REGION H
Water Planning Group

POPULATION DEMANDS COMMITTEE MEETING MATERIALS

April 17, 2023

Common Region H Terms and Conversion Factors

List of Abbreviations

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
IFR	Infrastructure Finance Report
IPP	Initially Prepared Plan
MAG	Modeled Available Groundwater
MPC	Master Planned Community
MUD	Municipal Utility District
MWP	Major Water Provider
PCS	Plumbing Code Savings
PDSI	Palmer Drought Severity Index
PWS	Public Water Supply
RFPG	Regional Flood Planning Group
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
URS	Unique Reservoir Site
USS	Unique Stream Segment
WAM	Water Availability Model
WCID	Water Control and Improvement District
WCP	Water Conservation Plan
WMS	Water Management Strategy
WRAP	Water Rights Analysis Package
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 = 1,120 ac-ft/yr

Region H Water Planning Group
Population Demands Committee
1:00 PM Monday
April 17, 2023
Freese and Nichols Houston Office
10497 Town and Country Way, Suite 500, Houston, TX 77024

AGENDA

1. Call to order.
2. Introductions.
3. Review and approve minutes of June 21, 2022 meeting.
4. **Receive public comments on specific issues related to agenda items 5 through 9**. (Public comments limited to 3 minutes per speaker)
5. Discuss Committee activities and schedule.
6. Discuss methodology for development of per capita water demands and calculation of Plumbing Code Savings for determining municipal demands.
7. Receive presentation on and discuss population and water demand projections, supporting data, and the process for requesting revised projections and consider recommendations to the Region H Planning Water Planning Group (RHWPG).
8. Discuss methodology for surveying Water User Groups (WUGs) for input regarding population projections and other data for use in the development of the 2026 Regional Water Plan.
9. Receive presentation on identification of Major Water Providers for Region H and consider recommendations to the RHWPG.
10. **Receive public comments**. (Public comments limited to 3 minutes per speaker)
11. Adjourn.

Persons with disabilities who plan to attend this meeting and would like to request auxiliary aids or services are requested to contact Philip Taucer at (713) 600-6835 at least three business days prior to the meeting so that appropriate arrangements can be made.

Agenda Item 3

Review and approve minutes of June 21, 2022 meeting.

REGION H
Water Planning Group

REGION H WATER PLANNING GROUP
POPULATION DEMANDS COMMITTEE
MINUTES OF COMMITTEE MEETING
JUNE 21, 2022

MEMBERS PRESENT: Marvin Marcell, Robert Istre, Mike Turco (virtual), and Byron Ryder (virtual)

MEMBERS ABSENT: Ivan Langford and Mark Evans

CONSULTANT TEAM: Philip Taucer, Jason Afinowicz, and Courtney Corso

OTHER ATTENDEES: Julia Frankovich and Lianna Gregorian (BGE, Inc. / North Fort Bend Water Authority) and Sheila Cunningham (Bolivar Peninsula SUD)

---

1. **CALL TO ORDER**
   The meeting was called to order at 10:23 a.m.

2. **INTRODUCTIONS**
   Mr. Marcell welcomed the committee members and public to the meeting. Attendees introduced themselves. Mr. Turco and Judge Ryder attended the meeting virtually via Microsoft Teams.

3. **REVIEW AND APPROVE MINUTES OF JULY 31, 2017 COMMITTEE MEETING**
   Mr. Istre made a motion to approve the minutes from July 31, 2017. The motion was seconded by Mr. Turco and carried.

4. **RECEIVE PUBLIC COMMENTS ON SPECIFIC ISSUES RELATED TO AGENDA ITEMS 5 THROUGH 7.**
   There were no comments related to this item.

5. **DISCUSS COMMITTEE ACTIVITIES AND SCHEDULE**
   Mr. Taucer presented the upcoming schedule for activities related to population and demand projections in 2022 and 2023, including upcoming coordination between the Harris-Galveston and Fort Bend Subsidence Districts, Texas Water Development Board (TWDB), and the Region H Water Planning Group (RHWPG). Mr. Marcell mentioned the importance of the Committee and others' involvement in reviewing TWDB projections, particularly because of concerns related to potential Census undercounts in the Region H area.

6. **RECEIVE PRESENTATION ON AND DISCUSS PRELIMINARY TEXAS WATER DEVELOPMENT BOARD (TWDB) WATER USER GROUP (WUG) DATA FOR THE 2026 REGION H REGIONAL WATER PLAN AND POTENTIAL REVISIONS TO WUG LISTINGS, PROPOSED PER-CAPITA DEMAND RATES, AND OTHER FACTORS.**
   Mr. Taucer explained the TWDB approach to defining WUGs, including what usage is and is not represented in demand projections for each WUG. TWDB generally maintained named municipal WUGs that were included in the 2021 Region H Regional Water Plan unless the WUG is no longer active. Mr. Taucer provided a summary of changes in the draft WUG list relative to the 2021 Regional

Water Plan and proposed revisions for the Committee's consideration based upon technical review of the draft WUG list and background data.

Mr. Marcell asked Ms. Frankovich (attending on behalf of BGE, Inc. and North Fort Bend Water Authority (NFBWA) whether George Ranch is part of NFBWA. She confirmed that it is a contract participant but is not within the Authority's boundaries. Mr. Taucer suggested that the George Ranch area could be considered for evaluation as a sub-WUG since it is expected to grow substantially but is currently part of the County-Other, Fort Bend WUG. Ms. Frankovich commented that NFBWA would appreciate this approach so that demands in the George Ranch could be evaluated individually in the 2026 Regional Water Plan.

Ms. Frankovich confirmed that NFBWA would not have concerns with the TWDB change that removed two Texas Department of Criminal Justice water systems from NFBWA such that they are now shown as individual named WUGs.

Judge Ryder had to leave the meeting during discussion of Item 6.

Mr. Istre asked whether systems using only groundwater wells are still considered WUGs. Mr. Taucer confirmed that they are if the volume threshold is met and that the definition of a WUG is not dependent on water sources used.

The Committee discussed the current and past drought conditions in Texas and how these conditions may relate to data in the 2026 Regional Water Plan.

7. CONSIDER TAKING ACTION TO RECOMMEND CHANGES TO PRELIMINARY WUG PLANNING DATA AND AUTHORIZING THE CONSULTANT TEAM TO COMPILE AND TRANSMIT THE FORMAL REVISION REQUEST TO TWDB.

Mr. Turco made a motion to authorize the consultant team to compile and transmit the formal revision request to TWDB. The motion was seconded by Mr. Istre and carried unanimously by the present Committee members (Mr. Turco, Mr. Istre, and Mr. Marcell).

8. RECEIVE PUBLIC COMMENTS

There were no public comments.

9. ADJOURN

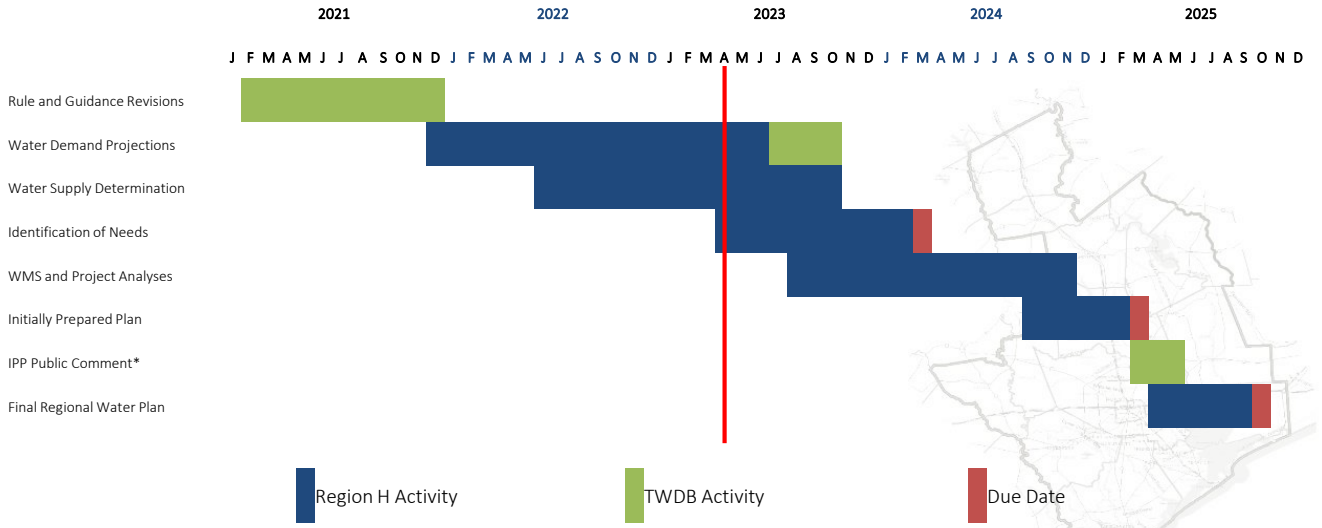
Without objection, the meeting was adjourned at 11:21 a.m.

Agenda Item 5

Discuss Committee activities and schedule.

REGION H
Water Planning Group

Agenda Item 5
Committee Activities and Schedule



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

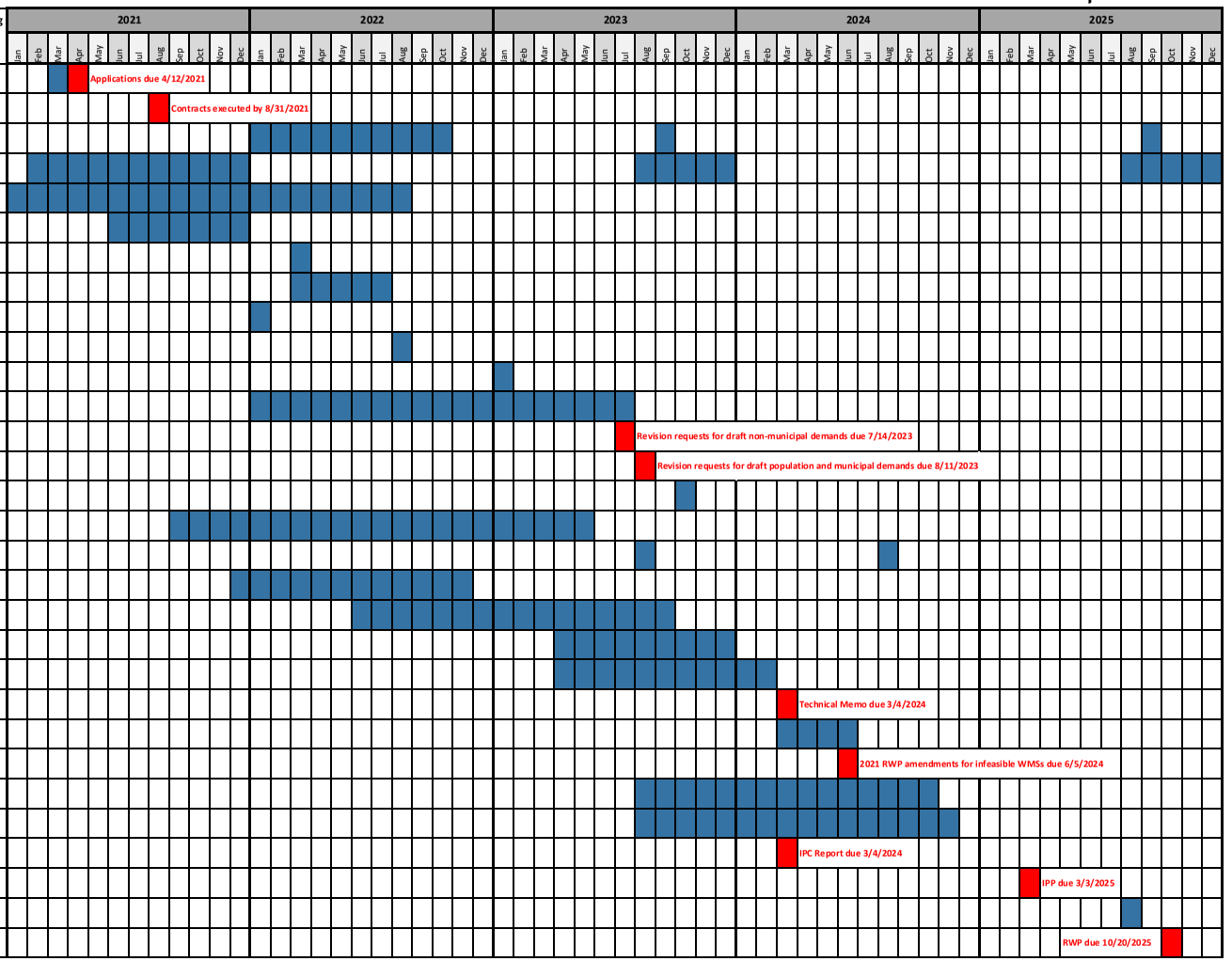
Agenda Item 5
Committee Activities and Schedule

Date	Scheduled Events/Tasks
04/2023	Population Demands Committee Meeting
05/2023	RWPG Meeting
06/2023	Population Demands Committee Meeting
08/2023	RWPG Meeting (possibly 07/2023)
08/2023	Municipal projection review concludes / requests due to TWDB
10/2023	TWDB adoption of projections
03/2024	Technical Memorandum due to TWDB

Sixth Cycle of Regional Water Planning (2026 Regional Water Plans)
Working Schedule (as of March 2023)[A]

Texas Water Development Board

Item	Entity	Activity	Planning SOW Task #
1	TWDB	RFA for regional water planning grant posted and applications due	NA
2	TWDB/RWPG	Initial planning contract execution deadline	NA
3	TWDB/RWPG	Anticipated additional contracting activities	NA
4	TWDB	Regional Water Planning rules update	NA
5	TWDB	TWDB/BEG Mining study	2A
6	RWPG	RWPGs hold pre-planning & coordination meeting (before technical work begins)	10
7	TWDB	Municipal WUG list, GPCD, historical population, and water use released	2B
8	RWPG	Review municipal WUG list, GPCD, historical population, and water use; provide feedback to TWDB	2B
9	TWDB	Draft Livestock, Manufacturing, and Steam Electric Power demand projections released	2A
10	TWDB	Draft Irrigation and Mining projections released	2A
11	TWDB	Draft Population and Municipal demand projections released	2B
12	RWPG	Review draft projections and finalize adjustments with TWDB staff	2A, 2B
13	RWPG	Revision requests for draft non-municipal demands due	2A
14	RWPG	Revision requests for draft population and municipal demands due	2B
15	TWDB	TWDB Board adopts projections	2A, 2B
16	TWDB	DB27 prepared for data entry[B, C]	NA
17	TWDB/RWPG	DB27 individualized training for consultants	NA
18	TWDB	Updated MAGs released	3
19	RWPG	Evaluate water availability and existing water supplies	3
20	RWPG	Identify water needs	4A
21	RWPG	Identify infeasible WMSs in the 2021 RWPs	4B
22	RWPG	Technical Memo due	4C
23	RWPG	Amendments to 2021 RWPs to remove/revise infeasible WMSs	4B
24	RWPG	RWPG adopted amendments to 2021 RWPs to remove/revise infeasible WMSs due to TWDB	4B
25	RWPG	Identify potentially feasible WMSs	5A
26	TWDB/RWPG	Review and negotiate SOW submittals for WMS evaluations and issue notice-to-proceeds[D]	5B
27	IPC	Interregional Planning Council report due to the TWDB	NA
28	RWPG	Initially Prepared Plan due	10
29	TWDB	Socioeconomic Impact Report released to RWPGs	6
30	RWPG	Final Plan due	10



Notes: [A] Estimated timeline based on currently available agency resources and subject to change
[B] DB27 is the updated, online water planning database for the 2027 State Water Plan
[C] Anticipated database availability dates are estimates based on currently available agency resources
[D] Subject to available funding

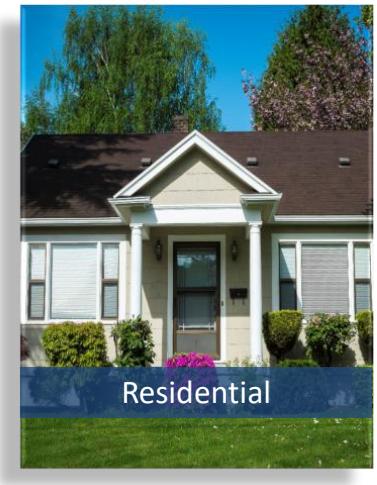
Agenda Item 6

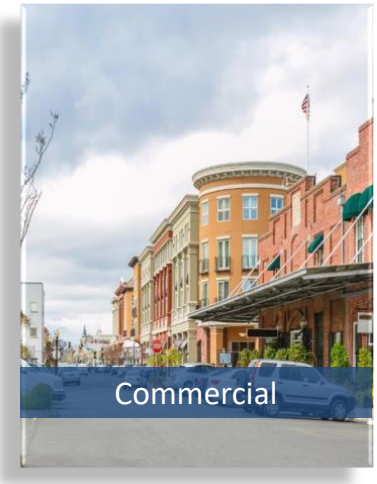
Discuss methodology for development of per capita water demands and calculation of Plumbing Code Savings for determining municipal demands.

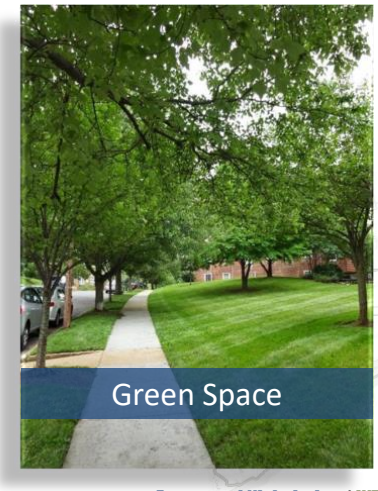
REGION H
Water Planning Group

Agenda Item 6
Per Capita Demands

What is Municipal?







Agenda Item 6
Per Capita Demands

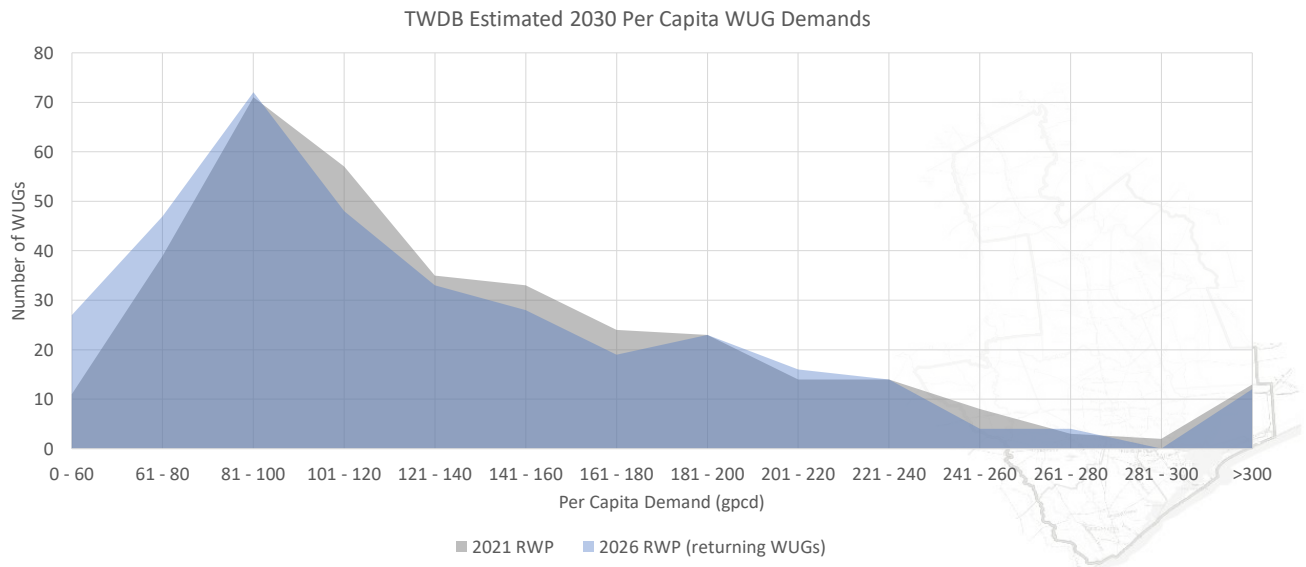
- Dry year conditions
- Historical data + estimated future efficiencies
- Assumed lower boundary

2021 RWP dry year per-capita → Convert 2020 PCS from old plan to annual rate → Apply accrued savings dry year to 2020 → New 2020 Baseline per-capita → Apply future PCS estimates → Constrain minimum to 60 gpcd

Agenda Item 6
Per Capita Demands

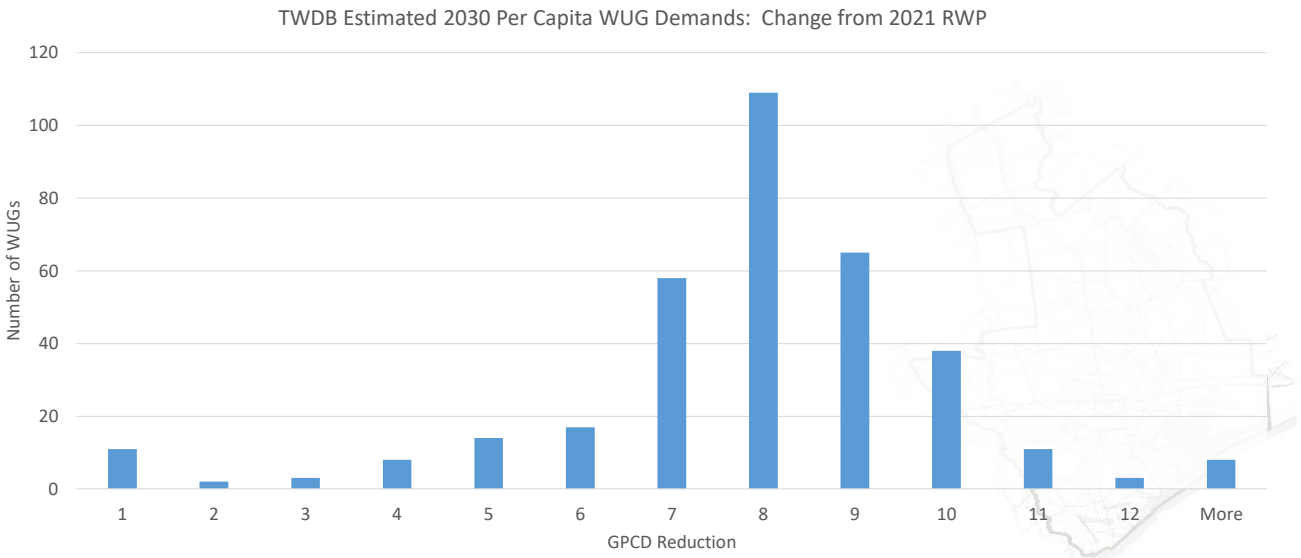
- So what is PCS?
  - Plumbing Code Savings
  - Gradual change over time
  - Replacement and new construction
  - Indoor - bathroom fittings and clothes washer
- TWDB considers:
  - Regulation date
  - Fixture lifespan and savings
  - Populations then vs now vs future

Agenda Item 6
Per Capita Demands



Freese and Nichols, Inc. | INTERA Inc.

Agenda Item 6
Per Capita Demands



Agenda Item 6
Per Capita Demands

- Initial assessment of draft per-capita demands:
  - Generally reasonable
  - Occasional outliers for new WUGs
  - Some institutional rates may warrant adjustment

Freese and Nichols, Inc. | INTERA Inc.

Population and Municipal Water Demand Draft Projections for the 2026 Regional and 2027 State Water Plans

1. Population and municipal water demand projections overview

Municipal water demand projections are a function of population projections, baseline Gallons per Capita per Day ($GPCD_{base}$), and projected plumbing code savings. The following steps are involved in developing municipal water demand projections for Water User Groups (WUGs):

a) develop population projections,

b) determine $GPCD_{base}$ by WUG,

c) develop plumbing code savings projections by WUG, and

d) calculate municipal water demand projections.

Population projections and municipal water demand projections are aggregated by counties and Regional Water Planning Areas. The high-level steps are outlined here, while Sections 2 and 3 of this document go into more detail.

1.1 Foundational data and major assumptions

- Population projections are based on county-level projections from the Texas Demographic Center (TDC), which used migration rates between the 2010 and 2020 decennial Census to project future growth (Section 2.1).
- The Texas Water Development Board (TWDB) drafted WUG-level projections using the TDC's 1.0 migration scenario projections and provided 0.5 migration scenario projections for the planning groups' consideration.
- $GPCD_{base}$ values were drafted for each WUG (Section 3.1) and minimum GPCD values were imposed (Section 3.2).
- Projected plumbing code savings for each WUG assume passive water efficiency savings due to plumbing code laws related to residential toilets, showerheads, clothes washers, and commercial toilets and urinals. (Section 3.3). WUGs with high employment relative to the permanent residential population may have high projected plumbing code savings due the replacement of commercial fixtures.

1.2 Key changes from previous planning cycle's projection methodology

- The TWDB population projections for the regional and state water plans have always relied, initially, on county-level population projections from the TDC. In the past, the TWDB had altered the resulting regional plan population projections in certain counties – by holding them flat in future periods – to avoid projecting declining populations. For the 2026 Regional Water Plans (RWPs), the draft county population projections followed the trends projected by the TDC, including declines.
- Future savings from additional faucet and dishwasher replacements were not considered necessary for inclusion in the draft plumbing code savings projections for this current planning cycle. Based on the effective year of the relevant plumbing code standards and the useful life of

these items, the expected water efficiency savings by replacement and new growth would reasonably be fully realized by the first projected decade (2030).

2. Population

The population projection methodology is performed in two steps: first, projections at the county-level, and then, projections at the WUG-level.

2.1 County population projections

Draft county population projections are based on the TDC's 2022 county-level population projections.[1] Such projections are based on recent and projected demographic trends, including the birth rates, mortality rates, and net migration rates of population groups and defined by age, gender, and race/ethnicity. Population projections represent permanent residents, and not seasonal or transient populations. This method for developing population projections is known as the cohort component method and is performed by the TDC using a model.

The TDC generally develops county-level population projections under three migration scenarios:

- zero migration: no net migration (natural growth only),
- 1.0 migration: net migration rates of 2010 to 2020 ("full-migration scenario"), and
- 0.5 migration: 2010 to 2020 migration rates halved ("half-migration scenario").

