Chapter 9

Reporting of Financing Mechanisms for WMS

Chapter	Support
▪ Capital cost summary ▪ IFR survey (post-IPP)	▪ Survey results (post-IPP)

Agenda Item 8
Draft IPP – Chapter 10

Adoption of Plan and Public Participation

Chapter	Support
▪ RWPG representation ▪ Outreach, notices, and websites ▪ RWPG meeting summaries ▪ Committee meeting summaries ▪ Public review and comment (post-IPP)	▪ Hearing materials ▪ Public comments ▪ Responses ▪ All post-IPP

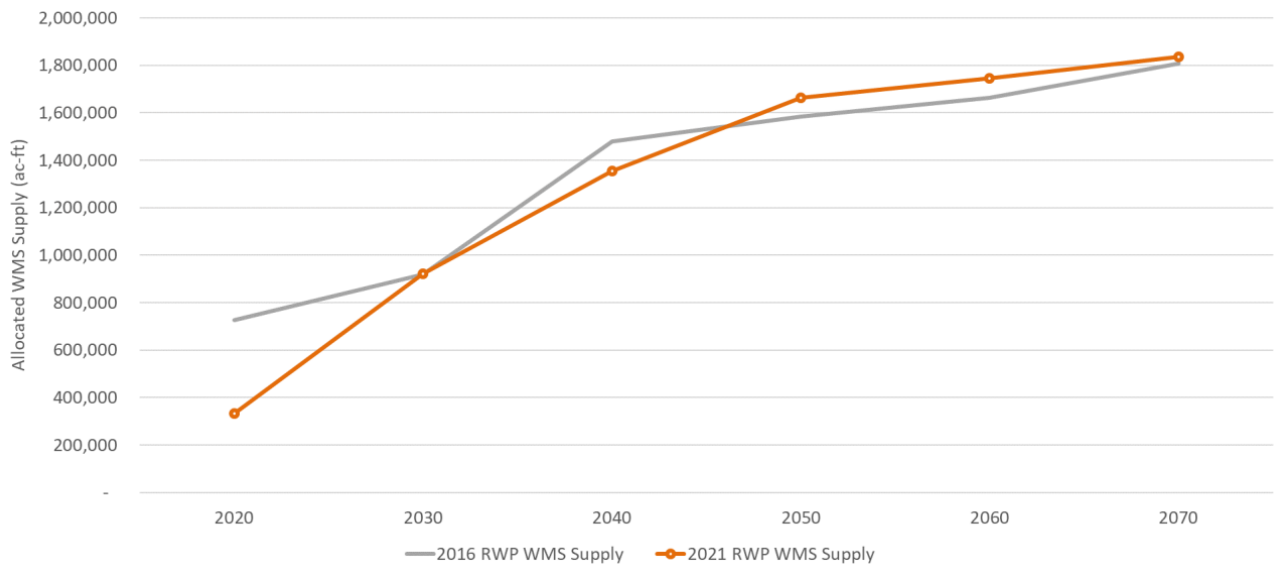
Agenda Item 8
Draft IPP – Chapter 11

Implementation and Comparison to Previous RWP

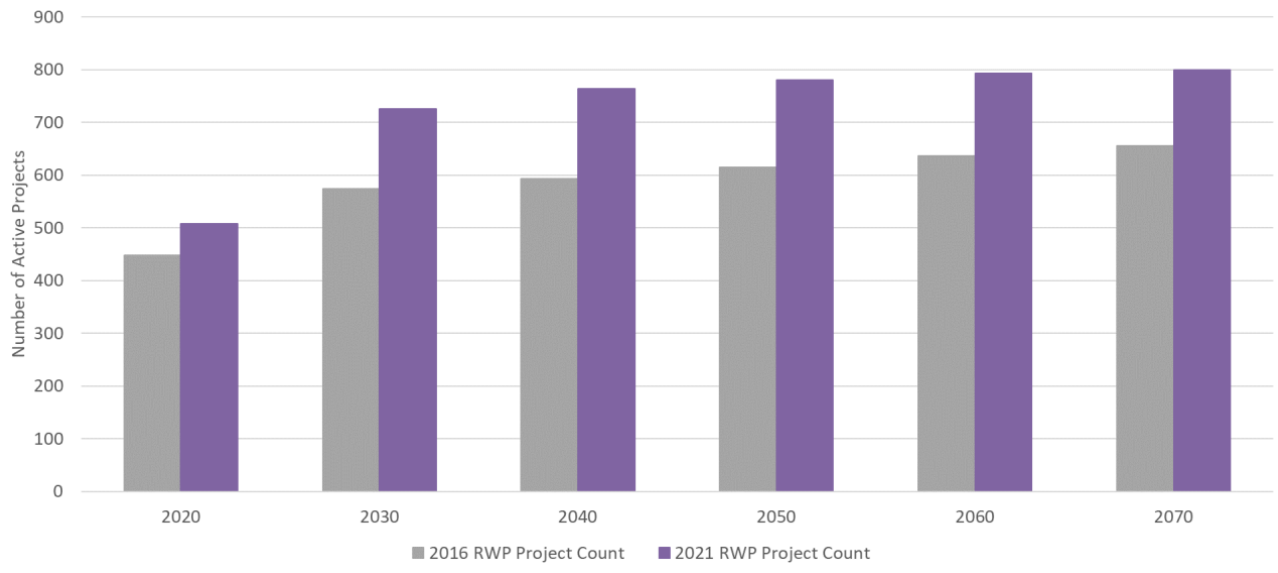
Chapter	Support

▪ 2016 RWP strategy implementation summary