While the TDC's projections extend to 2060, the 2027 State Water Plan requires projections to 2080. Therefore, the TWDB staff used the 1.0 migration scenario to extend the TDC's projections through 2080 and to develop WUG-level projections. Although, the TDC strongly recommends use of the half-migration scenario for long-term planning, the TWDB drafted population projections for all planning regions using one consistent scenario. For each county, the draft projection is based on the 1.0 migration scenario as the default, but the 0.5 migration scenario was provided through 2080 for Regional Water Planning Groups (RWPGs) to consider during the review process. The TWDB staff extended each region's projections to 2070 and 2080 using the region-level compounded annual growth rates (CAGR) from the 2050 to 2060 projections (see Table 1) and then sub-allocated to counties within the regions using the county's share of the region's decadal growth.

[1] Texas Demographic Center, 2022, Population Projections, https://demographics.texas.gov/Data/TPEPP/Projections/#2022prj

Table 1. Extending the TDC's thirty-year population projections through 2080

	Sum of TDC 1.0 Migration Scenario Projections				Extend two decades using Region-specific CAGR				
Region	**2030**	**2040**	**2050**	**2060**	**2050 to 2060 CAGR**	**2070**	**2080**	**2060 to 2070 CAGR**	**2070 to 2080 CAGR**
A	397,160	405,244	408,658	409,696	0.03%	410,735	411,779	0.03%	0.03%
B	189,639	182,637	172,769	162,203	-0.63%	152,283	142,971	-0.63%	-0.63%
C	8,866,884	10,093,722	11,297,108	12,440,777	0.97%	13,700,226	15,087,176	0.97%	0.97%
D	824,990	847,410	859,530	868,815	0.11%	878,201	887,689	0.11%	0.11%
E	931,194	960,699	969,203	963,018	-0.06%	956,873	950,768	-0.06%	-0.06%
F	778,553	879,271	982,649	1,071,087	0.87%	1,167,487	1,272,561	0.87%	0.87%
G	2,703,905	3,074,453	3,481,252	3,913,803	1.18%	4,400,096	4,946,811	1.18%	1.18%
H	8,369,431	9,477,092	10,583,689	11,611,062	0.93%	12,738,163	13,974,676	0.93%	0.93%
I	1,100,376	1,103,143	1,093,467	1,077,850	-0.14%	1,062,457	1,047,284	-0.14%	-0.14%
J	129,683	130,134	130,196	131,285	0.08%	132,384	133,493	0.08%	0.08%
K	2,125,830	2,481,504	2,827,373	3,204,245	1.26%	3,631,353	4,115,392	1.26%	1.26%
L	3,525,104	4,110,775	4,738,184	5,424,749	1.36%	6,210,796	7,110,741	1.36%	1.36%
M	1,778,329	1,831,384	1,842,992	1,818,702	-0.13%	1,794,734	1,771,082	-0.13%	-0.13%
N	585,222	586,642	580,190	569,474	-0.19%	558,956	548,631	-0.19%	-0.19%
O	553,026	587,260	620,752	665,214	0.69%	712,862	763,921	0.69%	0.69%
P	53,556	55,843	57,772	59,678	0.33%	61,648	63,682	0.33%	0.33%

2.2 Water user groups

The regional and state water plans require population projections and municipal water demand projections for individual WUGs (31 TAC § 357.31(a)). Before projections can be developed, a list of municipal WUGs with associated data must first be created.

2.2.1 WUG criteria

Defined in the Texas Administrative Code (31 TAC § 357.10(43 A-E)), municipal WUGs are composites of public water systems, grouped by utilities, developed at the beginning of each regional water planning cycle. Per *First Amended General Guidelines for Development of the 2026 Regional Water Plans (Exhibit C)*, RWPGs reviewed and provided input on the draft WUG list for the 2026 RWPs. Municipal WUGs generally include:

- utilities providing more than 100 acre-feet of municipal water per year;
- collections of utilities with a common water supplier or water supplies (Collective Reporting Units or 'CRU'); and
- remaining public water systems and self-supplied population summarized as "County-Other".

For the 2026 RWPs, the draft municipal WUG list was developed by carrying over all municipal WUGs from the 2021 RWPs with active, community public water systems. Additional new WUGs were evaluated based on the utility water use meeting the criteria listed in 31 TAC § 357.10(43 A-E).

2.2.2 Historical WUG populations

The historical WUG populations are a critical step in developing WUG population projections. Following the development of the WUG list, the 2010 and 2020 population estimates were developed based on the

decennial Census.[2] Public water system boundaries were gathered from the TWDB's Texas Water Service Boundary Viewer application and grouped by WUG. Using ESRI Geographic Information Systems, WUG boundaries were then overlayed with the Census Blocks and population was counted. Because some boundaries contain inaccuracies (e.g., water lines shown as boundaries instead of the actual service area of the water provider) self-reported population estimates from the TWDB Water Use Survey were cross-referenced to determine the final WUG population estimates. The sum of the WUG populations were reconciled to the decennial Census population count. The number of households per WUG were estimated using the 2020 decennial Census data by county and persons per household were then estimated using the previously calculated population.

2.3 Projection methodology

Projections for individual WUGs are developed by sub-allocating the population from the region-county projections to the WUGs. The methods of allocating future populations from the county total to the sub-county areas include:

- share of growth: applying the WUG's historical (2010 to 2020) share of the region-county's growth to future growth,
- share of population: applying the WUG's 2020 share of the region-county's 2020 population to the region-county's projected population each decade, and
- constant population: applied to military bases, universities, and other WUGs that are primarily group quarter population. Also, any WUGs that indicated buildout in the 2021 RWPs were held constant at or near their buildout population from the previous planning cycle.

Over a fifty-year planning period, it can be expected that WUGs may grow at different rates within counties, therefore, the share of growth method was prioritized; however, an extensive review was completed by the TWDB staff to ensure that the projected growth rate was in line with the historical growth. If the projected growth rate was not similar to either the WUG's historical growth rate or the region-county growth rate, then the share of population method may have been used. The share of population method maintains the WUG's 2020 proportion of the region-county population throughout the planning horizon. The sum of all WUG population projections within a region-county was reconciled to the total region-county projection prior to the finalization of draft projections.

3. Municipal water demands

Draft municipal water demand projections utilize the permanent residential population projections and a decade-specific per person water use volume for each WUG, including County-Other WUGs. GPCD represents the entire utility's water use (including residential, commercial, and institutional water use). For each municipal WUG, the initial baseline GPCD ($GPCD_{base}$) value minus the incremental anticipated plumbing code savings for each future decade was multiplied by the projected population to develop the municipal water demand projections (see Section 3.4 for the formula).

[2] U.S. Census Bureau, 2020, Decennial Census, P.L. 94-171 Redistricting Data, https://www.census.gov/programs-surveys/decennial-census/about/rdo/summary-files.html

3.1 Baseline Gallons per Capita per Day

For the 2026 RWPs, the baseline GPCDs represent historical 'dry-year' water use minus accumulated plumbing code savings ($GPCD_{base}$). The GPCD was drafted for WUGs by carrying over the GPCD from the 2021 RWPs minus estimated accumulated plumbing code savings. The GPCDs in the 2021 RWPs were carried over from the 2016 RWP and mostly represented the historically dry year 2011, although some WUG GPCDs in the 2021 RWPs were revised by the planning groups to use more recent 'dry-year' utility-based water use (2010 to 2015). Accumulated plumbing code savings were calculated using the annualized projected plumbing code savings from the 2021 RWPs for each WUG and subtracting from the carried over GPCDs (see Table 2). All new WUGs in the 2026 RWPs baseline GPCD were drafted using 2018 net water use from the TWDB Water Use Survey and estimated population from the U.S. Census Bureau.

Table 2. Calculating Baseline GPCDs for existing WUGs

2027 Entity Name	RWP21 $GPCD_{base}$	RWP21 GPCD Approx. Year	RWP21 PC Savings 2020	2010-2020 Per Year PC Savings	Number of years between $GPCD_{base}$ & 2020	GPCD minus Savings Accrued	New $GPCD_{base}$ (draft)
AMARILLO	211	2011	9.62	0.96	9	8.7	202
AUSTIN	162	2011	6.00	0.60	9	5.4	157
CORSICANA	214	2011	10.22	1.02	9	9.2	205
DALLAS	207	2015	9.14	0.91	5	4.6	202
LOWER VALLEY WATER DISTRICT	107	2010	10.86	1.09	10	10.9	96
SEGUIN	147	2012	10.04	1.00	8	8.0	139
SPRINGS HILL WSC	88	2011	9.49	0.95	9	8.5	79
ALBANY	258	2013	10.15	1.02	7	7.1	251
NORTH HUNT WSC	60	2011	0	0	9	0	60
RIVERSIDE SUD	64	2011	4	0.4	9	3.6	60

Historical GPCDs were provided for RWPGs consideration to revise the baseline GPCD. The historical GPCDs were developed annually and gathered for the 2026 RWP revision process. Each year, GPCD is estimated for each WUG through the Water Use Survey by:

a) calculating the net water use of each water system surveyed annually by the TWDB as total system intake volume minus sales reported by the water system to large industrial facilities and other public water systems plus volumes purchased by other surveyed entities,

b) summarizing the net use by WUG,

c) estimating population for the WUG using the U.S. Census Bureau's population estimates for the county, and

d) dividing the net use by the WUG's population and then dividing by 365 (number of days in a year).

3.2 Minimum GPCD values

When calculating the $GPCD_{base}$ or the projected per person water use values, the TWDB staff applied a minimum of 60 GPCD for each WUG. The minimum value of 60 GPCD is based on two studies: *Analysis of*

Water Use in New Single-Family Homes[3] and an internal TWDB report, *The Grass Is Always Greener...Outdoor Residential Water Use in Texas*, analyzing the percentage of Texas residential water used outside of the home.[4] The single-family home study researched the average indoor per person water use for:

- pre-1995 Homes (62.18 GPCD),
- standard new homes built after 2001 (44.15 GPCD),
- standard new homes retrofitted with high-water-efficient fixtures and appliances (39.0 GPCD), and
- new WaterSense homes built with the best available technology for water conservation (35.6 GPCD).

With the assumed replacement of fixtures and appliances over the next 50 years, the indoor per person water use of the standard new home retrofitted (39.0 GPCD) can be expected under existing standards. However, this is only indoor use and the single-family home study found that there was no statistical difference in outdoor water use between types of housing. The TWDB study of outdoor water use in Texas estimated that on average 31 percent of total residential water use is outdoor water use. Utilizing this average outdoor water use percentage (31 percent) and the indoor water use (69 percent) of 39 GPCD for retrofitted new homes produced a total residential GPCD of 56.5. While some municipal WUGs may remain primarily residential, any water use by commercial, institutional, and light industrial water users will contribute to the overall WUG's average GPCD. For this reason, the minimum baseline GPCD, as well as decade-specific projected GPCD (baseline GPCD minus projected plumbing code savings) was rounded to a value of 60 GPCD.

3.3 Plumbing code savings

Plumbing code savings may be referred to as water efficiency savings and are required to be considered in municipal demand projections per 31 TAC § 357.31(d). Plumbing codes are federal and state laws that mandate the efficiency of all new appliances and fixtures sold in retail stores. Plumbing codes result in passive water efficiency savings, as households naturally replace older appliances and fixtures without having to 'actively' seek more water efficient appliances and fixtures. The TWDB staff project plumbing code savings for each WUG for each decade in the planning horizon for the following fixtures and appliances: residential toilets, clothes washers, showerheads, and commercial toilets and urinals.

3.3.1 Plumbing code standards and parameters

Historical legislation (both state and federal) impacts the volume of water used within homes and businesses. Such legislation generally provided a maximum water use standard (per flush, per cycle, or per minute), as well as an effective date for when appliances and fixtures sold locally must meet that standard. Tables 3 and 4 summarize the effective years and the standards for each fixture and appliance included in the plumbing code savings projections. The assumed effective date for the first State of Texas

[3] *Analysis of Water Use in New Single-Family Homes*, 2011, Prepared by William B. De Oreo of Aquacraft Water Engineering & Management for The Salt Lake City Corporation and the U.S. Environmental Protection Agency.
[4] *The Grass Is Always Greener...Outdoor Residential Water Use in Texas*, 2012, Sam Marie Hermitte and Robert E. Mace, Texas Water Development Board Technical Note 12-01.

standards is 1995, which varies slightly from the effective date within the legislation, as allowances were included within the legislation for the sale of inventory stocks. For the purposes of calculating future plumbing code savings, the assumed effective date for the first standards is 1995. Whereas the other standards listed in Tables 3 and 4 correspond with the effective dates listed in each of the pertinent pieces of legislation or actual designation by EPA rule. Based on new research, the useful life of fixtures/appliances may be updated between planning cycles. Standards are measured in gallons per minute (gpm), gallons per flush (gpf), or gallons per cycle (gpc).

Table 3. State of Texas Plumbing Code Standards

Standards	Effective Year of New Standard		Useful Life	Included in 2026 RWP?	Included in 2021 RWP?
	1995[5]	2014[6]			
Faucets	2.2 gpm		15 years	No, benefits fully realized	Yes
Toilets	1.6 gpf	1.28 gpf	25 years	Yes	Yes
Showerheads	2.75 gpm	2.5 gpm	15 years	Yes	Yes
Urinals	1 gpf	0.5 gpf	25 years	Yes	No

Table 4. Federal Plumbing Code Standards

Standards	Effective Year of New Standard					2026 RWP Useful Life	Included in 2026 RWP?	Included in 2021 RWP?
	2010[7]	2011[8]	2012[9]	2015[10]	2018[10]			
Dishwashers	6.5 gpc		5 gpc			10 years	No, benefits fully realized	Yes
Front-load Clothes Washers (4.0 cubic feet)		38.0 gpc		18.8 gpc		12 years	Yes	Yes
Top-load Clothes Washers (4.5 cubic feet)		42.75 gpc		37.8 gpc	29.25 gpc	12 years	Yes	Yes

Two possible fixtures/appliances, originally included in the legislative efforts concerning plumbing codes,

[5] State of Texas Legislature, SB 587, 1991, 72(R) legislative session, https://capitol.texas.gov/MnuLegislation.aspx
[6] State of Texas Legislature, HB 2667, 2009, 81(R) legislative session, https://capitol.texas.gov/MnuLegislation.aspx
[7] EPA Water Sense, National Efficiency Standards and Specifications for Residential and Commercial Water-Using Fixtures and Appliances, Sept. 29, 2008.
[8] U.S. Congress, Public Law 110-140, Energy Independence and Security Act of 2007, Dec. 19th, 2007.
[9] Federal Register, Energy Conservation Program: Energy Conservation Standards for Dishwashers, Vol. 77, No. 190 October 1, 2012.
[10] Office of Energy Efficiency and Renewable Energy, Department of Energy. Energy Conservation Program: Energy Conservation Standards for Residential Clothes Washers, May 31, 2012.

were not included in the 2026 RWP draft calculations. Kitchen and bathroom faucets as well as residential dishwashers were excluded as the timing of the latest effective plumbing code standards and the useful life combined to render little or no additional savings via replacement or new construction installations during the 2030 to 2080 planning horizon.

Draft 2026 RWP water efficiency savings projections also include savings within the commercial sector, a first for the regional water planning effort. Improvements in data availability and analysis methods allowed this first-time estimation for potential water savings due to replacement of commercial toilets and urinals at the WUG-level.

Water savings estimates that accompanied the water demand projections represent an estimation of the amount of water (average per person) that will be saved by the conversion to more water-efficient fixtures. Housing units built before the various standards came into effect will, over time, replace their old fixtures with the new water-efficient fixtures. In addition, construction of new homes or businesses with the more efficient fixtures/appliances will also contribute to the passive savings estimate, lowering the average GPCD as the proportion of more water-efficient fixtures/appliances within the WUG increases over time.

Prior to determining the WUG-level expected savings, the TWDB staff assembled additional data concerning the useful life of each possible fixture/appliance (assumed values in Tables 3 and 4) and updated all calculations concerning the impacts on GPCD when replacing one fixture/appliance with a given level of efficiency with an updated fixture/appliance that has a higher efficiency standard. After reviewing the water efficiency standards, the TWDB staff converted the water use per fixture and appliance into per person water use and estimated GPCD savings (Tables 5 and 6) before projecting utility-wide savings. Because there are multiple standards for each fixture and appliance, the TWDB staff developed GPCD savings for each standard and tracked replacement rates since 1995 (when the first plumbing code laws were enacted). Commercial toilets and urinals were combined and GPCD savings were calculated using the gender percentages from the Bureau of Labor Statistics[11] and average number of flushes per day times the number of days at work.

Table 5. GPCD Savings Parameters - Fixtures

Fixture	GPCD Savings		
	Pre-1995 Average Use to 1995 Standard	**Pre-1995 Average Use to 2014 Standard**	**1995 Average Use to 2014 Standard**
Showerheads*	13.0	NA	1.86
Toilets - residential	10.5	12.1	1.6
Toilets & urinals – commercial**	7.06	8.41	1.35
* Savings values shown assume 8 minutes per shower and 6.5 showers per person per week ** Savings values shown assume state-level gender employee proportions and 6 days/week use for commercial toilet and urinal use			

[11] Bureau of Labor Statistics, 2020, Geographic Profile of Employment and Unemployment, https://www.bls.gov/opub/geographic-profile/home.htm

Table 6. GPCD Savings Parameters - Appliances

Appliance	Key Assumptions	GPCD Savings					
		Pre-2011 Average Use to 2011 Standard	Pre-2011 Average Use to 2015 Standard	Pre-2011 Average Use to 2018 Standard	2011 Standard to 2015 Standard	2011 Standard to 2018 Standard	2015 Standard to 2018 Standard
Clothes Washers	Composite top and front loader, 75/25 percent split.[12] 300 cycles/year[13] and statewide average household size of 2.77 people per household.[2]	0.22	2.35	4.25	2.52	4.41	1.90
Savings shown here are an example. Average persons per household varies by WUG and thus actual savings will vary by WUG.							

3.3.2 Plumbing code savings projections methodology – residential

Individual models were developed for each of the fixture/appliance types to project the plumbing code savings for each WUG for 2030 to 2080. The TWDB compiles population data rather than housing data, so in calculating the estimates of the number of houses and less-efficient fixtures, population was used as a proxy for the number of houses at the time the law took effect and the projection of future houses. The 1995 population was estimated for each WUG in the 2026 RWPs and used as a benchmark to determine the potential average per capita water savings. The 1995 population (as a proxy for housing and fixtures) is assumed to have less-efficient fixtures, which will be replaced over time, lowering the WUG's average GPCD. The TWDB staff tracked which standards were likely to be adopted from 1995 to 2080 using the respective efficiency standard and useful life of the fixture/appliance. Because some WUGs' projected populations decline over time, the planned replacement of fixtures and appliances based on useful life could exceed the number of people (proxy for households) in a WUG, therefore, the TWDB staff scaled the replacement rates based on the number of people within a WUG in each decade. These measures corrected the possible adverse impacts on the projected plumbing code savings and were deemed reasonable to align fixtures and appliances with occupied houses.

3.3.3 Plumbing code savings projections methodology – commercial

Employment estimates were used as a proxy to project the replacement of commercial toilets and urinals and to project average water efficiency savings gained for the WUG. Historical data for county-level population and employment for 2000 through 2020[14] was used to document the relationship between county-level population and employment. A two-way lookup table was derived with the percent change in

[12] U.S. Energy Information Administration, Appliances in U.S. homes in the South and West regions, 2020, https://www.eia.gov/consumption/residential/data/2020/hc/pdf/HC%203.8.pdf
[13] EnergyStar, Clothes Washers, https://www.energystar.gov/products/clothes_washers
[14] U.S. Census Bureau, 2000, 2001, 2010, 2011, 2019, and 2020, County Business Patterns.

employment based upon size classes for population for the WUG and the percent change in population for the WUG. Once the employment projections by decade were determined, similar GPCD savings calculations as residential were implemented. A set of planned replacements was determined based upon the pattern of employment growth, which was then adjusted if the planned replacement exceeded the projected employment. The projected savings by the replacement of more efficient toilets and urinals in commercial businesses, while a function of employment within the utility, was calculated on a WUG-level per person basis. Therefore, WUGs with high projected employment relative to the number of permanent residents may have high projected commercial savings.

3.3.4 Plumbing code savings projections by WUG

Spreadsheets were used to project the plumbing code savings for the specific fixture or appliance, based upon the historical WUG population estimates and projected population or employment. The four types of fixtures or appliance GPCD savings projections were reviewed for accuracy, and then aggregated to determine the total expected plumbing code savings for each WUG. These projections were used to reduce the baseline GPCD ($GPCD_{base}$) (Section 3.1) over the planning horizon to ensure WUG-level passive water efficiency savings, as shown in the formula in Section 3.4 and Table 7 below. Figure 1 below demonstrates how the projected impacts of plumbing code savings will decline over time due to the adoption of more efficient appliances and fixtures occurring in the first part of the planning horizon rather than the latter.

Figure 1. Projected Impacts of Plumbing Code Savings

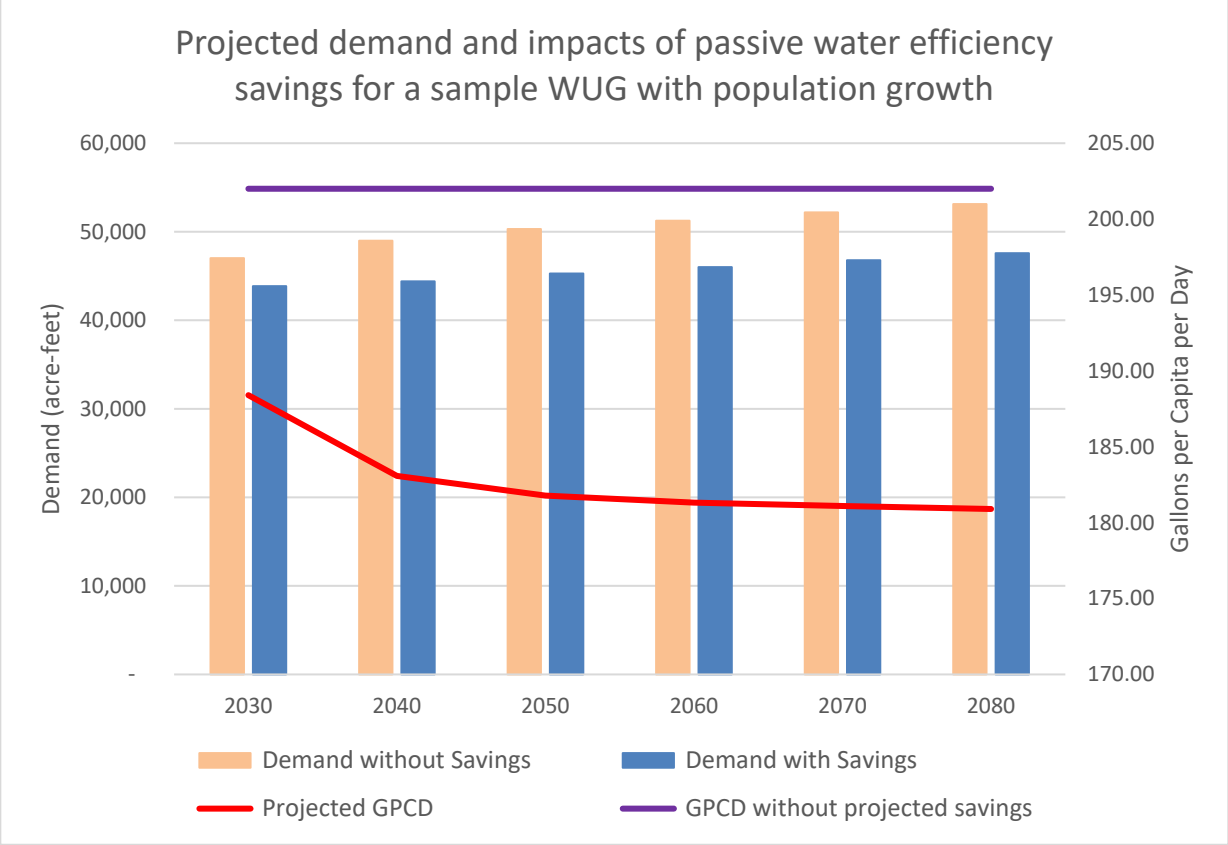


Table 7. Examples of Plumbing Code Savings by WUG

Entity Name	Baseline GPCD	Projected Plumbing Code Savings						Projected GPCD (rounded)					
		2030	2040	2050	2060	2070	2080	2030	2040	2050	2060	2070	2080
Abilene	163	13.43	18.85	20.36	21.18	21.80	22.42	150	144	143	142	141	141
Amarillo	202	13.60	18.92	20.22	20.68	20.90	21.10	188	183	182	181	181	181
Austin	157	12.57	17.71	19.69	21.10	22.38	23.62	144	139	137	136	135	133
Spring Hill WSC	79	10.93	15.45	17.48	18.96	19.00	19.00	68	64	62	60	60	60
Carthage	214	13.62	18.84	19.77	19.98	19.98	19.98	200	195	194	194	194	194
Cash SUD	103	11.05	15.30	16.92	17.91	18.71	19.44	92	88	86	85	84	84
Los Fresnos	60	0	0	0	0	0	0	60	60	60	60	60	60
Corpus Christi	173	13.85	19.23	20.40	20.66	20.66	20.66	159	154	153	152	152	152
Corsicana	205	12.83	18.04	19.42	20.08	20.53	20.97	192	187	186	185	184	184
Dallas	202	13.78	19.46	20.83	21.41	21.72	22.04	188	183	181	181	180	180

3.4 Municipal water demand projections

Municipal water demand projections are a function of population, baseline GPCD ($GPCD_{base}$), and projected plumbing code savings. Municipal water demand projections were developed for each WUG for each decade from 2030 through 2080 and then summarized by county and Regional Water Planning Area. The following formula was used to calculate municipal demands for each decade in acre-feet for each WUG:

$$\text{Projected Demand} = (\text{Population} * (GPCD_{base} - \text{PC Savings}) * 365) / 325{,}851$$

RWPGs may review and revise the WUG-level population projections, baseline GPCD, and projected plumbing code savings per criteria in *First Amended General Guidelines for Development of the 2026 Regional Water Plans (Exhibit C)*, thus revising the municipal water demand projections.

Agenda Item 7

Receive presentation on and discuss population and water demand projections, supporting data, and the process for requesting revised projections and consider recommendations to the Region H Planning Water Planning Group (RHWPG).

REGION H
Water Planning Group

Agenda Item 7
Population and Demand Projections

Methodology

- What are the options?
- How can they be utilized?
- How do they work?

Agenda Item 7
Population and Demand Projections

TWDB Projection Process

- All 15 Region H counties
- Consistent methodology for State
- Population disaggregated to WUG
- Dry year per-capita basis

JRPR Projection Process

- Nine Region H counties
- Area-specific considerations
- Population disaggregated to block
- Average per-capita basis

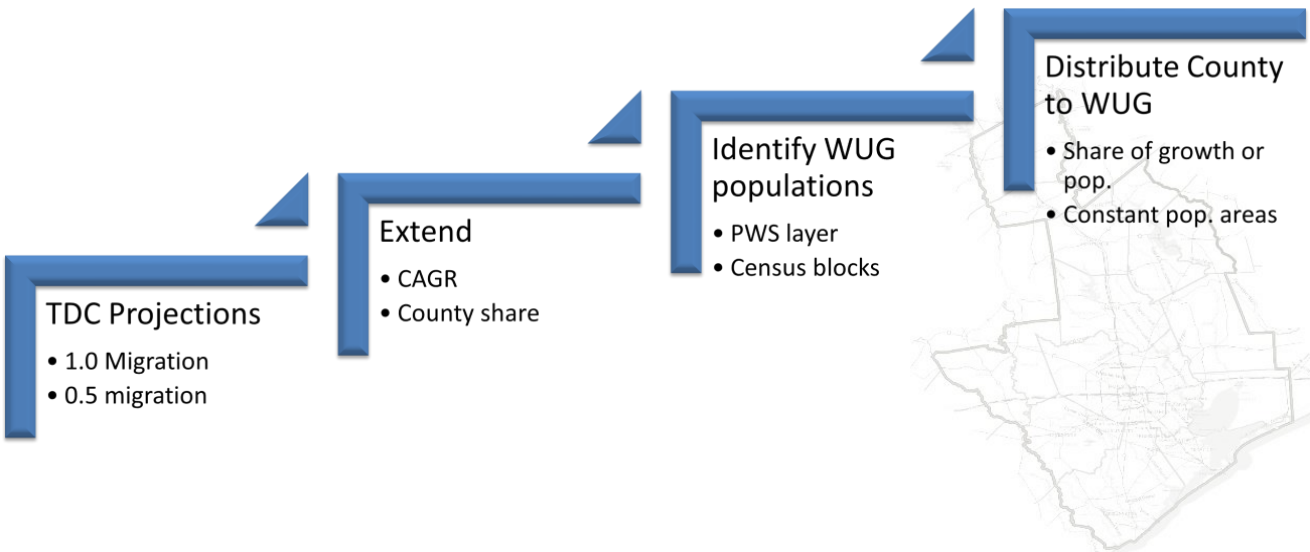
Bringing It Together

- Aggregate JRPR populations to WUG boundaries
- Apply TWDB per-capita rates
- Utilize TWDB projections in remaining counties

Agenda Item 7
Population and Demand Projections - TWDB Methodology

TDC Cohort Component Method

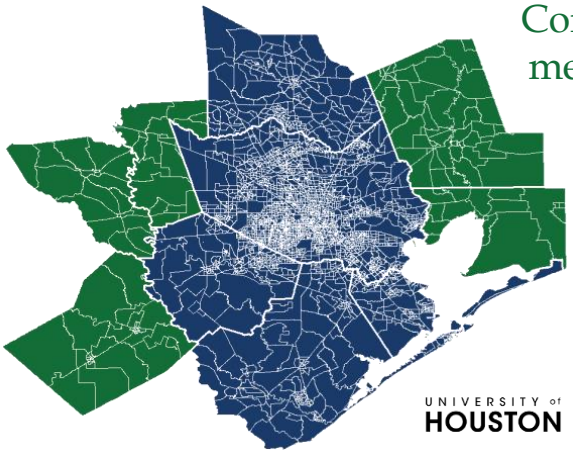
Agenda Item 7
Population and Demand Projections - TWDB Methodology



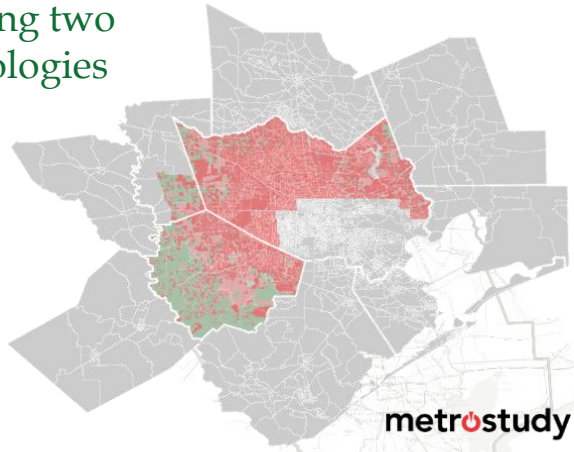
Freese and Nichols, Inc. | INTERA Inc.

Agenda Item 7
Population and Demand Projections – JRPR Methodology

Combining two methodologies



Small Area Model Houston (SAM-Houston)
Long-range, wide-area projections



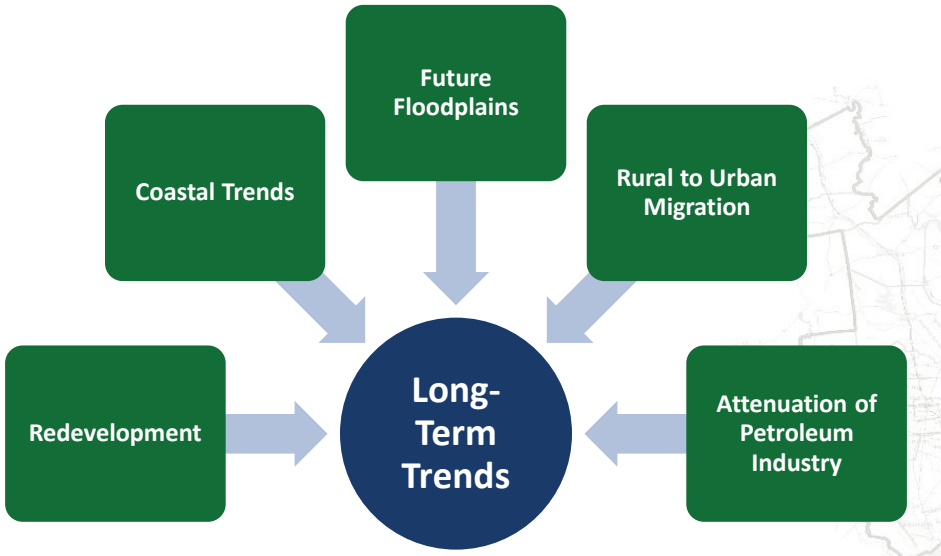
Projected Development Methodology
Short-range, detailed projections

Agenda Item 7
Population and Demand Projections – JRPR Methodology

UH SAM-Houston Model Approach

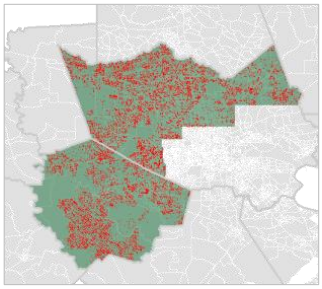
1. Predict Total Employment
2. Predict Employment by Subcenter
3. Predict how People Sort Around Employment Subcenters
4. Account for Vacant Land (Capacity)

Agenda Item 7
Population and Demand Projections – JRPR Methodology

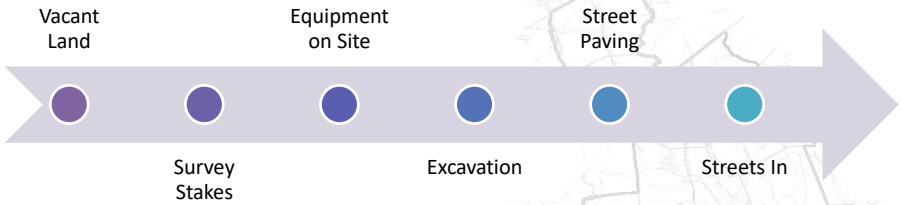


Agenda Item 7
Population and Demand Projections – JRPR Methodology

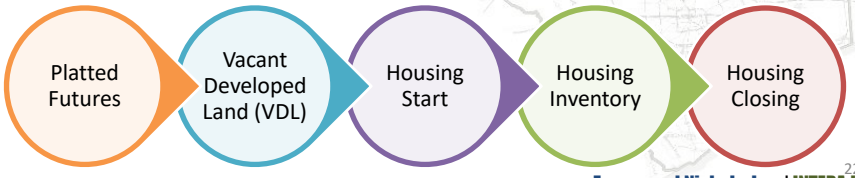
- Metrostudy Projected Development Methodology



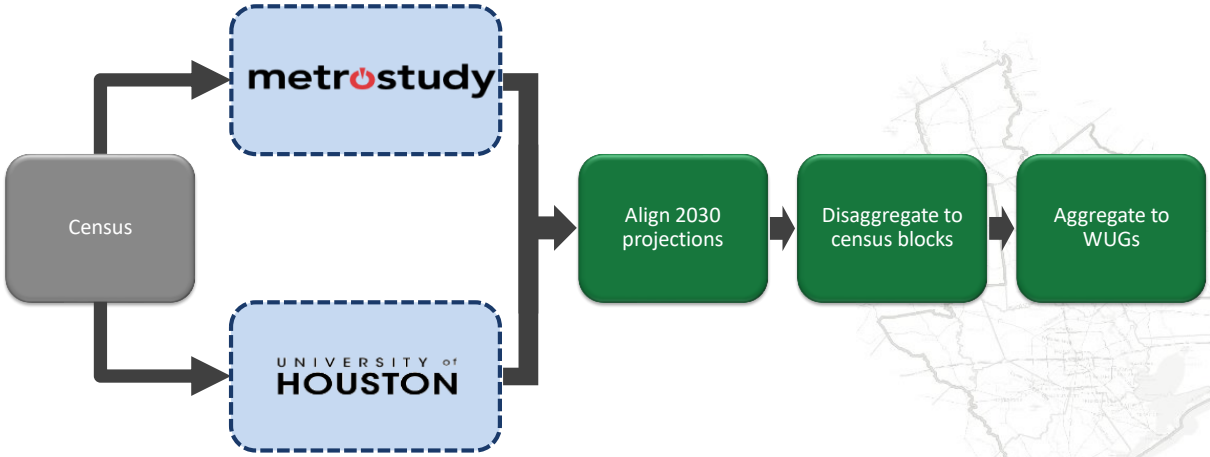
- Land/lot development



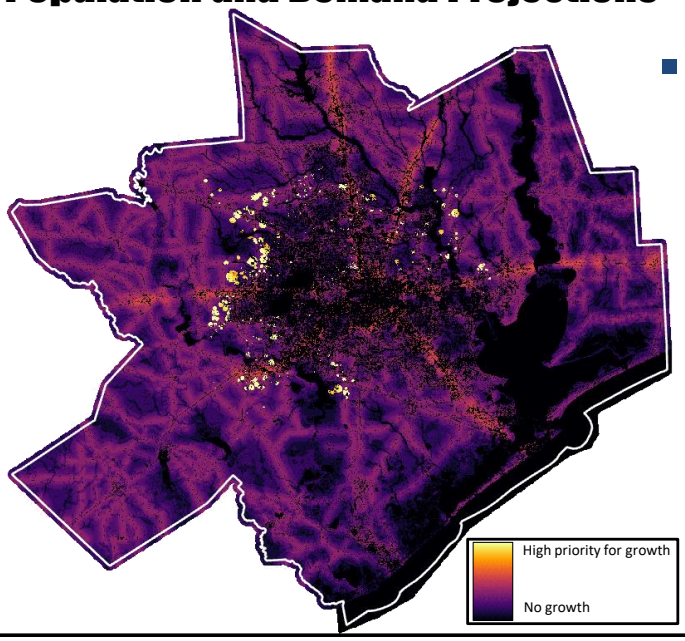
- New home development



Agenda Item 7
Population and Demand Projections – JRPR Methodology

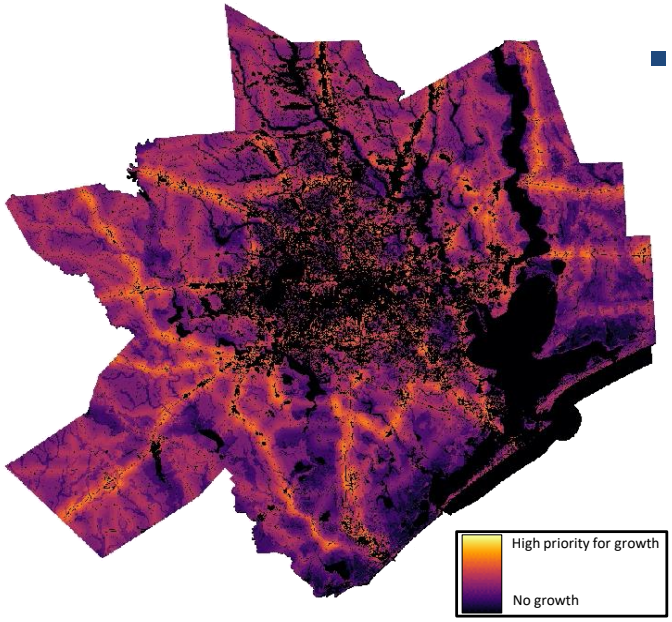


Agenda Item 7
Population and Demand Projections – JRPR Methodology



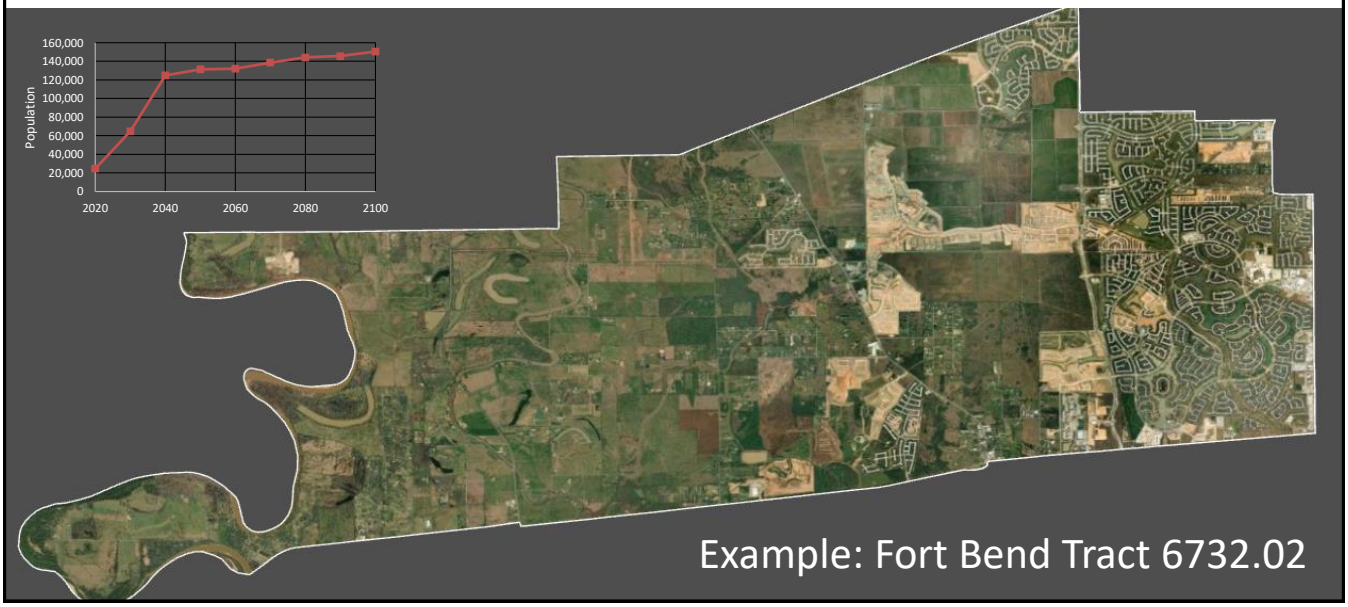
- Within tracts, growth distributed based on:
  - Near-term development
  - Interstate and highway proximity
  - Wetlands
  - Floodplains
  - Existing recent development

Agenda Item 7
Population and Demand Projections – JRPR Methodology

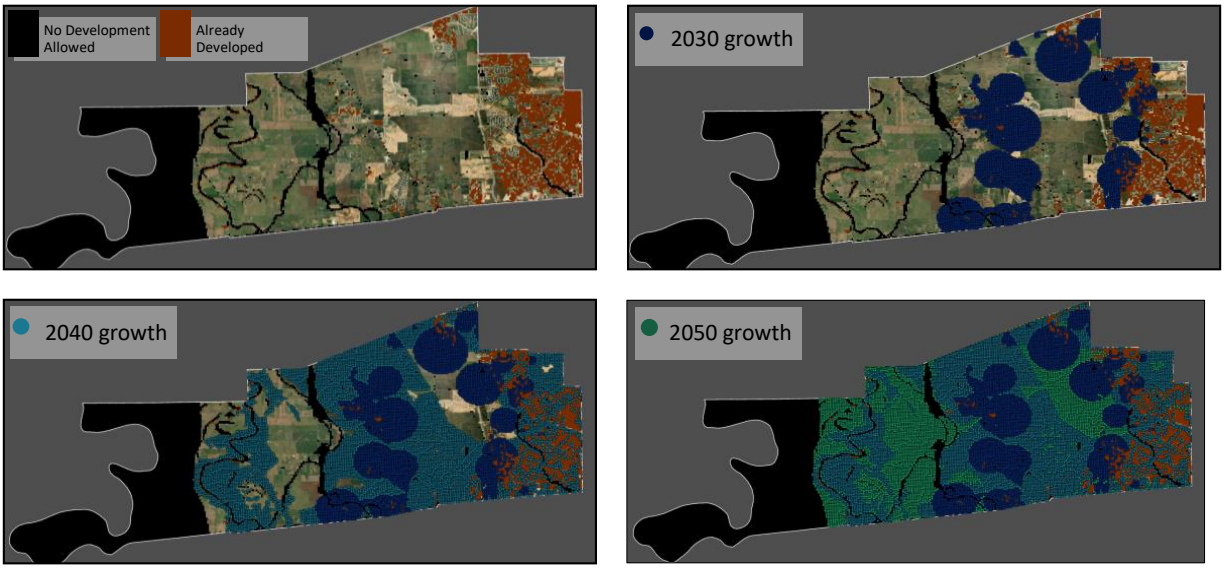


- Distribution after 2030
  - Less certainty about precise development locations
  - Interstate and highway proximity – expansion of major corridors
  - Wetlands
  - Floodplains – potential changes

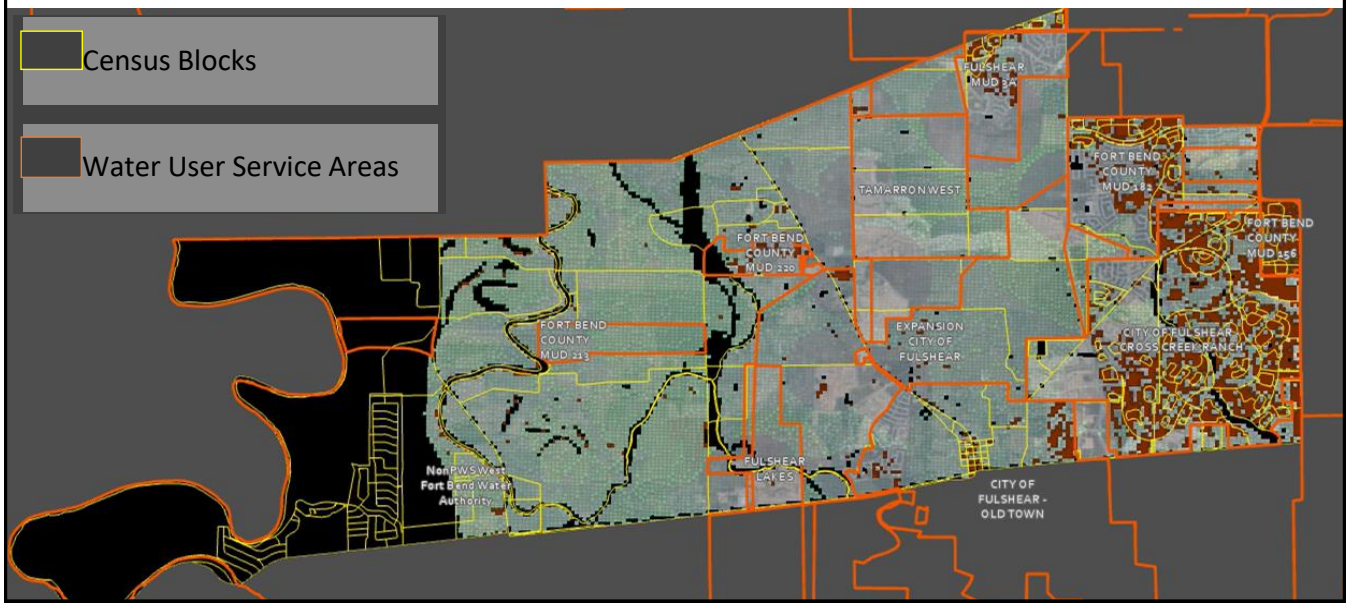
Agenda Item 7
Population and Demand Projections – JRPR Methodology



Agenda Item 7
Population and Demand Projections – JRPR Methodology



Agenda Item 7
Population and Demand Projections – JRPR Methodology



Agenda Item 7
Population and Demand Projections

Results

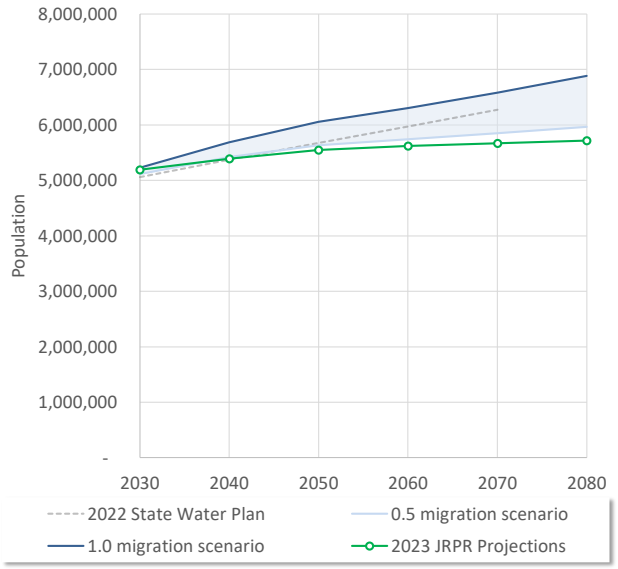
- How do the approaches compare?
- Why do we see these responses?