▪ Numerical comparison to prior RWP
  ▪ Drought of record and modeling assumptions
  ▪ Demands
  ▪ Supplies
  ▪ Strategies and costs
▪ Regionalization assessment
	▪ Implementation report

Agenda Item 8
Draft IPP – Chapter 11

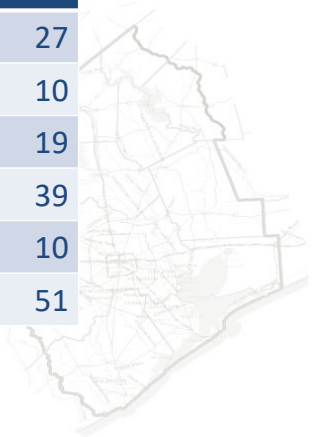


Agenda Item 8
Draft IPP – Chapter 11

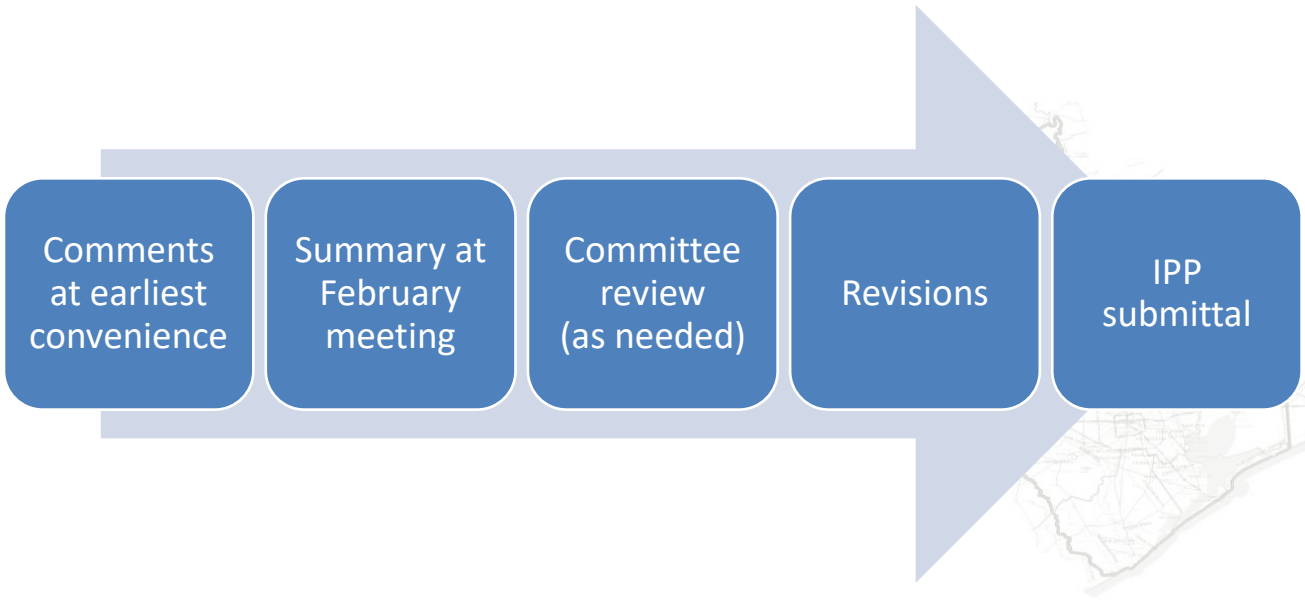


Agenda Item 8
Draft IPP – Chapter 11

Regionalization Indicator		2016 RWP	2021 RWP
WMS	Serving multiple WUGs	24	27
	With multiple sponsors and sellers	10	10
	Using multiple water sources	17	19
	Involving transfers to others	32	39
Projects	With multiple sponsors	6	10
WWPs	Serving multiple WUGs	40	51