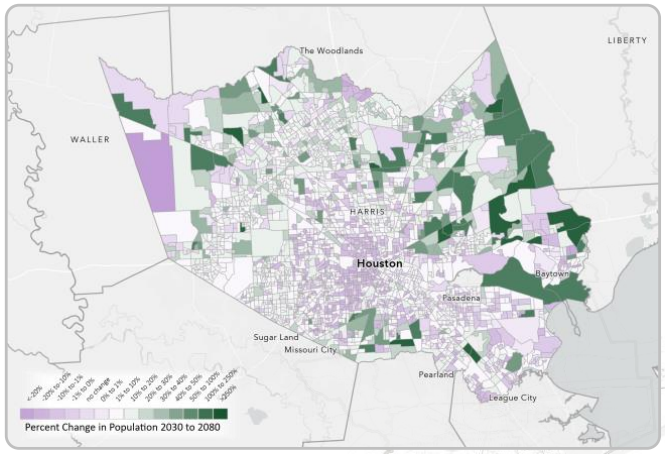
Agenda Item 7
Population and Demand Projections

Urbanized Center

- High density and population
- Continued growth
- Transition from up to outward
- Rates slow over time

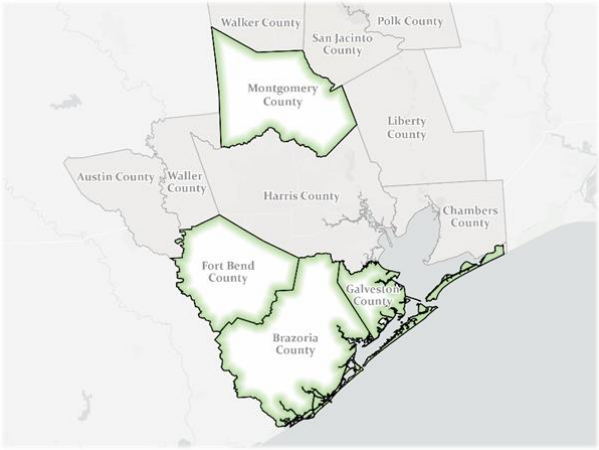
Agenda Item 7
Population and Demand Projections – Harris County





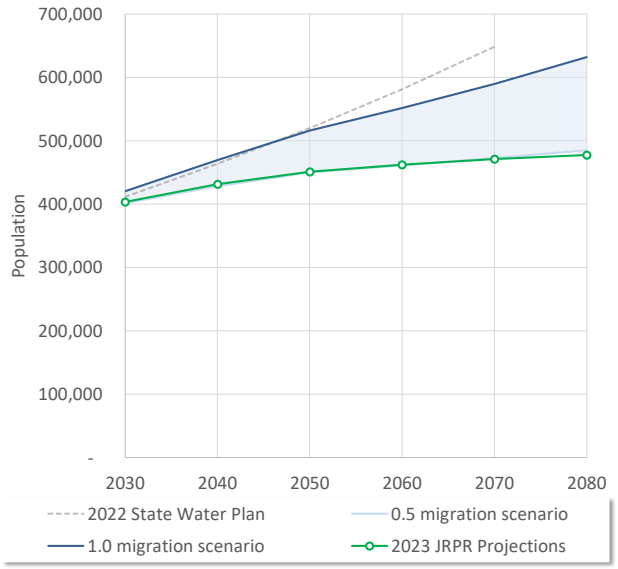
Agenda Item 7
Population and Demand Projections

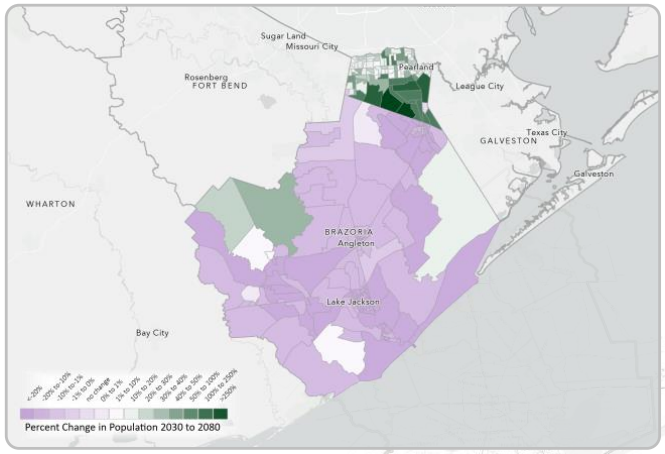
Suburban Counties



- Mix of high and low-density areas
- Continued growth
- Substantial growth in new areas

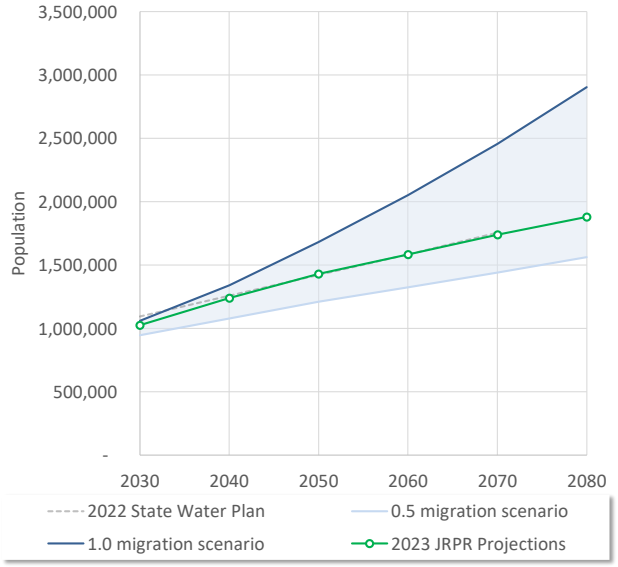
Agenda Item 7
Population and Demand Projections – Brazoria County

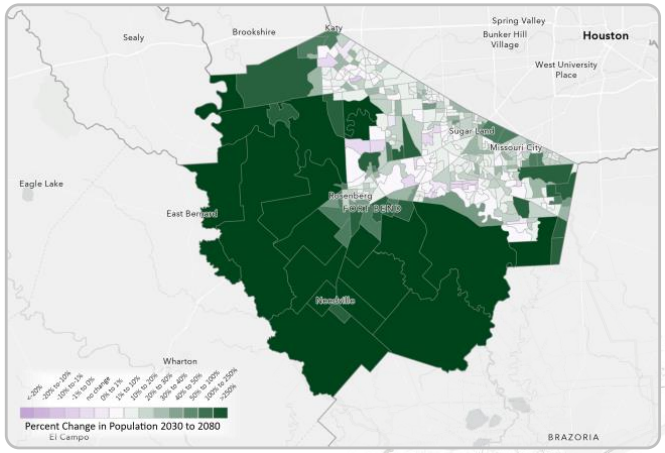




Freese and Nichols, Inc. | INTERA Inc.

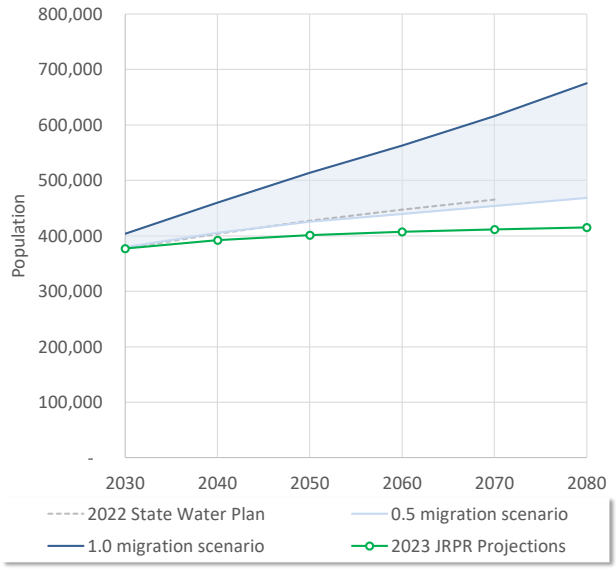
Agenda Item 7
Population and Demand Projections – Fort Bend County

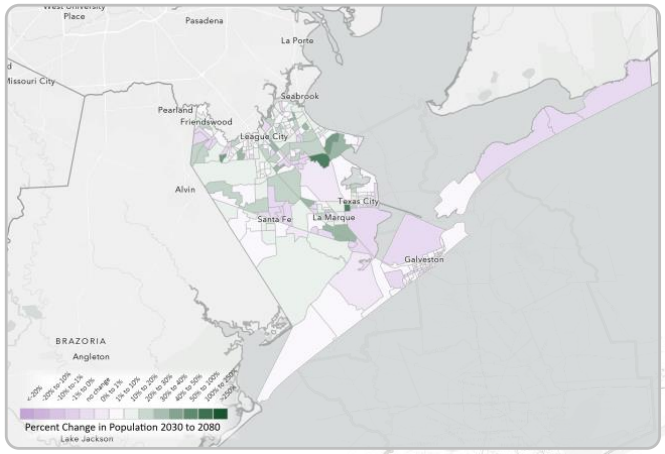




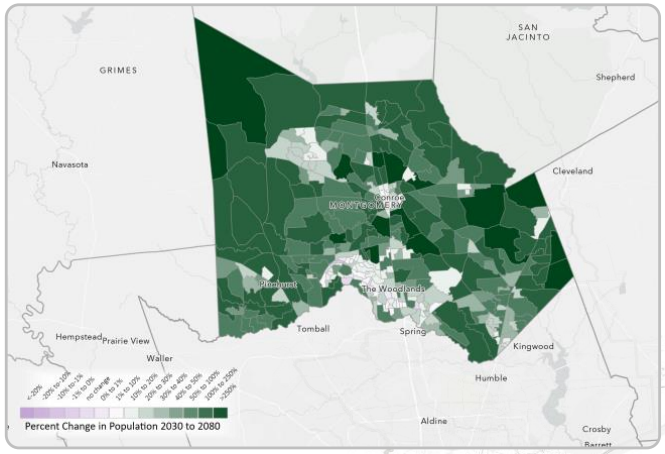
Freese and Nichols, Inc. | INTERA Inc.

Agenda Item 7
Population and Demand Projections – Galveston County



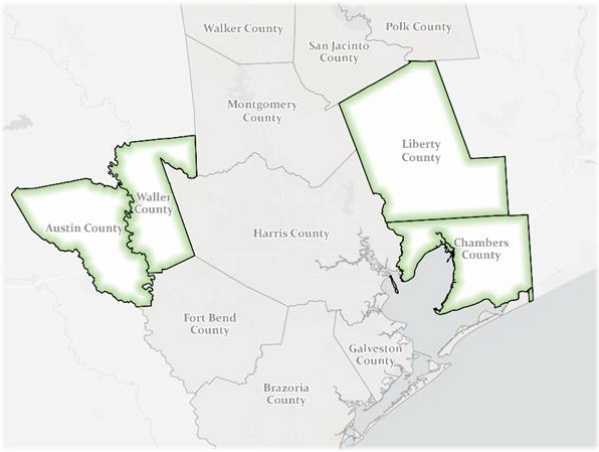


Agenda Item 7
Population and Demand Projections – Montgomery County



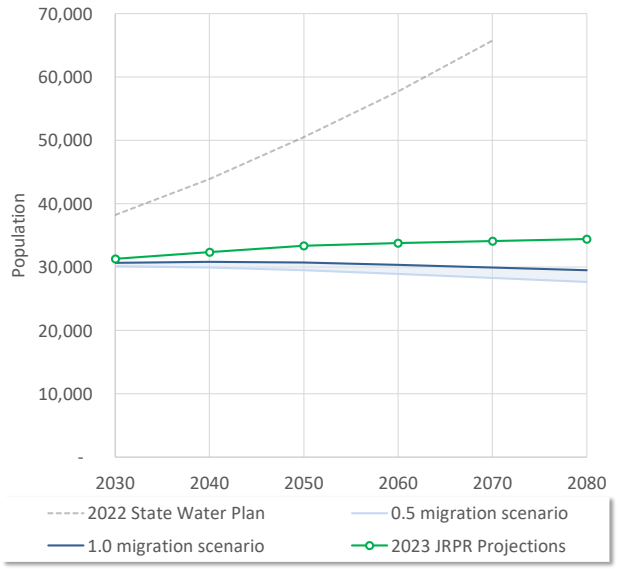
Agenda Item 7
Population and Demand Projections

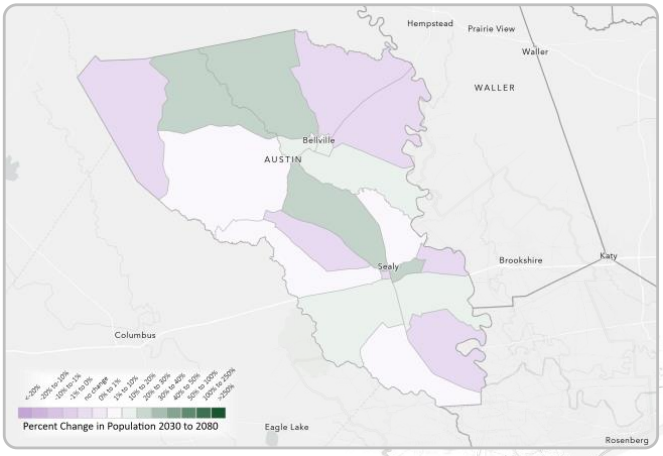
New Suburban Development



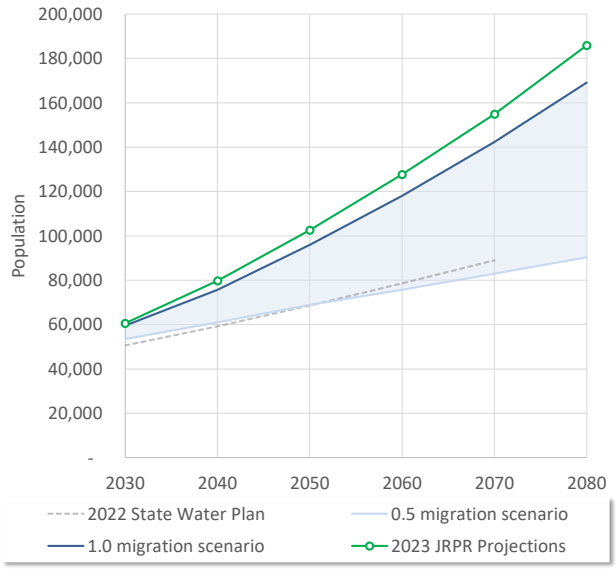
- Currently lower-population counties
- Adjacent to traditional growth areas
- Ongoing growth projected to continue
- Transportation and decentralization of employment

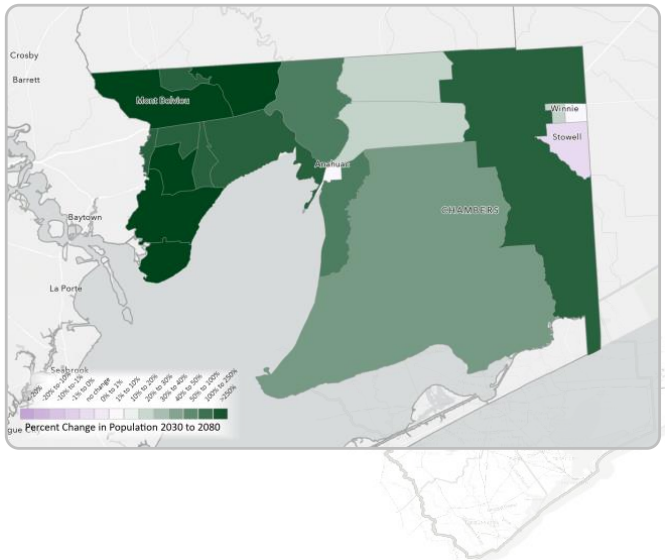
Agenda Item 7
Population and Demand Projections – Austin County





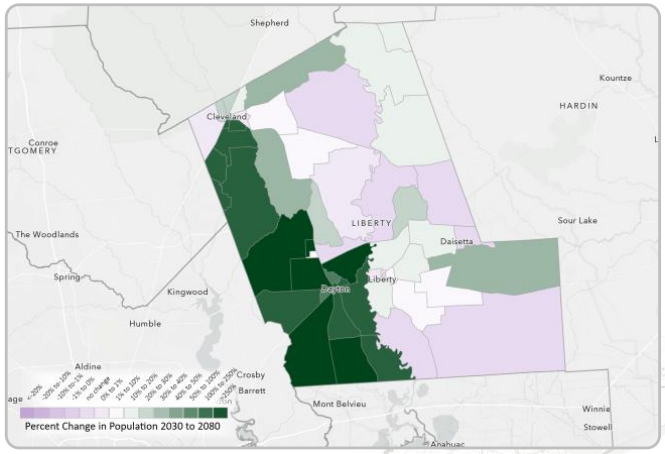
Agenda Item 7
Population and Demand Projections – Chambers County





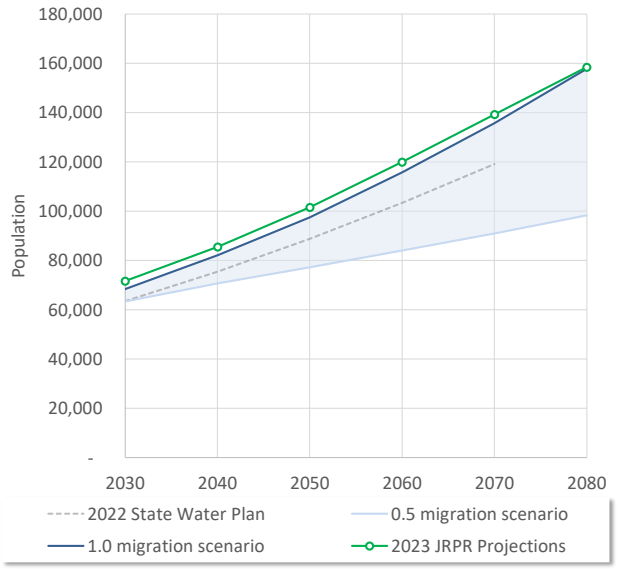
Freese and Nichols, Inc. | INTERA Inc.

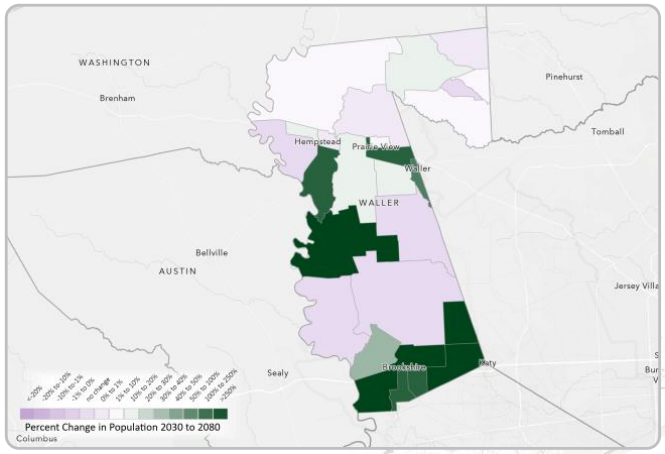
Agenda Item 7
Population and Demand Projections – Liberty County



Freese and Nichols, Inc. | INTERA Inc.

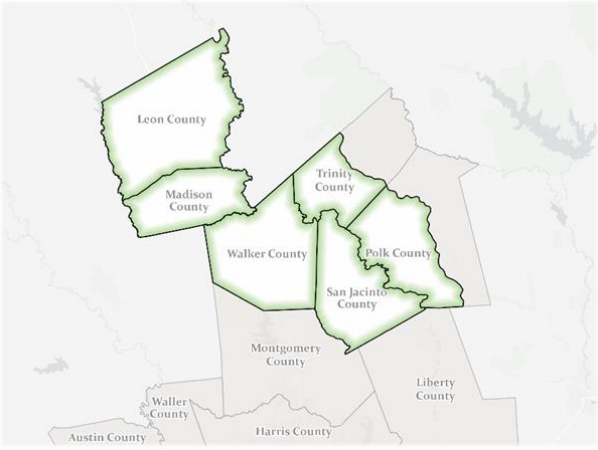
Agenda Item 7
Population and Demand Projections – Waller County





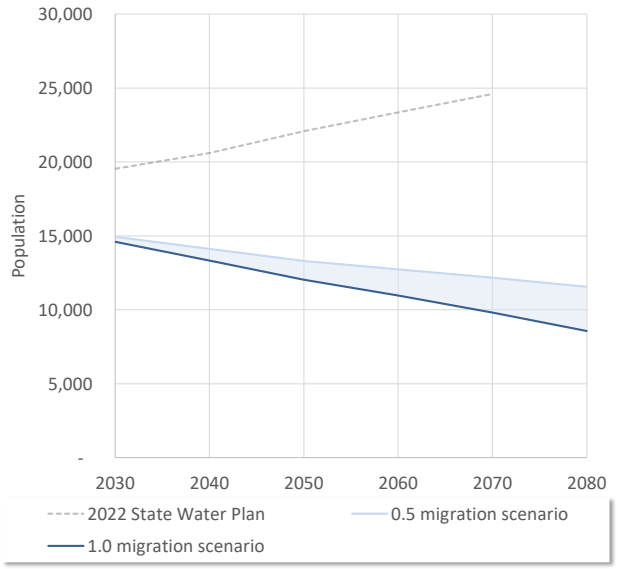
Agenda Item 7
Population and Demand Projections

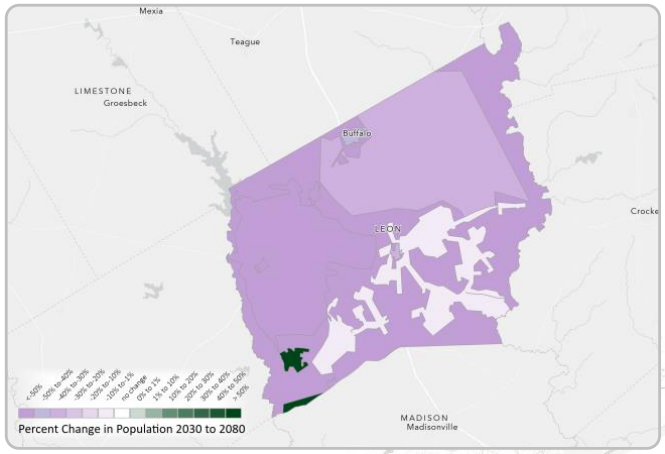
Northern Counties



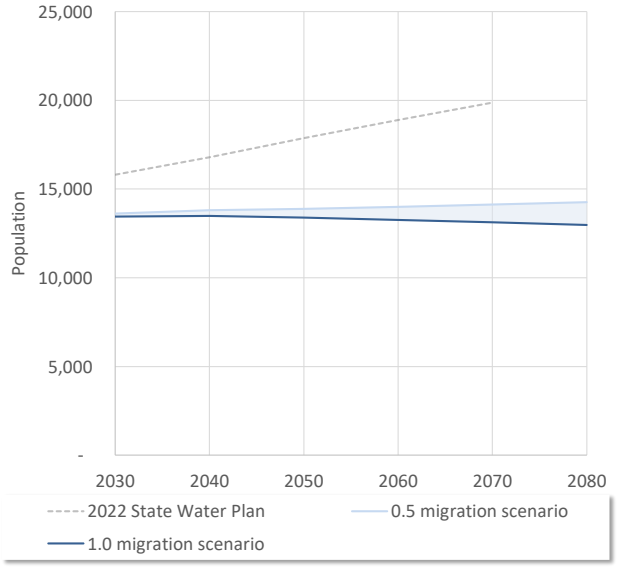
- Generally low density
  - Small cities and utility districts
  - Diffuse rural residential
- Growth in some cities
- Recent and/or projected reduction for some areas

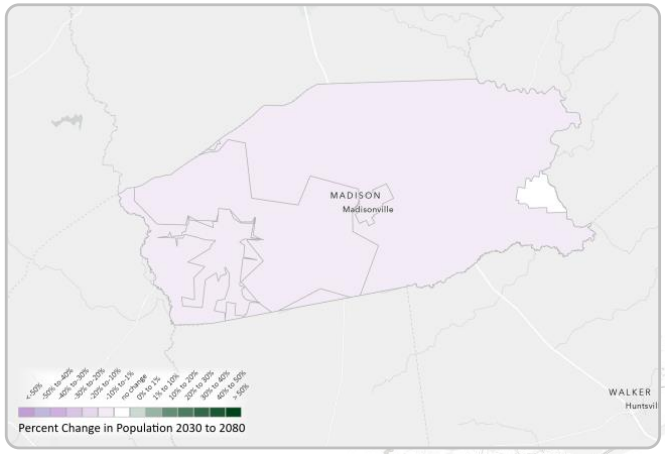
Agenda Item 7
Population and Demand Projections – Leon County



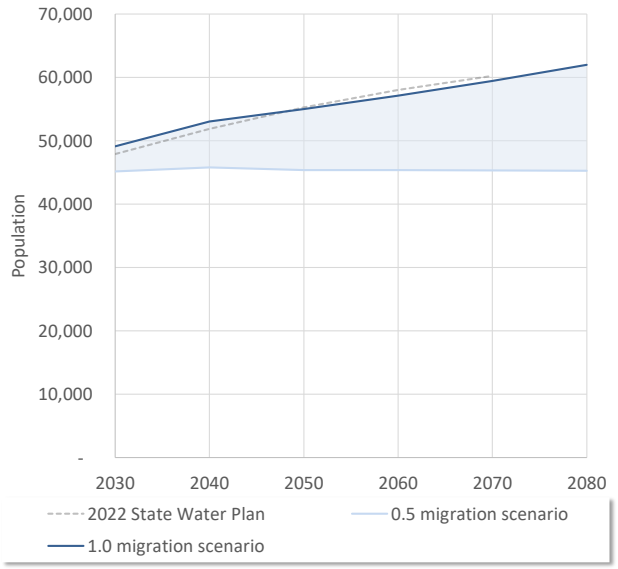


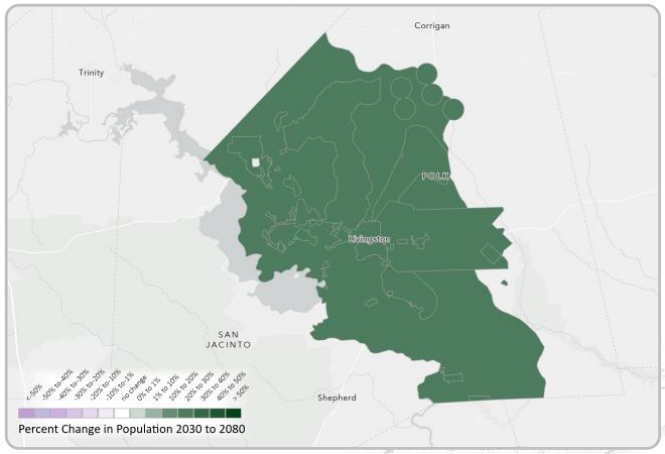
Agenda Item 7
Population and Demand Projections – Madison County



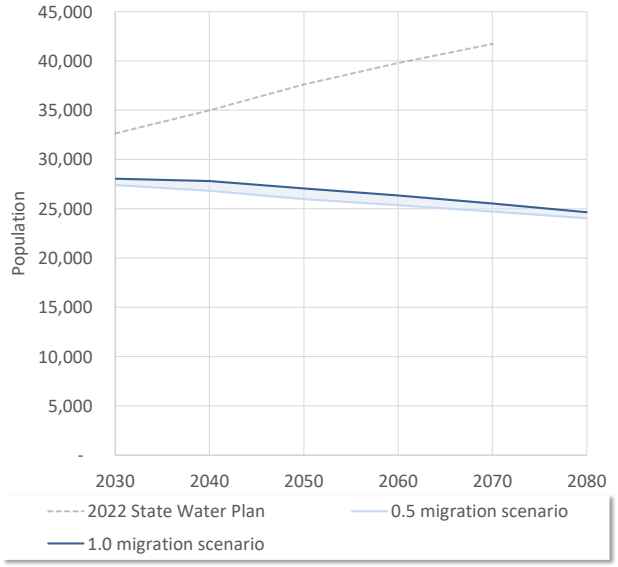


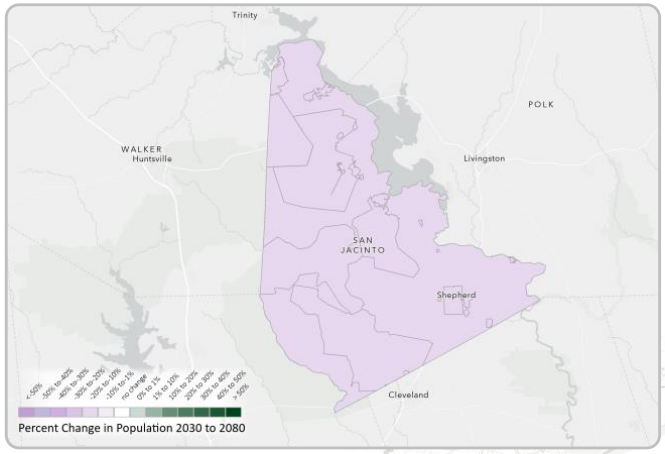
Agenda Item 7
Population and Demand Projections – Polk County



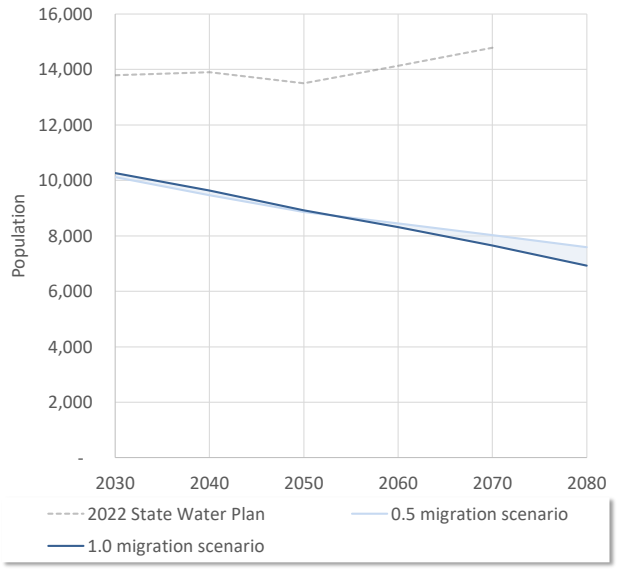


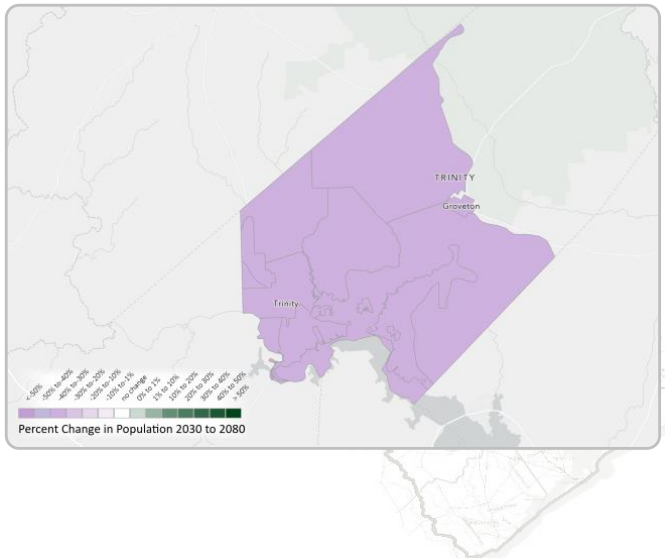
Agenda Item 7
Population and Demand Projections – San Jacinto County



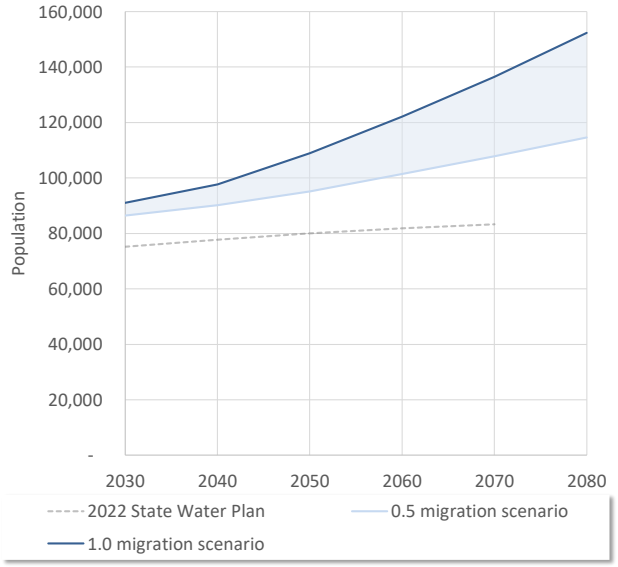


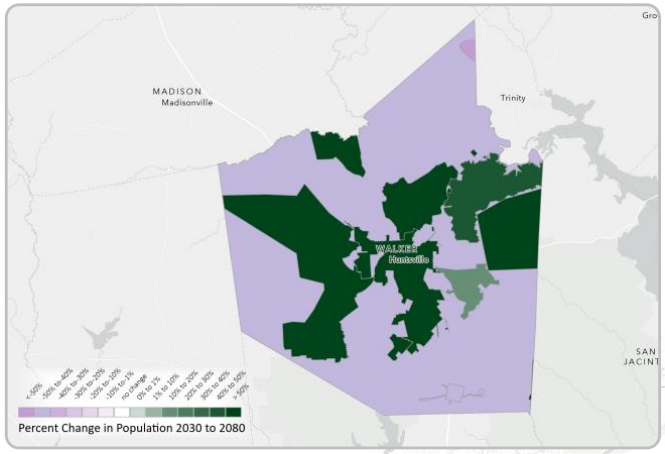
Agenda Item 7
Population and Demand Projections – Trinity County



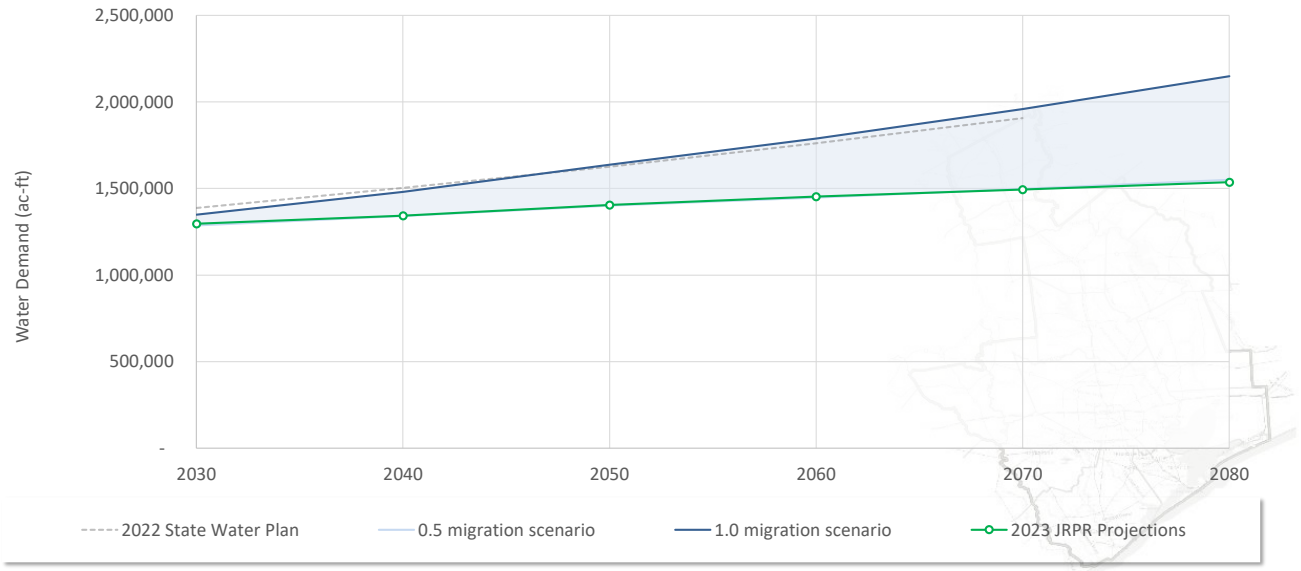


Agenda Item 7
Population and Demand Projections – Walker County

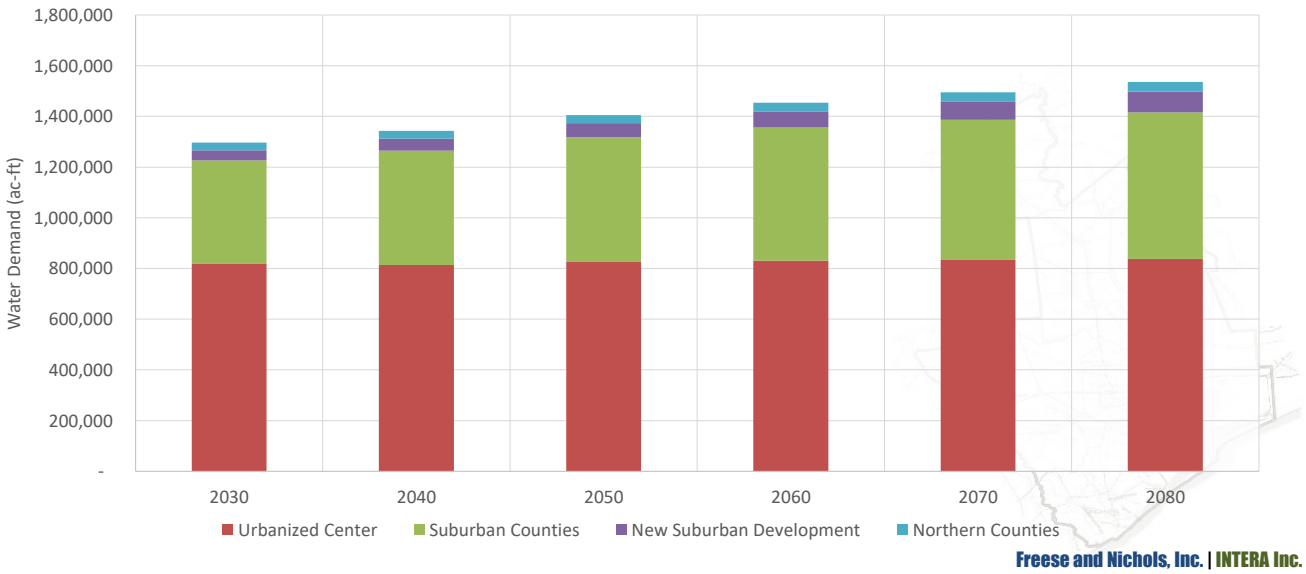




Agenda Item 7
Population and Demand Projections – Municipal Demand



Agenda Item 7
Population and Demand Projections – Municipal Demand



Agenda Item 7
Population and Demand Projections

Recommendations

- What is the TWDB process?
- What do we recommend to the RWPG?

Agenda Item 7
Population and Demand Projections

Criteria for Adjustment

- Ongoing Census correction request
- Evidence of
  - Errors in projection
  - Different recent migration rates
  - Different near-future rates
- Changes to PWS service area
- Plans for new development or expansions
- Build-out conditions

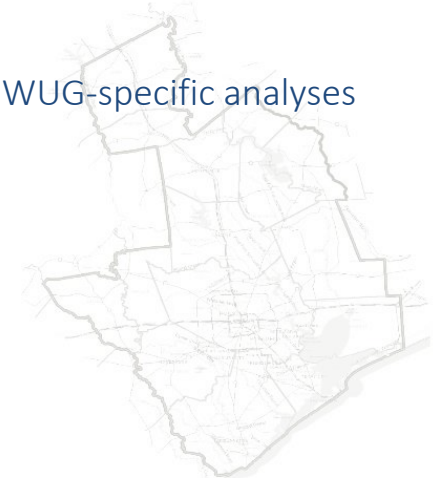
Data Requirements

- Documentation of
  - Data corrections
  - Different rates
  - Plans for facilities or other employment centers
  - New development
- Other data the RWPG feels supports changes

Agenda Item 7
Population and Demand Projections

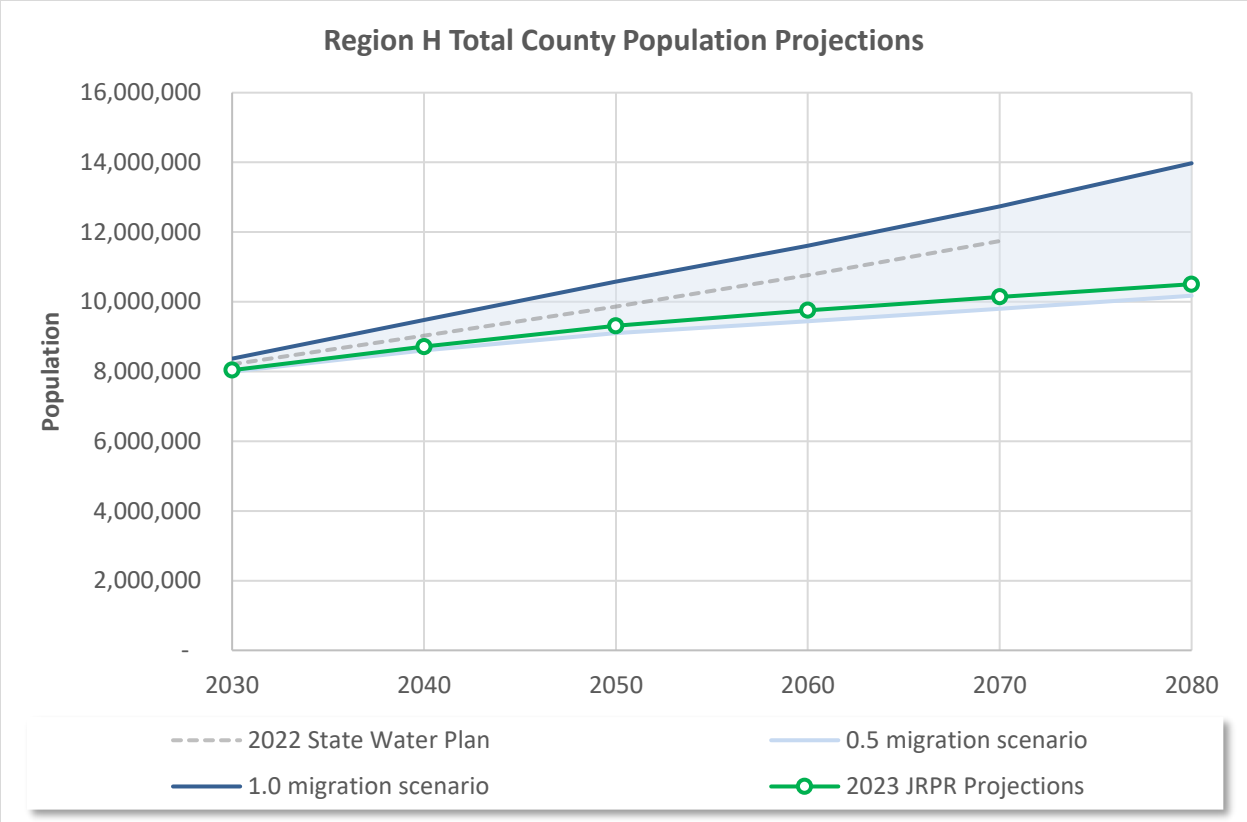
- Alignment with JRPR projections
- Northern counties
  - Keep 1.0 migration scenario?
  - Switch to 0.5 for select counties?

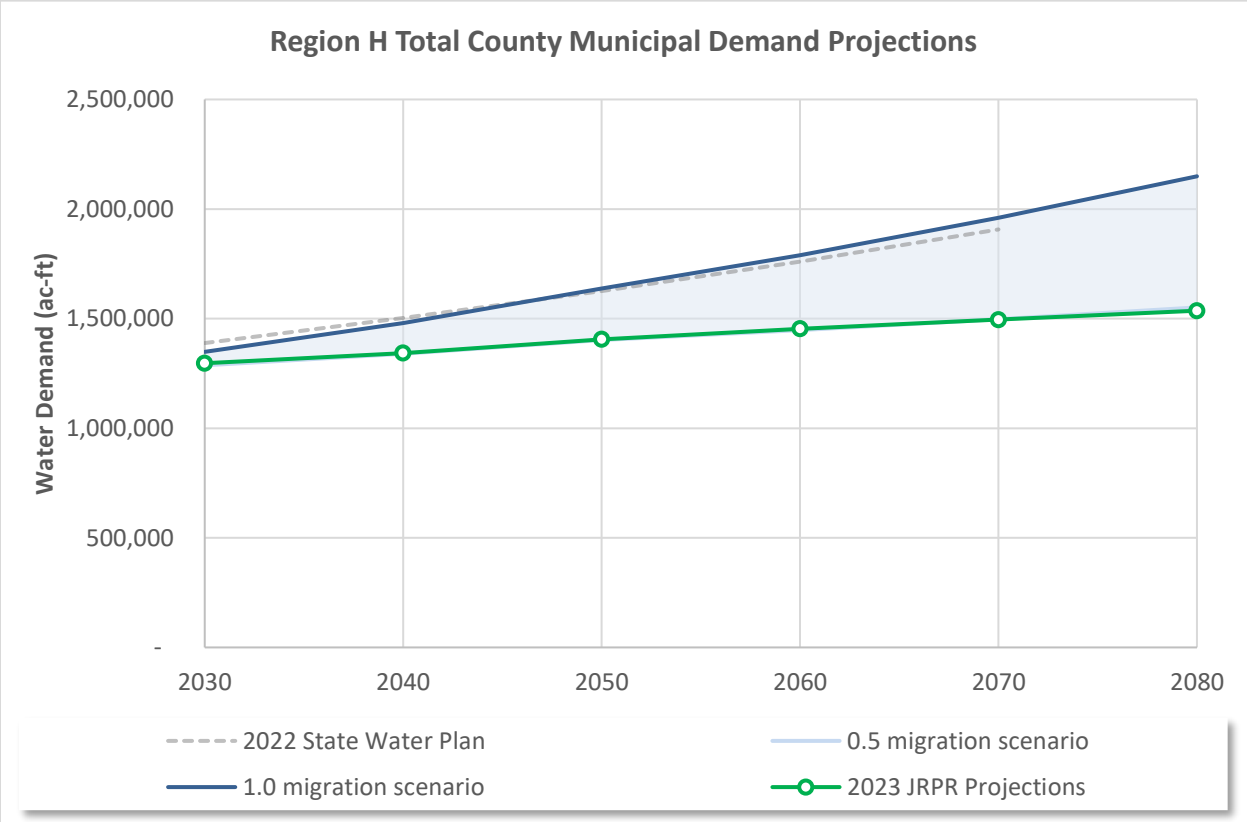
- General agreement with TWDB demands approach?
- Continued WUG-specific analyses



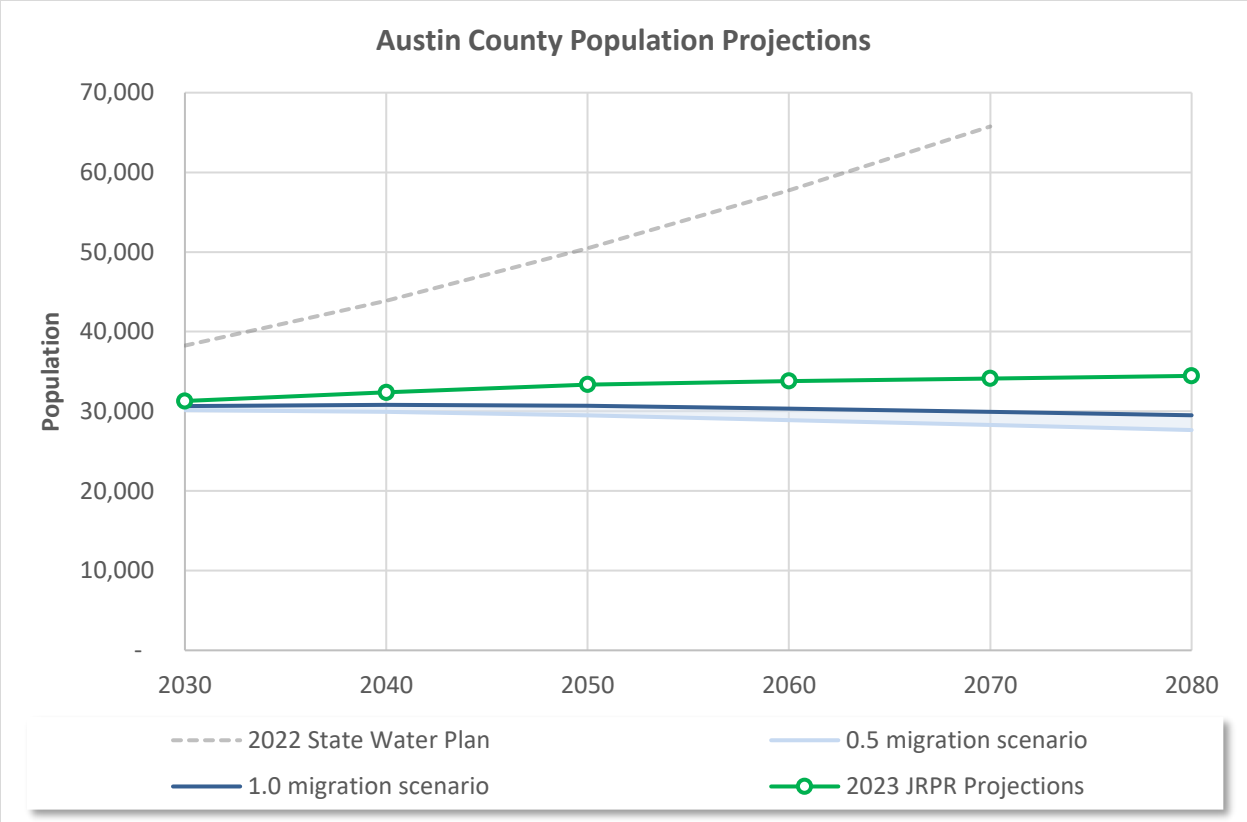
Draft 2026 RWP
Municipal Population and Water Demand Projections for Region H