Agenda Item 8
Draft IPP – Chapter 11

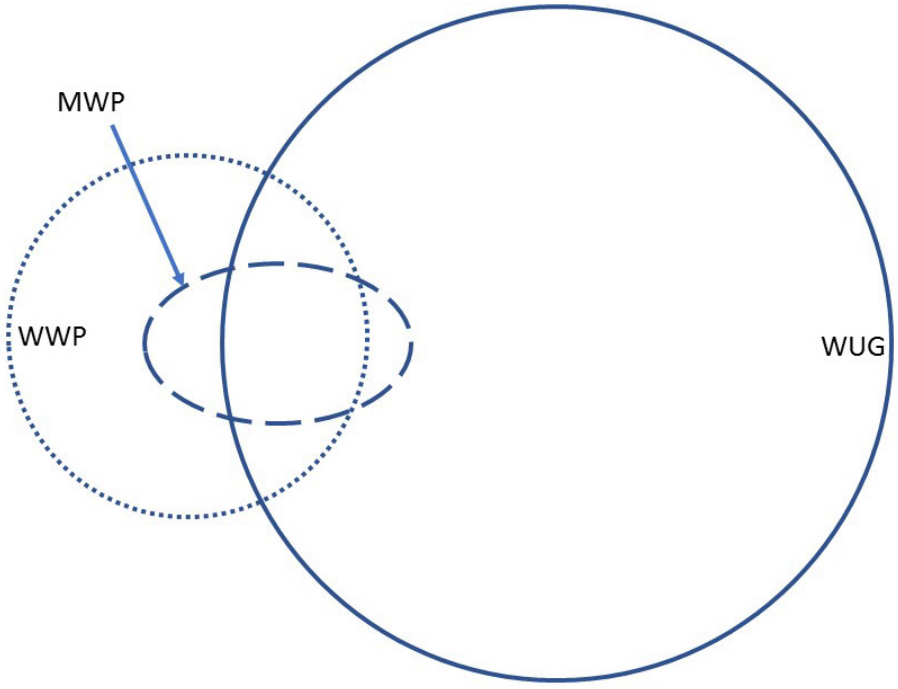


FEBRUARY 2018

Water User Groups, Wholesale Water Providers, and Major Water Providers in Regional Water Planning

Regional water planning groups (RWPG) are required by rule to specifically consider three, often overlapping, planning units, Water User Groups (WUG), Wholesale Water Providers (WWP), and Major Water Providers (MWP), when developing their plans. This document explains what these entities are, how they relate, and how they may overlap. Keep in mind throughout this discussion that a single entity may simultaneously be designated as a WUG, WWP, and MWP, as summarized in Figure 1. Note that an MWP must also be at least a WUG or a WWP.

Figure 1: Ven relationship between three categories of planning units in regional water plans



Water User Groups

WUGs are the entities for which water demand projections are developed by the Texas Water Development Board (TWDB) and that form the underlying—and highest resolution—basis for each regional water plan and the state water plan. Water demands, existing water supplies, and water needs (or surpluses) are evaluated for all WUGs. The Texas state water plan focuses on addressing the identified water needs of the 2,900 WUGS within Texas that fall within six categories (municipal, irrigation, manufacturing, livestock, mining, and steam-electric power). The Texas state water plan presents all information, including information in the interactive state water plan, on a WUG-centric basis.

Wholesale Water Providers

Another type of entity critical to plan development is the wholesale water provider, or WWP. For an entity to be designated as a WWP for planning purposes, it must sell or deliver (or plan to sell or deliver) wholesale water at some point in the 50-year planning horizon, as defined in 31 Texas Administrative Code (TAC) §357.10(43). If, for example, a WUG provides water to retail users as well as wholesale to other entities, it may also be considered a WWP (Figure 1). Regional water planning groups determine the WWPs that they want to utilize in their plan development based upon the known wholesale transactions that occur within the regional water planning area. Data analyses of identified WWPs occur in the evaluation of contractual obligations to supply water, the demands associated with WUGs served by the WWP, and the evaluation of the WWP's existing water supplies. Even though the RWPG is not required to specifically report basic information on WWP demands and supplies in the regional water plan,[1] it will need to do so in at least two specific instances, including:

- **if that same entity is also designated by the RWPG as a MWP, or**
- **if that WWP is designated as the "sponsor" of any recommended water management strategy project (WMSP) in the plan, through TWDB-generated data reports. The WWP information will provide the basis for the WWP WMSP or water management strategy.**

These are minimum reporting requirements; however, an RWPG may present more WWP information utilized in the development of its plan. **The extent to which RWPGs report on WWPs is left largely to the discretion of the RWPGs.**

Major Water Providers

The new category of "Major Water Providers" was established in rules for the development of the 2022 State Water Plan in conjunction with the removal of certain reporting requirements[2] to allow RWPGs to establish a more static list of large water providers for which they report information and to provide regional water planning groups with more flexibility in deciding which large (relative to each region) water provider(s) they want to report information on in their regional water plans. Major water providers represent WWPs and/or WUGs that use, and/or are responsible for developing and/or delivering significant quantities of water in the region. It is up to each region to decide which entities are designated as MWPs.