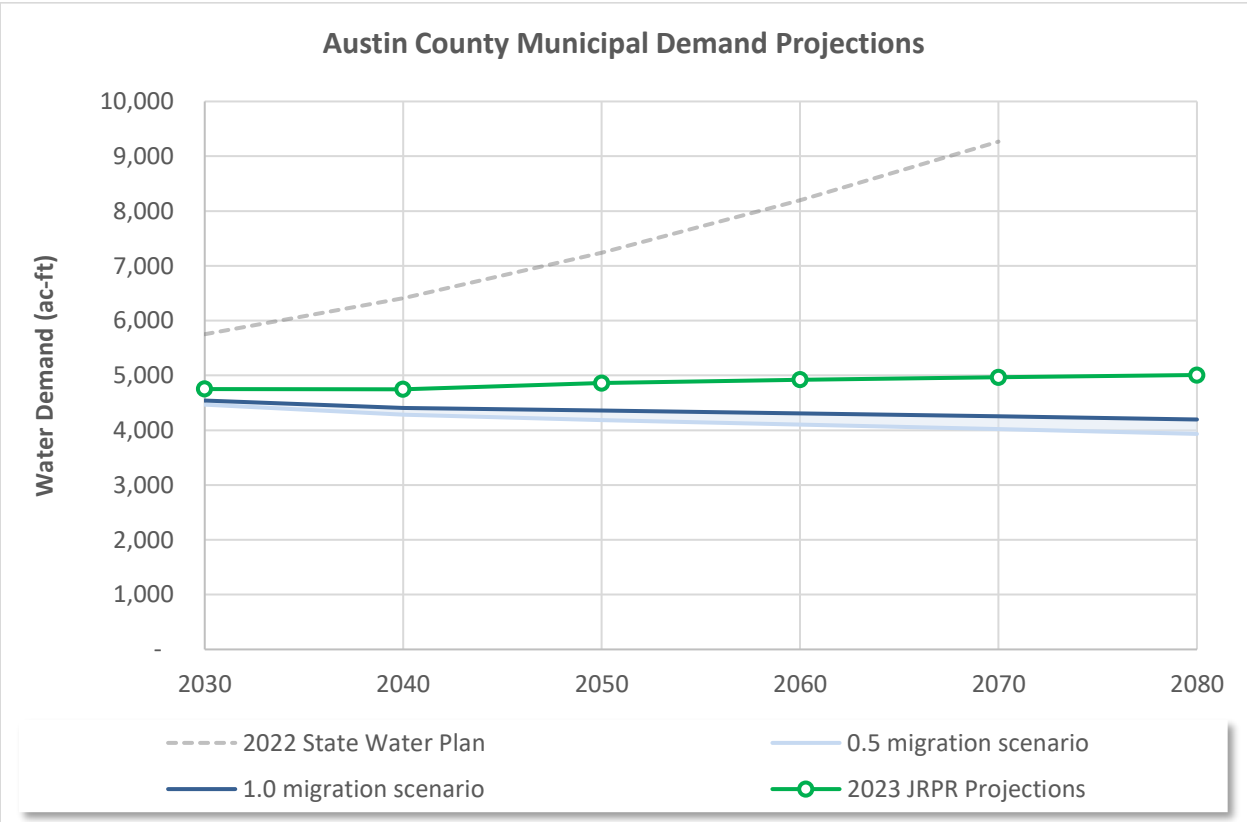
REGION H
Water Planning Group

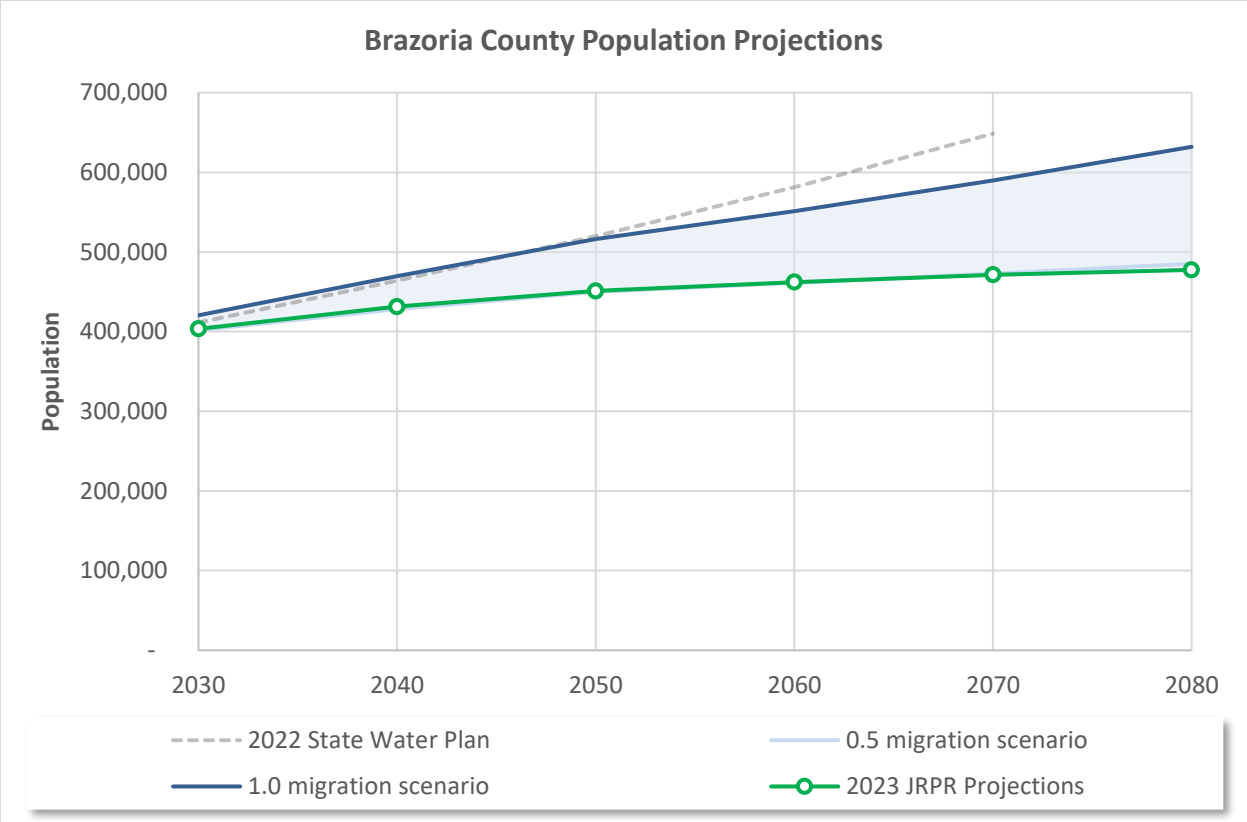


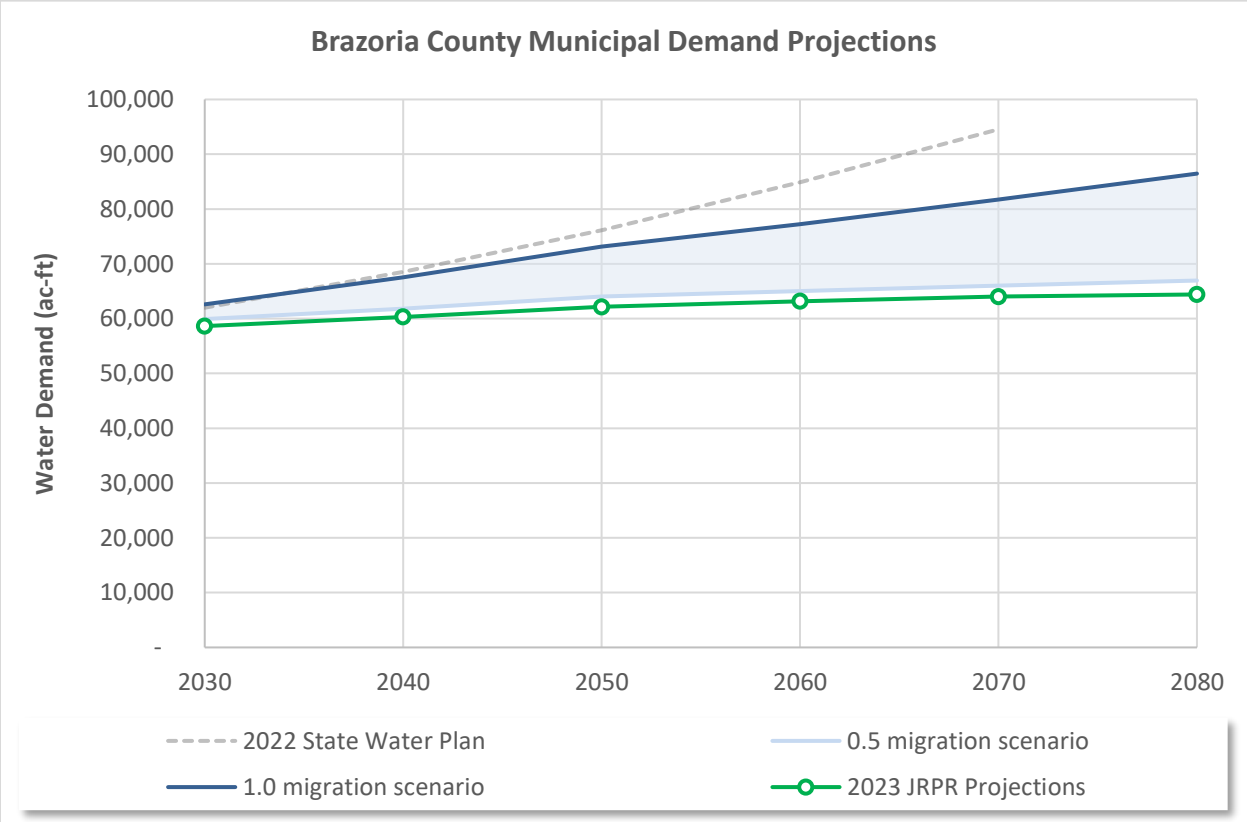


REGION H
Water Planning Group

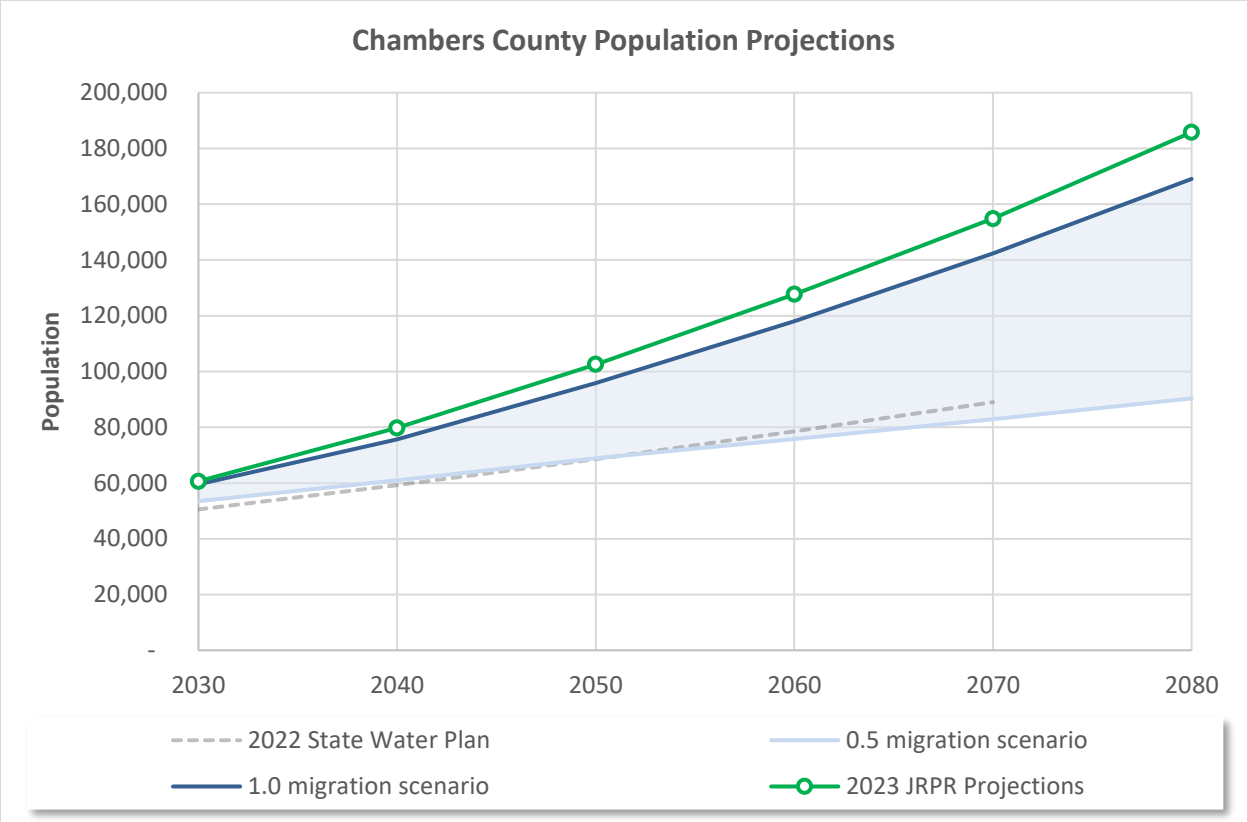

Austin County Population Projections
Population
70,000
60,000
50,000
40,000
30,000
20,000
10,000
-
2030
2040
2050
2060
2070
2080
2022 State Water Plan
0.5 migration scenario
1.0 migration scenario
2023 JRPR Projections

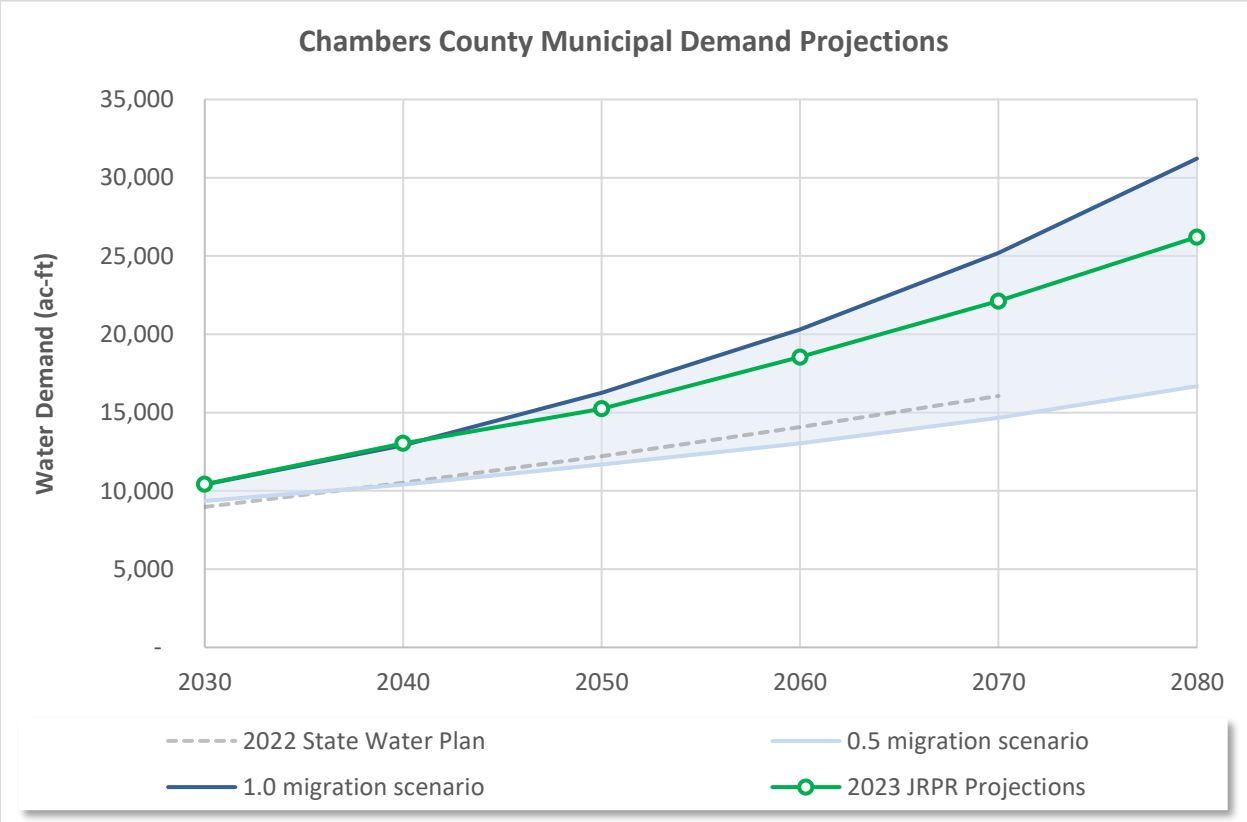

Austin County Municipal Demand Projections
Water Demand (ac-ft)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
-
2030
2040
2050
2060
2070
2080
2022 State Water Plan
0.5 migration scenario
1.0 migration scenario
2023 JRPR Projections

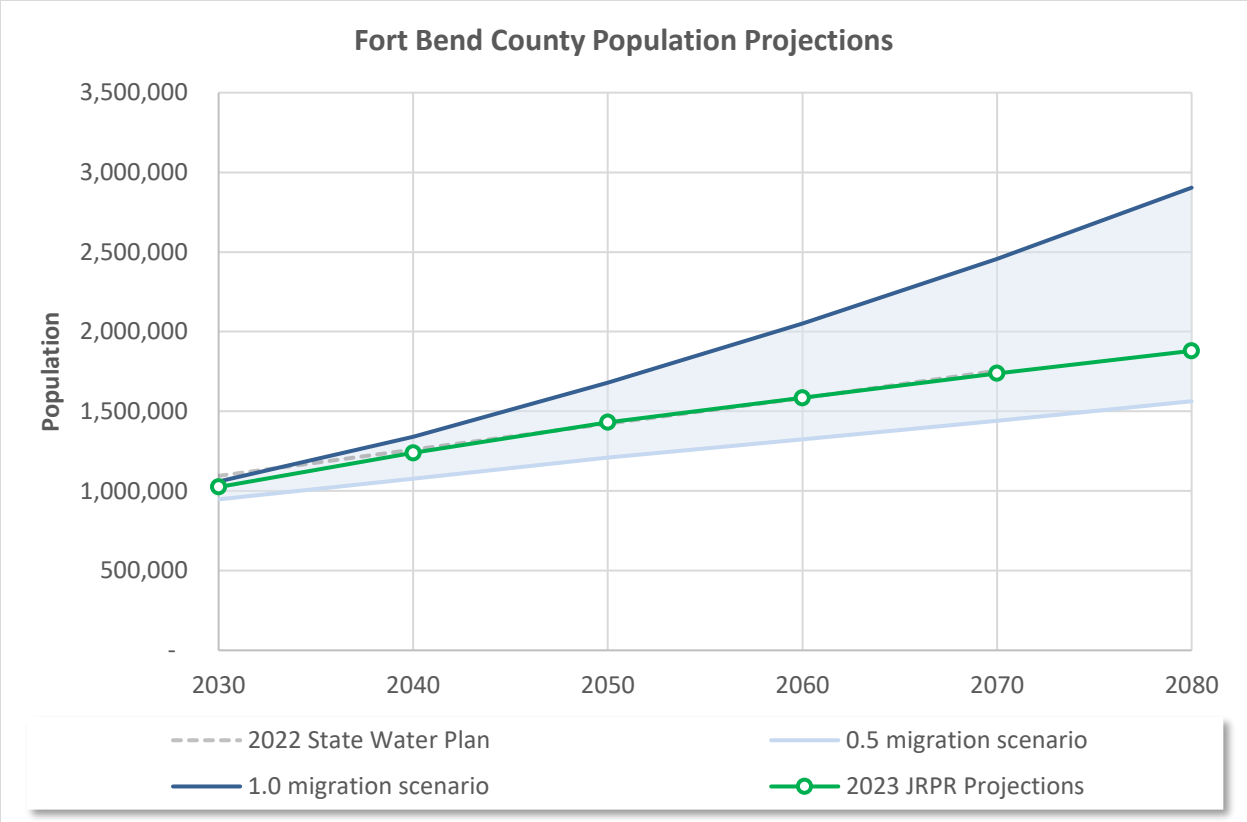


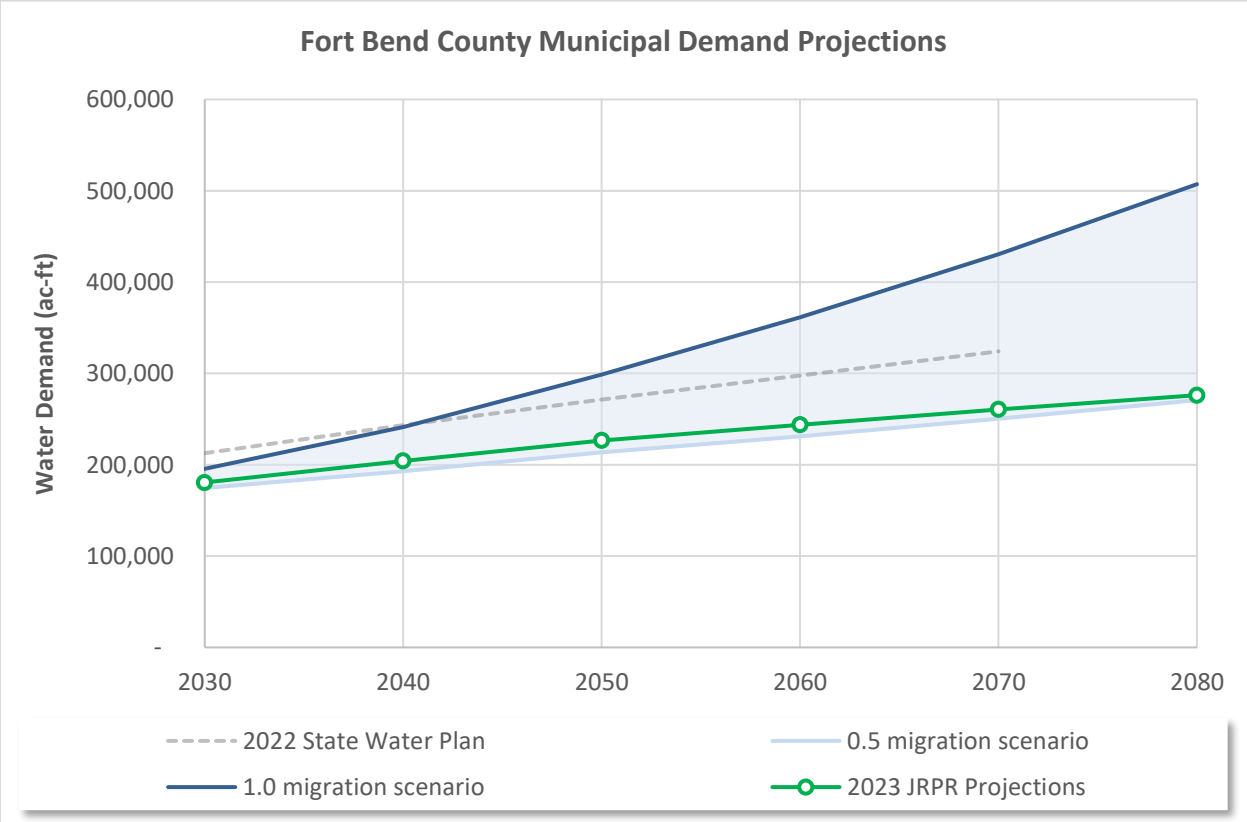


REGION H
Water Planning Group

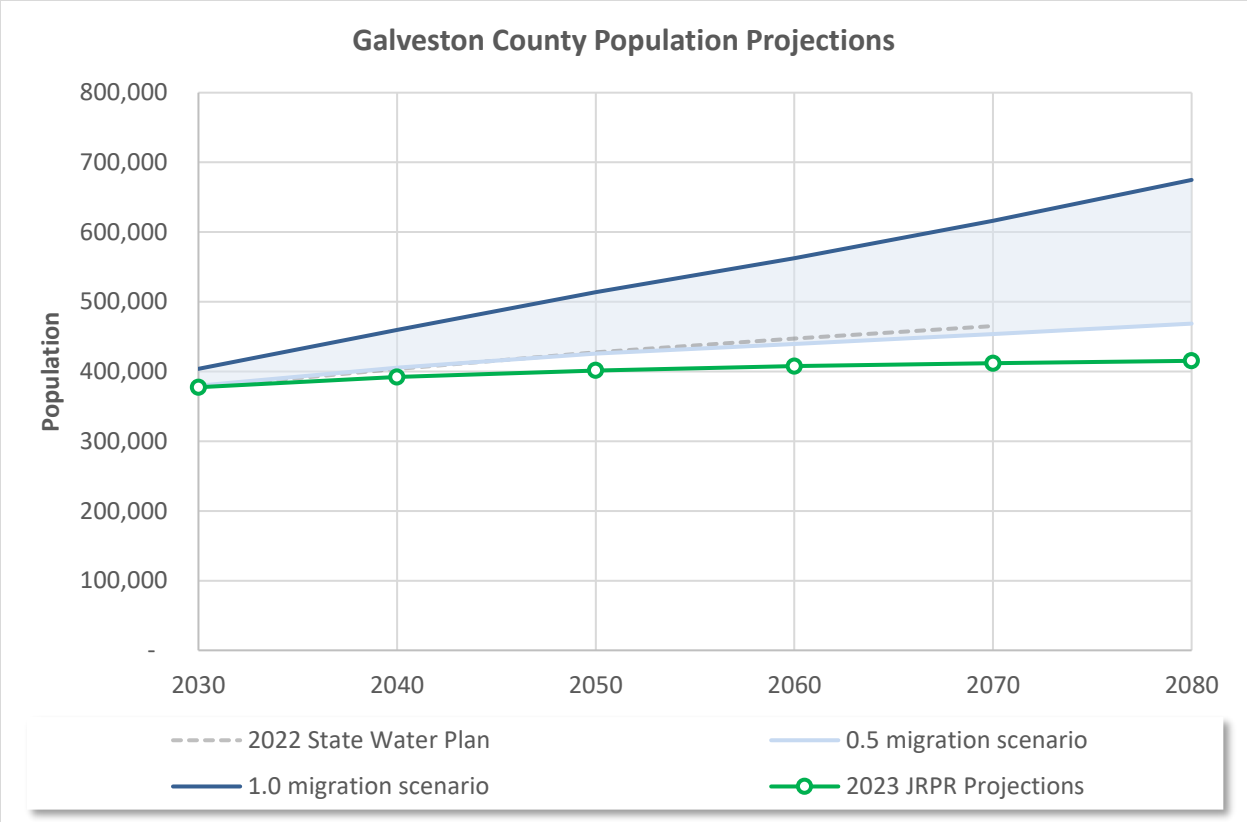

Chambers County Population Projections
Population
200,000
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
-
2030
2040
2050
2060
2070
2080
2022 State Water Plan
0.5 migration scenario
1.0 migration scenario
2023 JRPR Projections

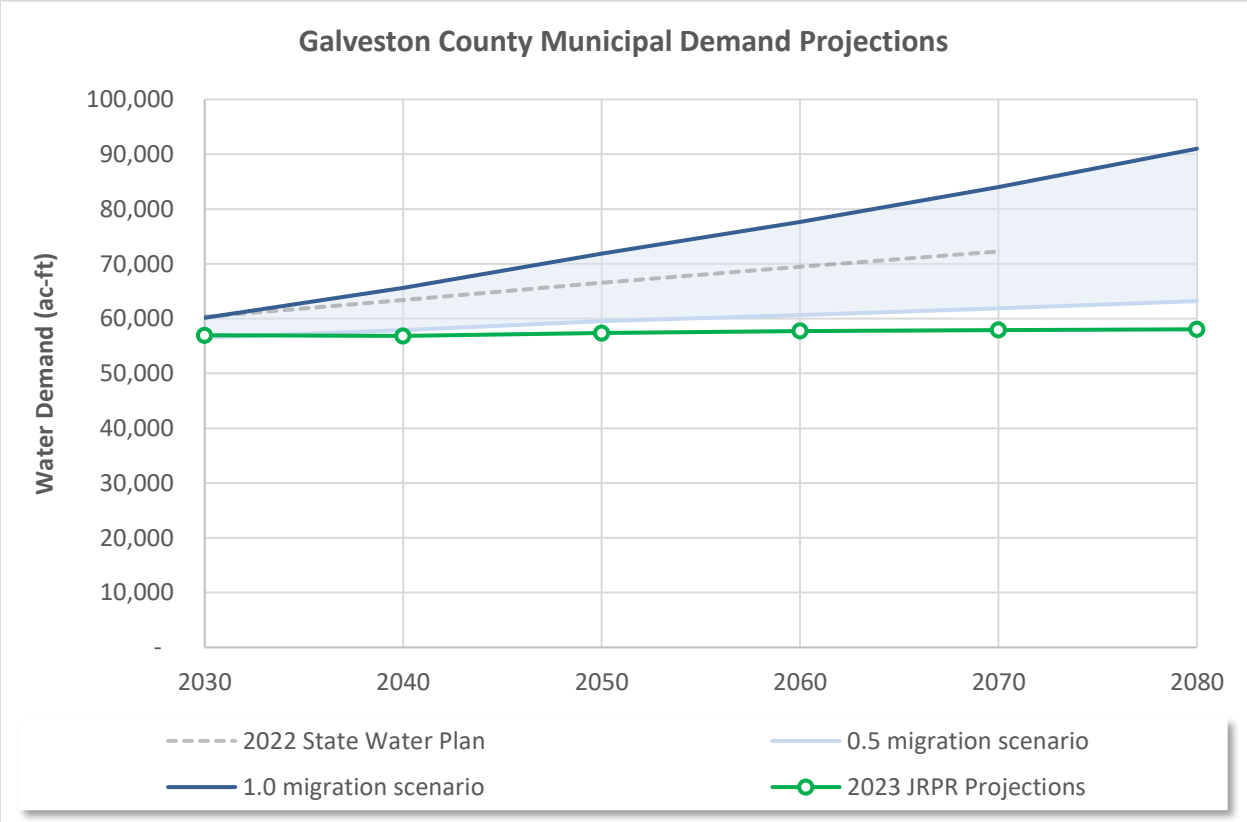

Chambers County Municipal Demand Projections
Water Demand (ac-ft)
35,000
30,000
25,000
20,000
15,000
10,000
5,000
-
2030
2040
2050
2060
2070
2080
2022 State Water Plan
0.5 migration scenario
1.0 migration scenario
2023 JRPR Projections



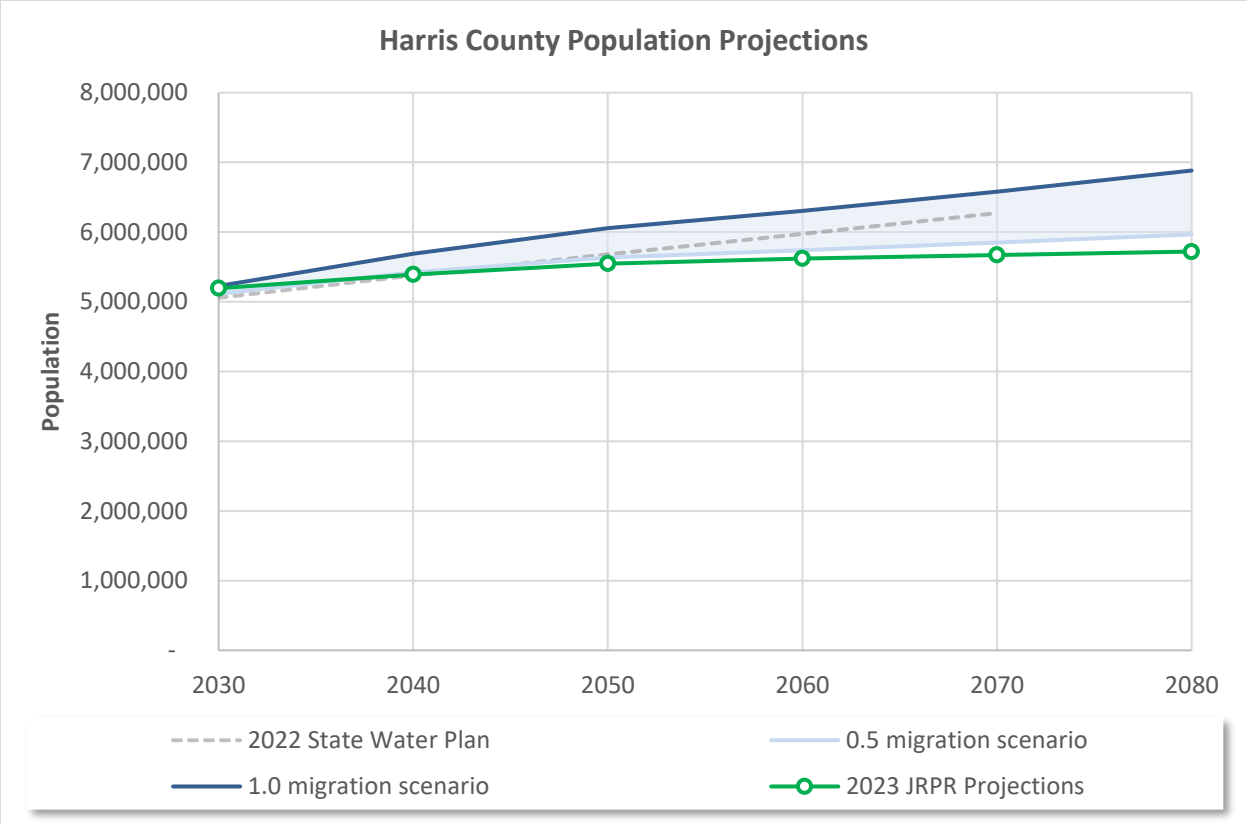


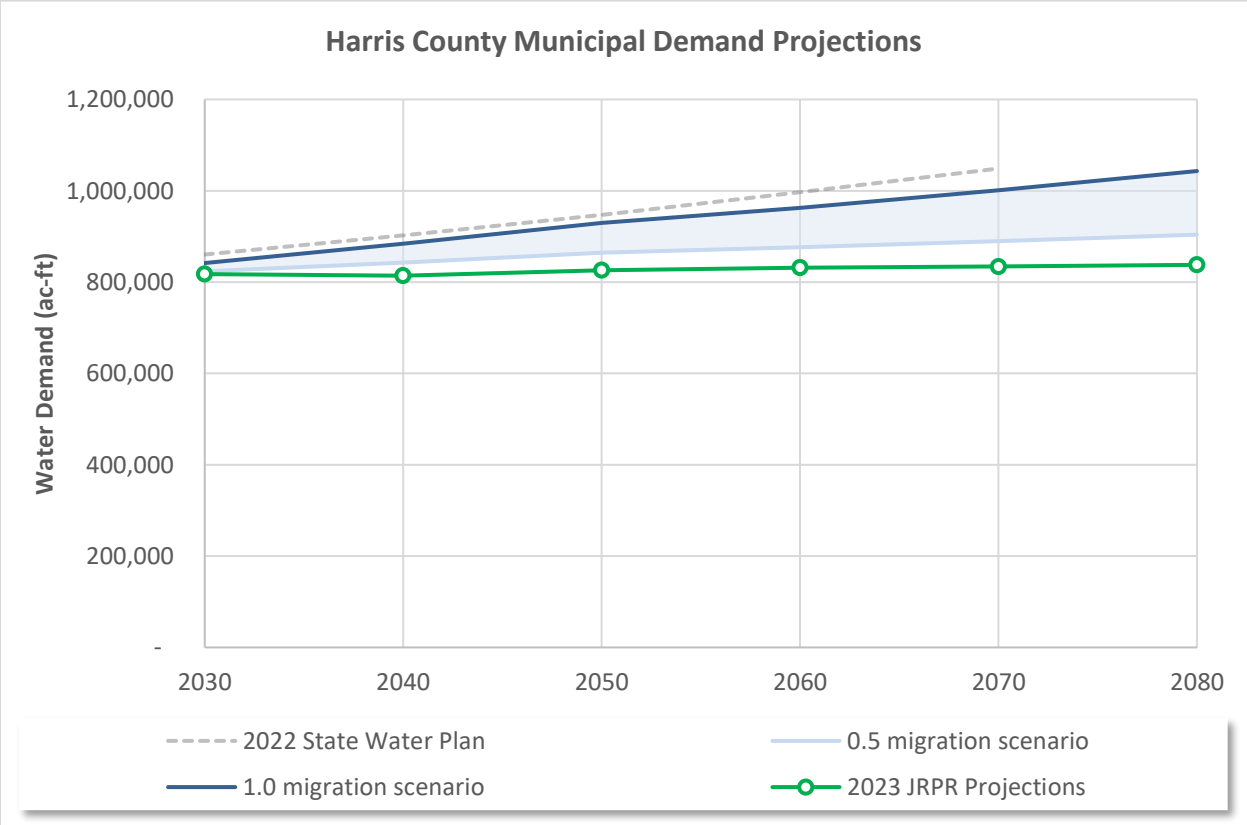
REGION H
Water Planning Group

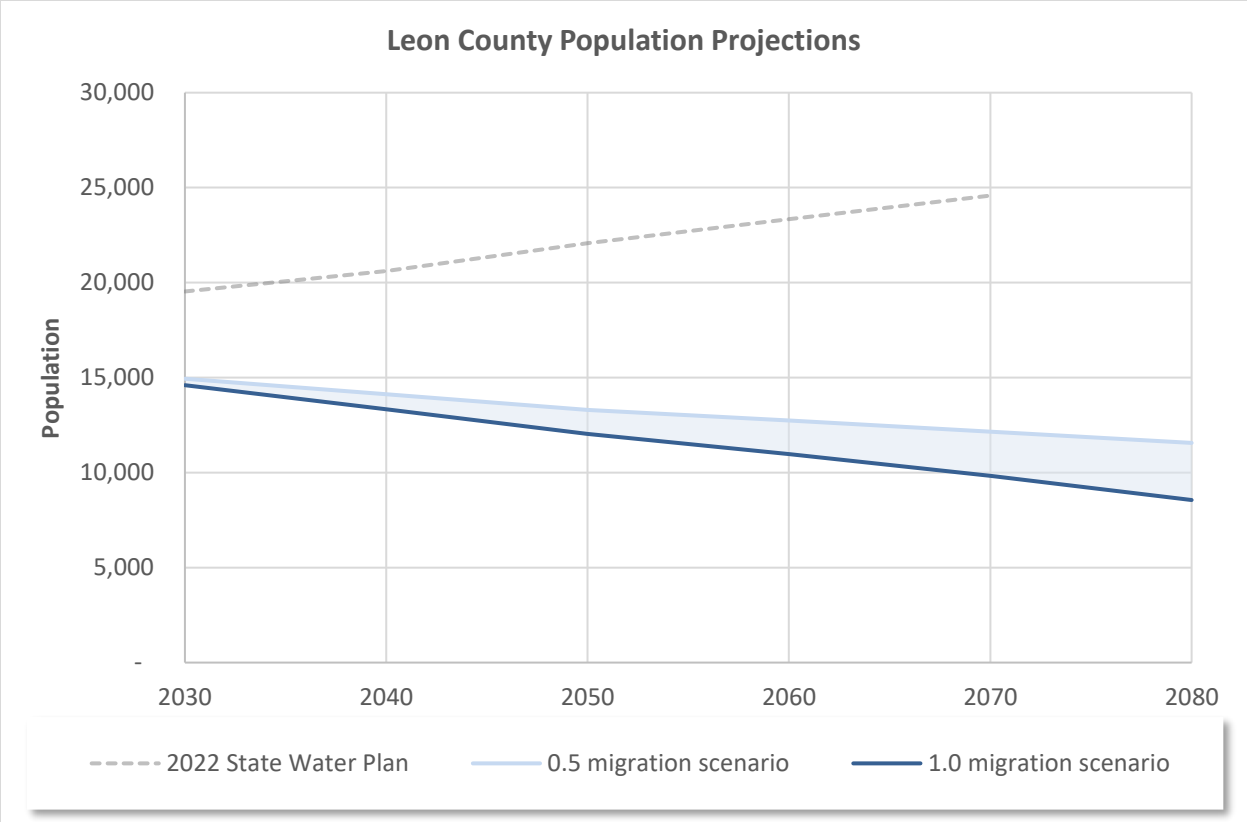


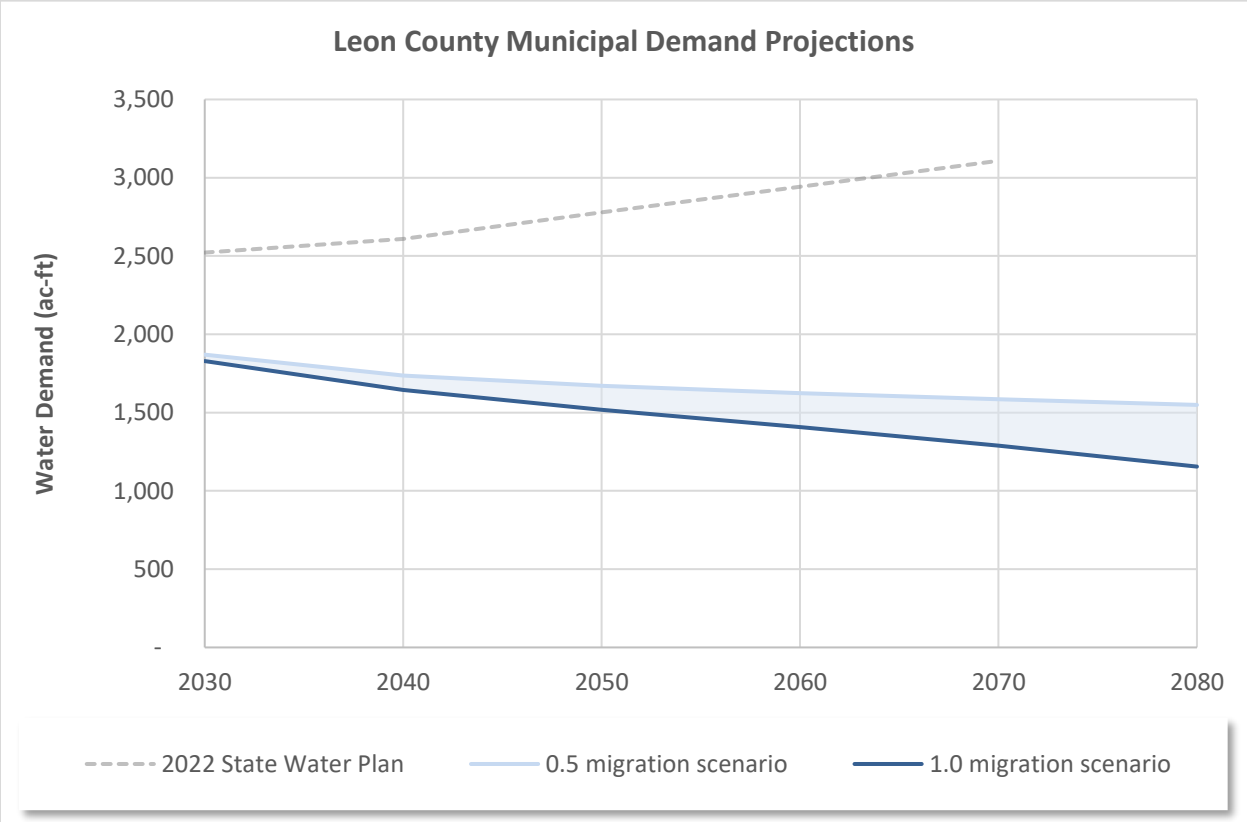


REGION H
Water Planning Group

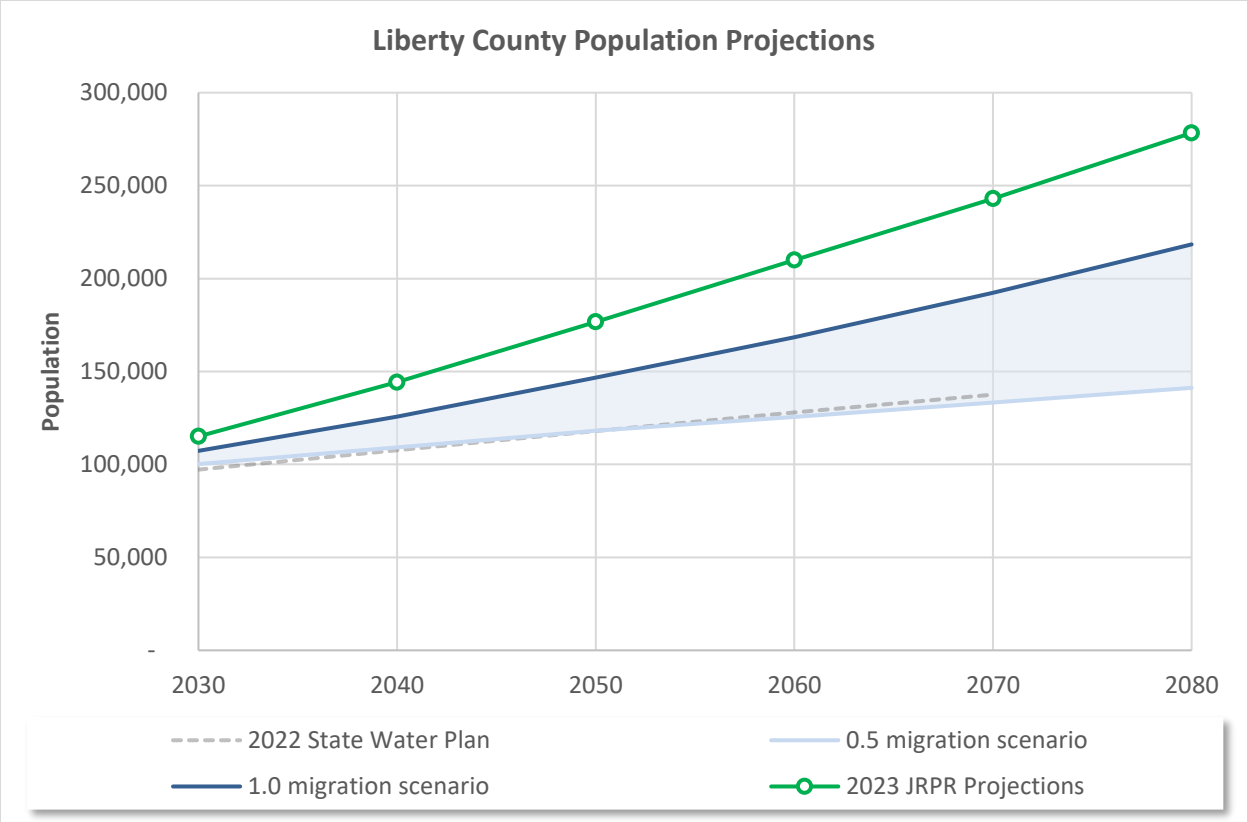

Harris County Population Projections
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
-
Population
2030
2040
2050
2060
2070
2080
2022 State Water Plan
0.5 migration scenario
1.0 migration scenario
2023 JRPR Projections

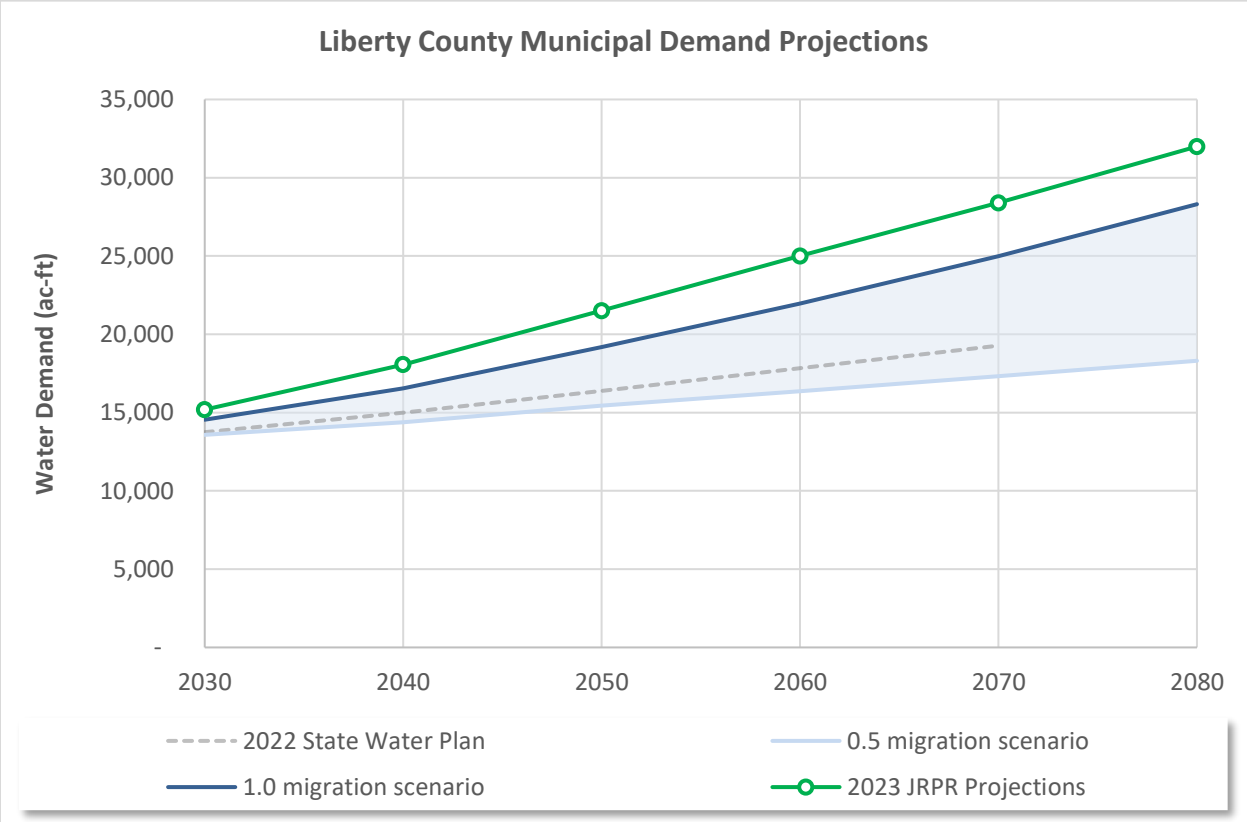

Harris County Municipal Demand Projections
1,200,000
1,000,000
800,000
600,000
400,000
200,000
-
Water Demand (ac-ft)
2030
2040
2050
2060
2070
2080
2022 State Water Plan
0.5 migration scenario
1.0 migration scenario
2023 JRPR Projections