The intent of the MWP category is to report data for entities of significance to the region.[3] If the region decides not to designate any entities as MWPs, the plan needs to include discussion in Chapter One as to why the RWPG determined it does not have any WUGs or WWPs of significance to the region's water supply.

Definitions:

Water User Group (WUG) (31 TAC §357.10(42)) – Identified user or group of users for which water demands and existing water supplies have been identified and analyzed and plans developed to meet water needs. A

[1] Previously, TWDB administrative rules required that regional water planning groups report supply, demand, and water management strategy data for WWPs as well as describe those WWPs in Chapter One of their plans. However, this requirement was removed at the request of stakeholders including for the reason that the volumetric threshold previously applied to the WWP definition proved problematic in certain regional water planning areas due to fluctuations in reported use between planning cycles and due to the relative scale in both smaller and larger regional water planning areas.

[2] See footnote 1.

[3] Instead of reporting data for every WWP in the region, as was previously required per footnote 1.

municipal WUG is a utility-based entity as defined in 31 TAC §357.10(42). Rural municipal water use that falls outside of the service area of discrete municipal water provider boundaries is aggregated at the county level as "county-other."
These include

A. *privately-owned utilities that provide an average of more than 100 acre-feet per year (AFY) for municipal use for all owned water systems;*
B. *water systems serving institutions or facilities owned by the state or federal government that provide more than 100 AFY for municipal use;*
C. *all other Retail Public Utilities not covered in (A) or (B) above that provide more than 100 AFY for municipal use;*
D. *collective Reporting Units, or groups of Retail Public Utilities that have a common association and are requested for inclusion by the RWPG;*
E. *municipal and domestic water use, referred to as County-Other, not included in A–D above; and*
F. *non-municipal water use including manufacturing, irrigation, steam-electric power generation, mining, and livestock watering for each county or portion of a county in a regional water planning area.*

Wholesale Water Provider (WWP) (31 TAC §357.10(43)) – Any person or entity, including river authorities and irrigation districts, that delivers or sells water wholesale (treated or raw) to WUGs or other WWPs or that the regional water planning group expects or recommends to deliver or sell water wholesale to WUGs or other WWPs during the period covered by the plan. The regional water planning groups shall identify the WWPs within each region to be evaluated for plan development.

Major Water Provider (MWP) (31 TAC §357.10(19)) – A WUG or WWP of particular significance to the region's water supply as determined by the regional water planning group. This may include public or private entities that provide water for any water use category.

For additional information on the regional water planning process and current activities, please call 512-936-2387 or visit www.twdb.texas.gov/waterplanning/rwp/index.asp.

Agenda Item 9

Receive report regarding recent and upcoming activities related to communications and outreach efforts on behalf of the RHWPG.

REGION H
Water Planning Group

Agenda Item 9
Community Outreach

Can’t find a speaker for your meeting?

Region H to the rescue!

Agenda Item 10

Agency communications and general information.

REGION H
Water Planning Group

Application Period for 2020 SWIFT Funding Cycle Opens December 2

The Texas Water Development Board (TWDB) will open the application period for the 2020 funding cycle of the State Water Implementation Fund for Texas (SWIFT) program* on Monday, December 2, 2019. Abridged applications will be due on Monday, February 3, 2020.

The SWIFT program helps communities develop and optimize water supplies at cost-effective rates. The program provides low-interest financing, extended repayment terms, deferral of repayments, and incremental repurchase terms for projects with state ownership aspects. It also includes additional interest rate subsidies for rural and agricultural projects. For more information on the program, please visit the SWIFT program web page.

To be eligible for SWIFT program financial assistance, projects must be recommended in the 2017 State Water Plan.

Abridged applications are due by midnight on February 3, 2020, and may be submitted via the TWDB's online application system or by paper copy. These short applications provide information the TWDB needs to complete prioritization of the projects. Projects that receive priority for financial assistance will be invited to submit a complete application, which will include a detailed financial, legal, engineering, and environmental review.

For more details on how to apply for the SWIFT program, please visit the TWDB website.

*The SWIFT program includes two funds, the State Water Implementation Fund for Texas (SWIFT) and the State Water Implementation Revenue Fund for Texas (SWIRFT).

SWIFT
State Water Implementation Fund for Texas