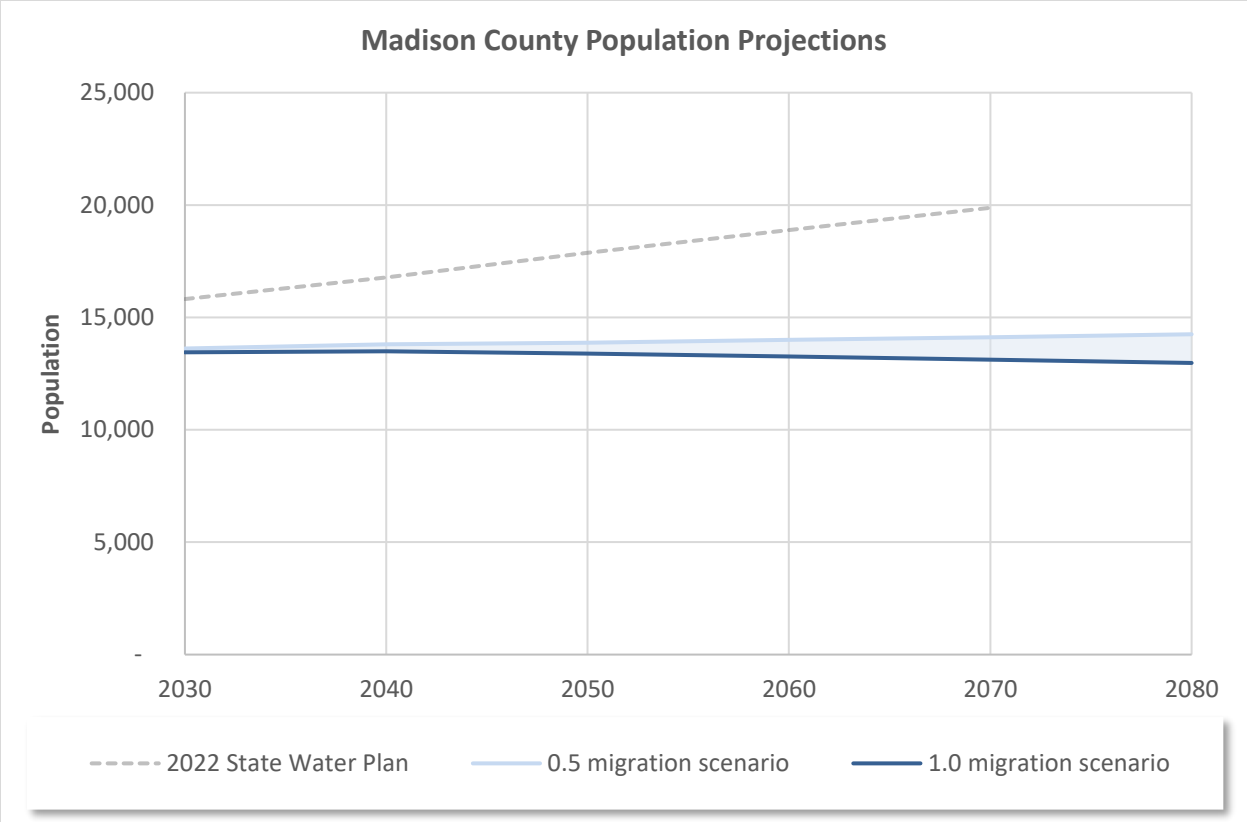


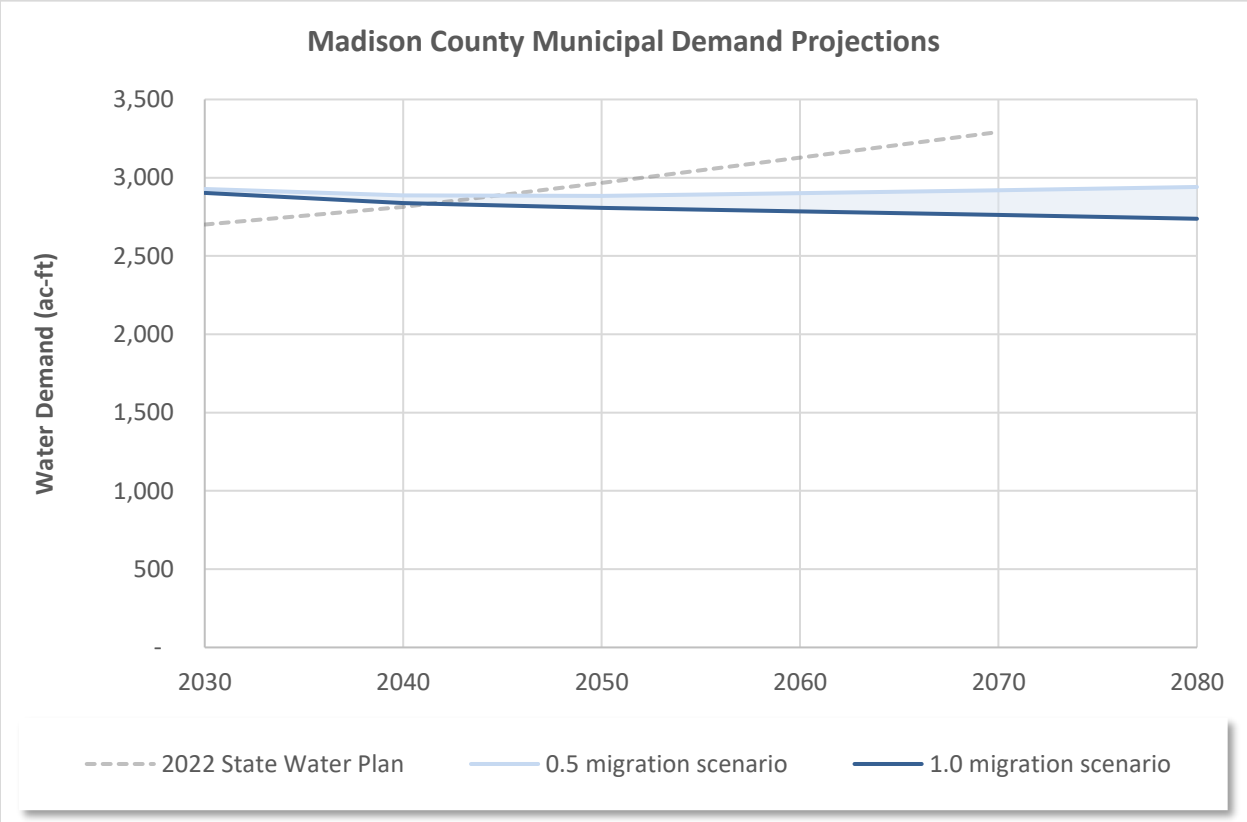
REGION H
Water Planning Group

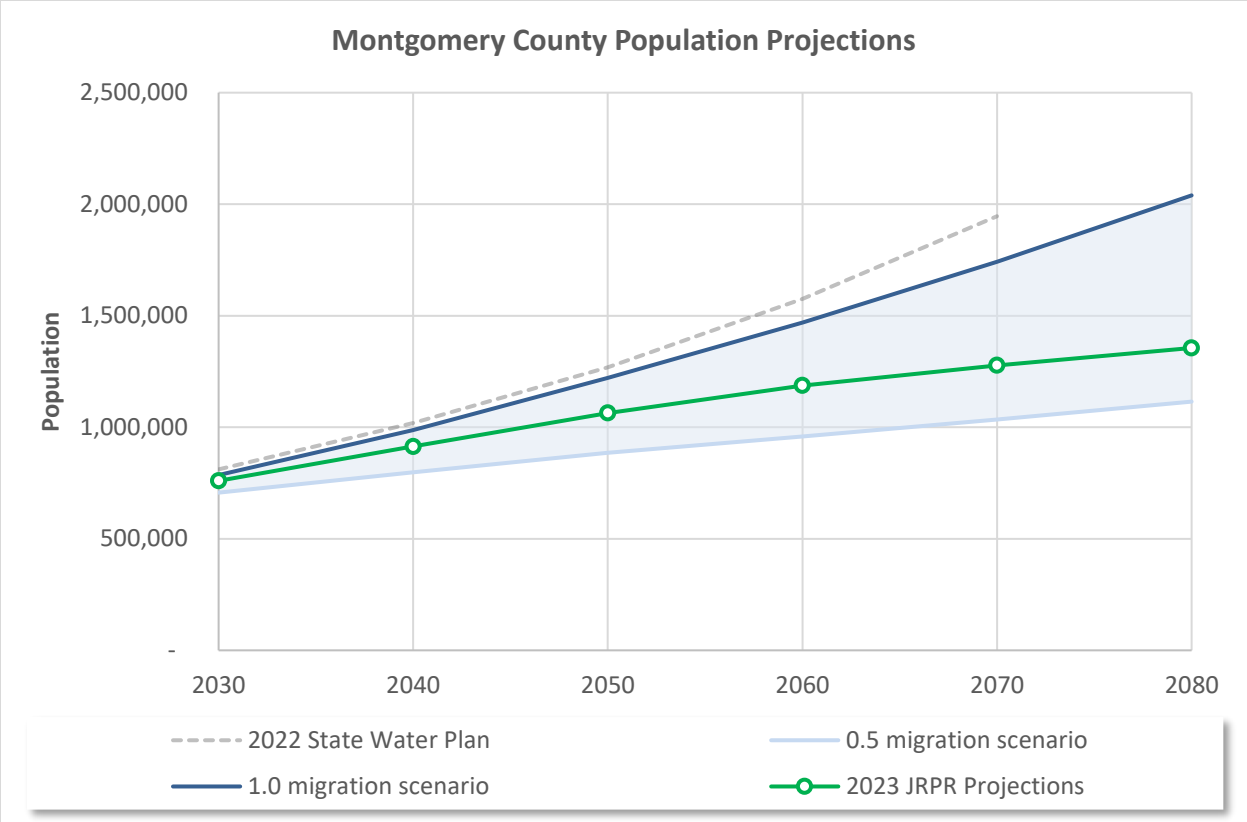


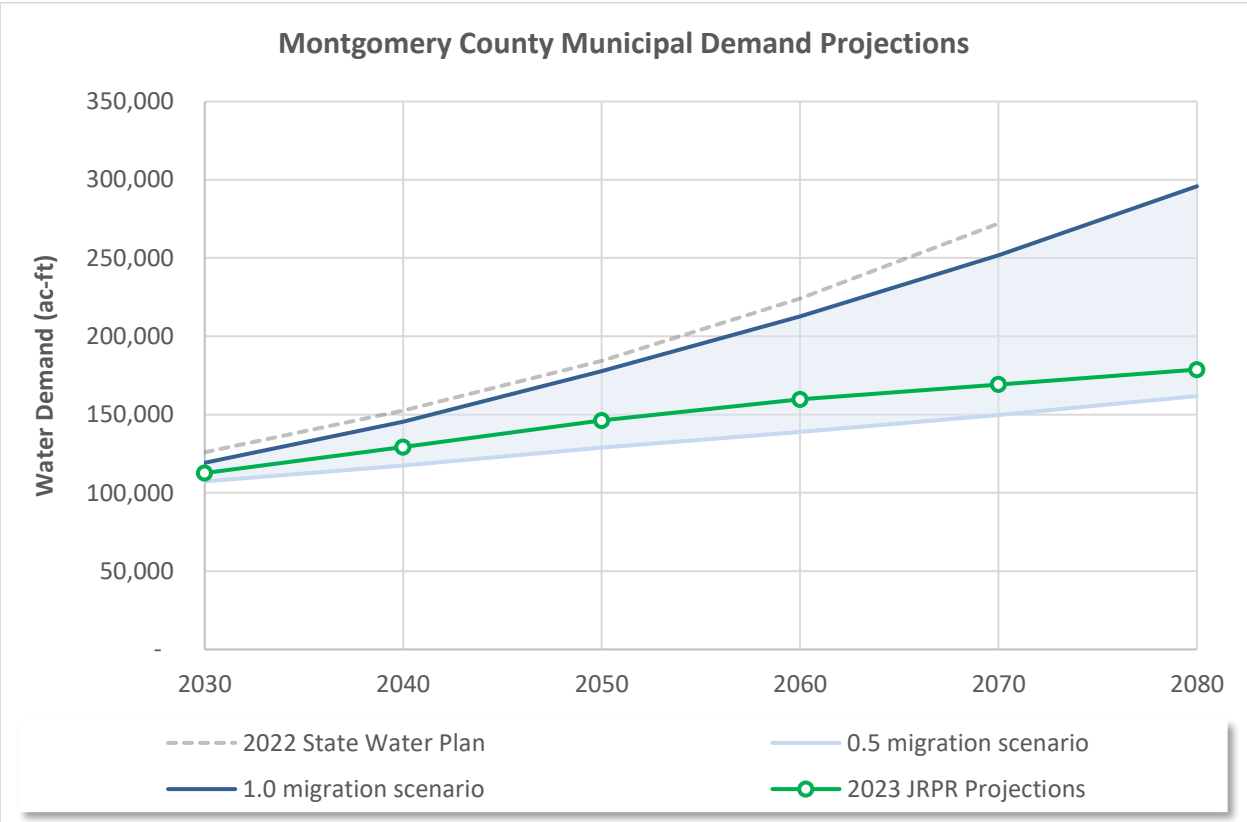


REGION H
Water Planning Group

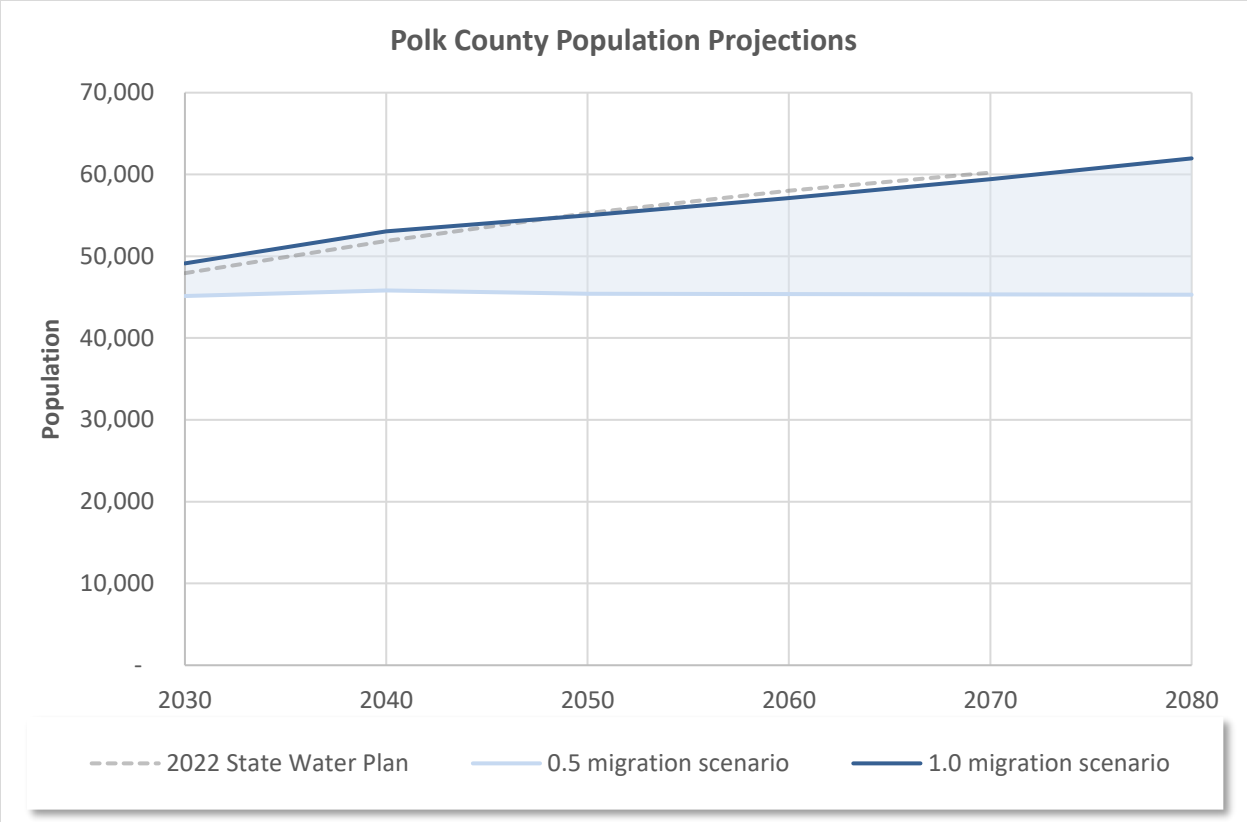

Madison County Population Projections
25,000
20,000
15,000
10,000
5,000
-
Population
2030
2040
2050
2060
2070
2080
2022 State Water Plan
0.5 migration scenario
1.0 migration scenario

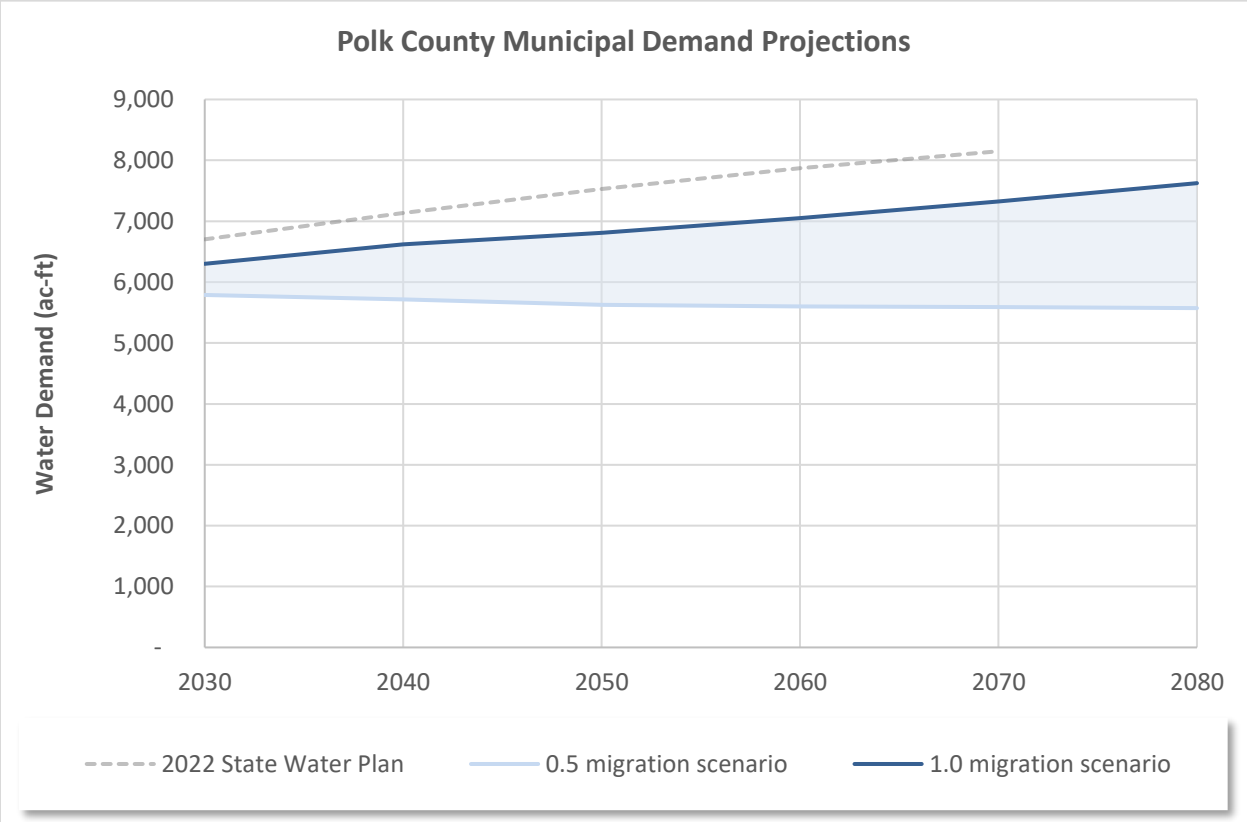

Madison County Municipal Demand Projections
3,500
3,000
2,500
2,000
1,500
1,000
500
-
Water Demand (ac-ft)
2030
2040
2050
2060
2070
2080
2022 State Water Plan
0.5 migration scenario
1.0 migration scenario

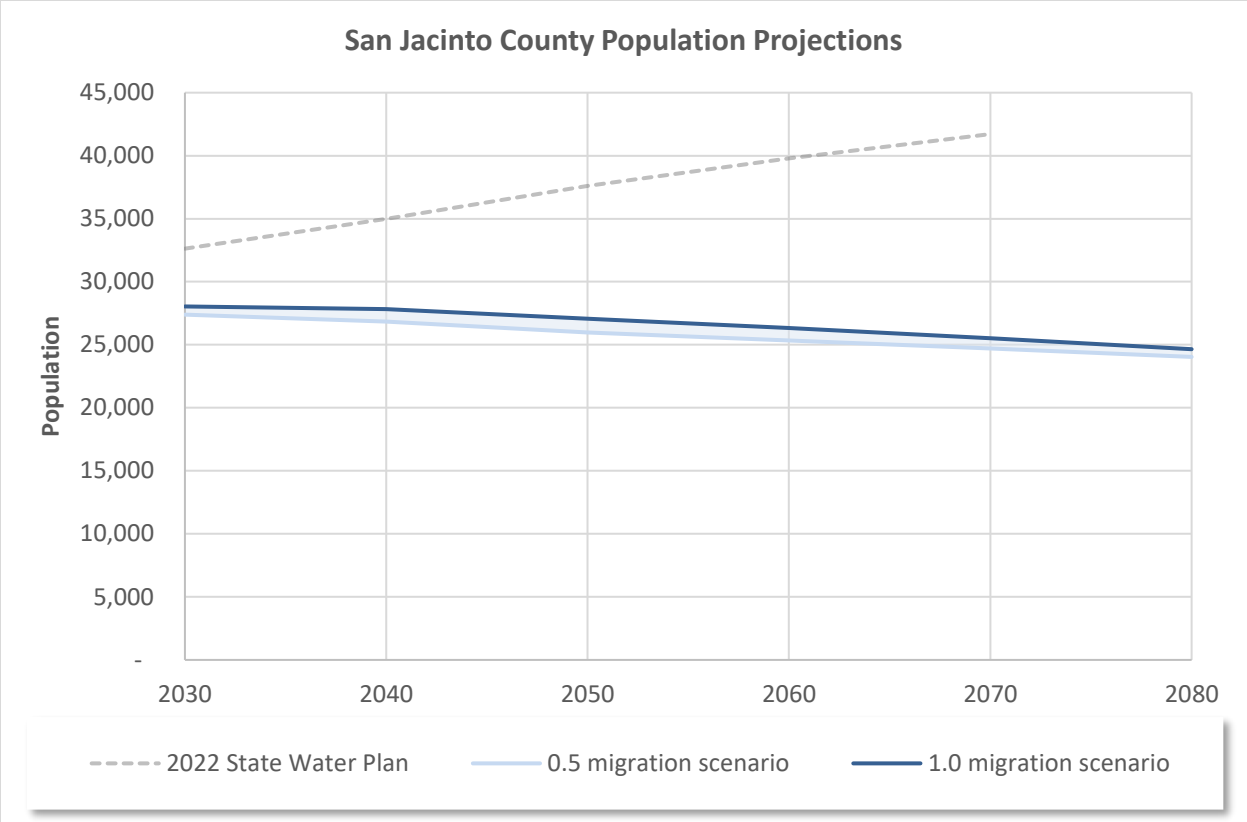


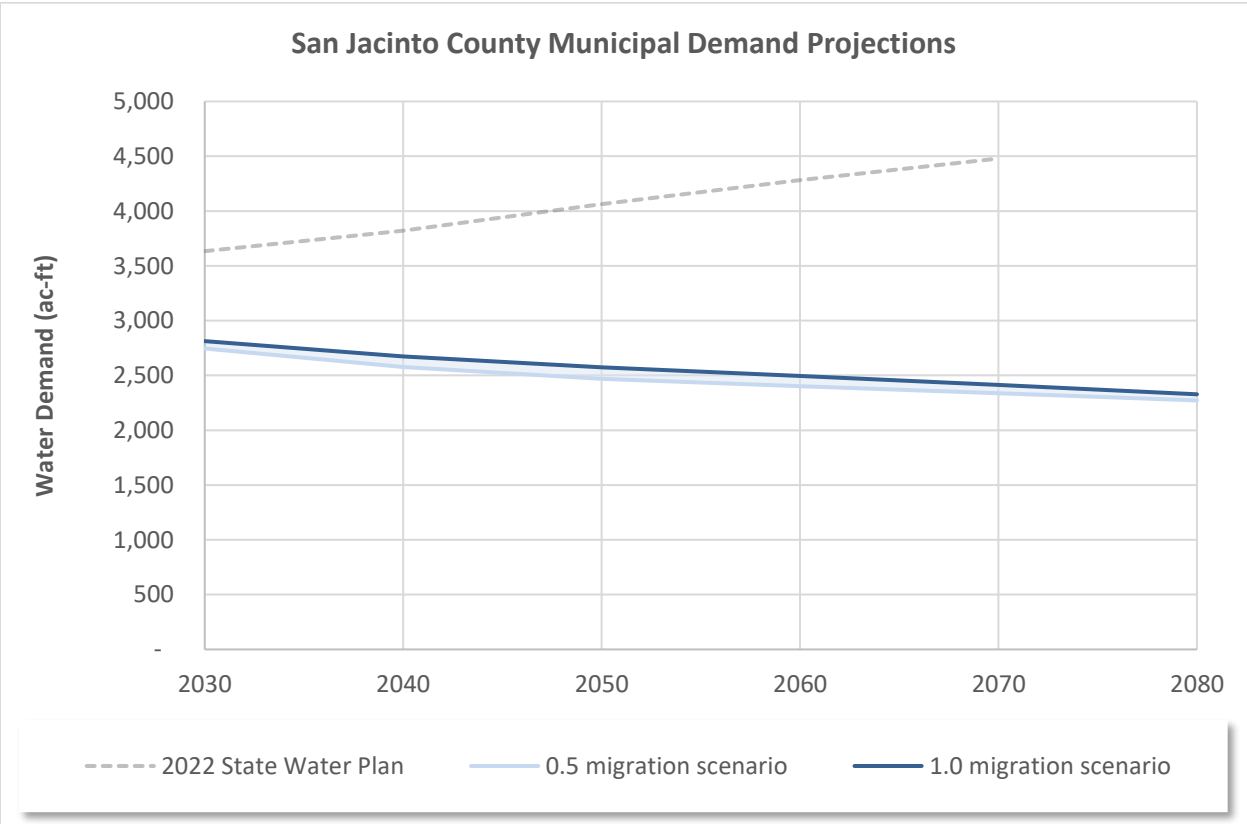


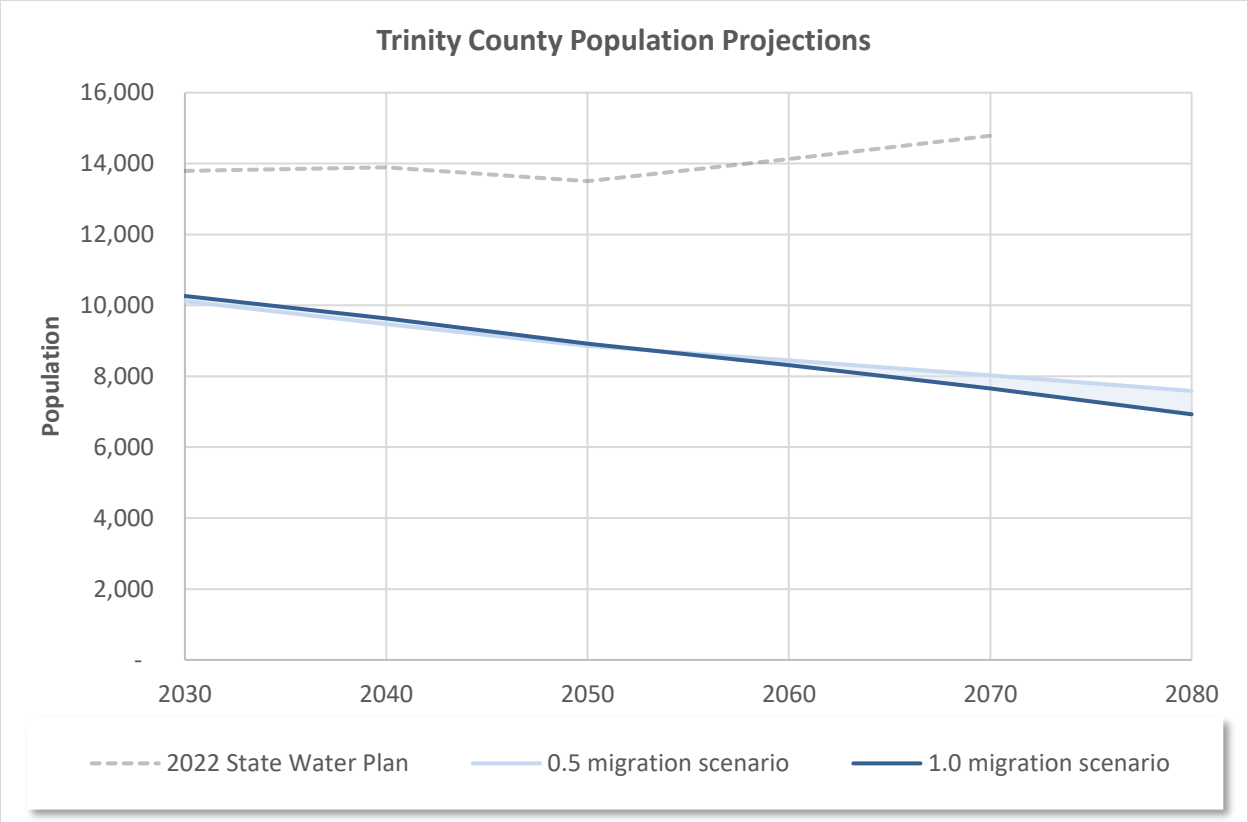
REGION H Water Planning Group

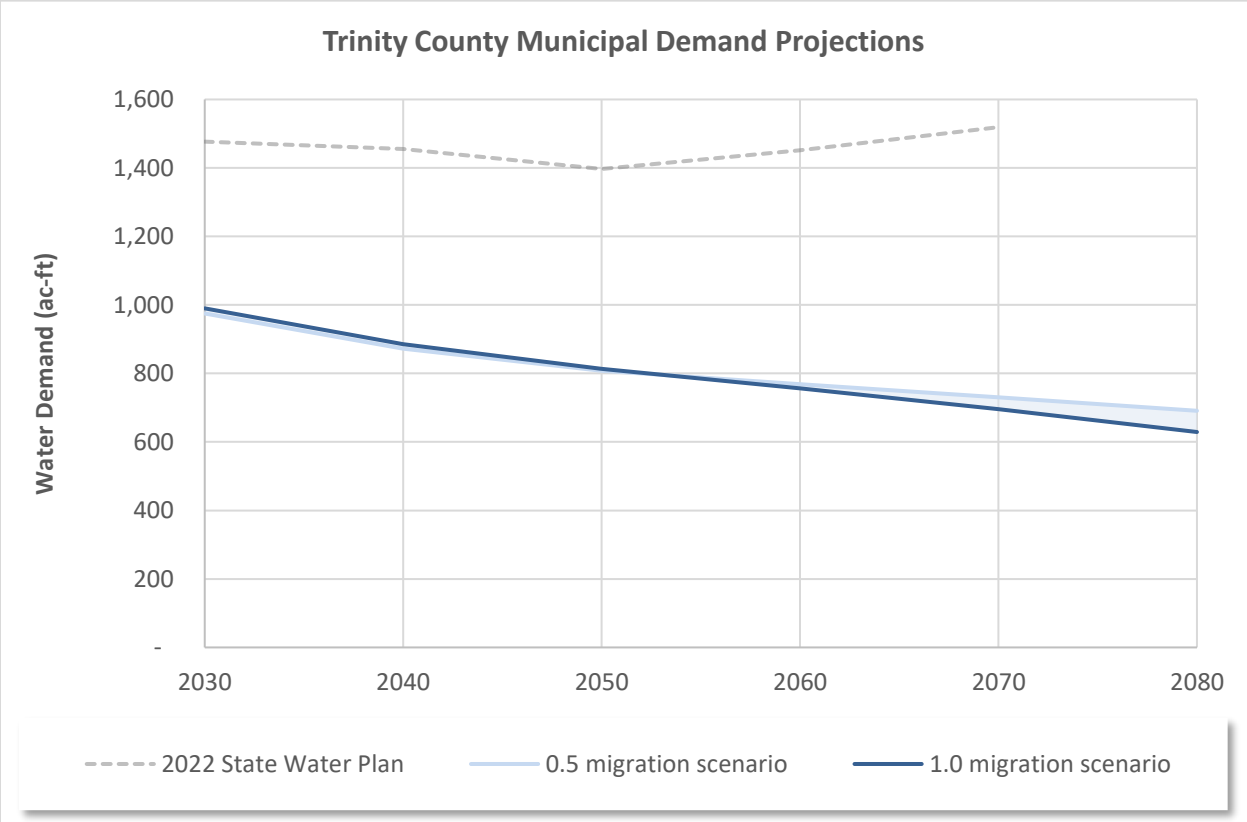

Polk County Population Projections
70,000
60,000
50,000
40,000
30,000
20,000
10,000
-
Population
2030
2040
2050
2060
2070
2080
2022 State Water Plan
0.5 migration scenario
1.0 migration scenario

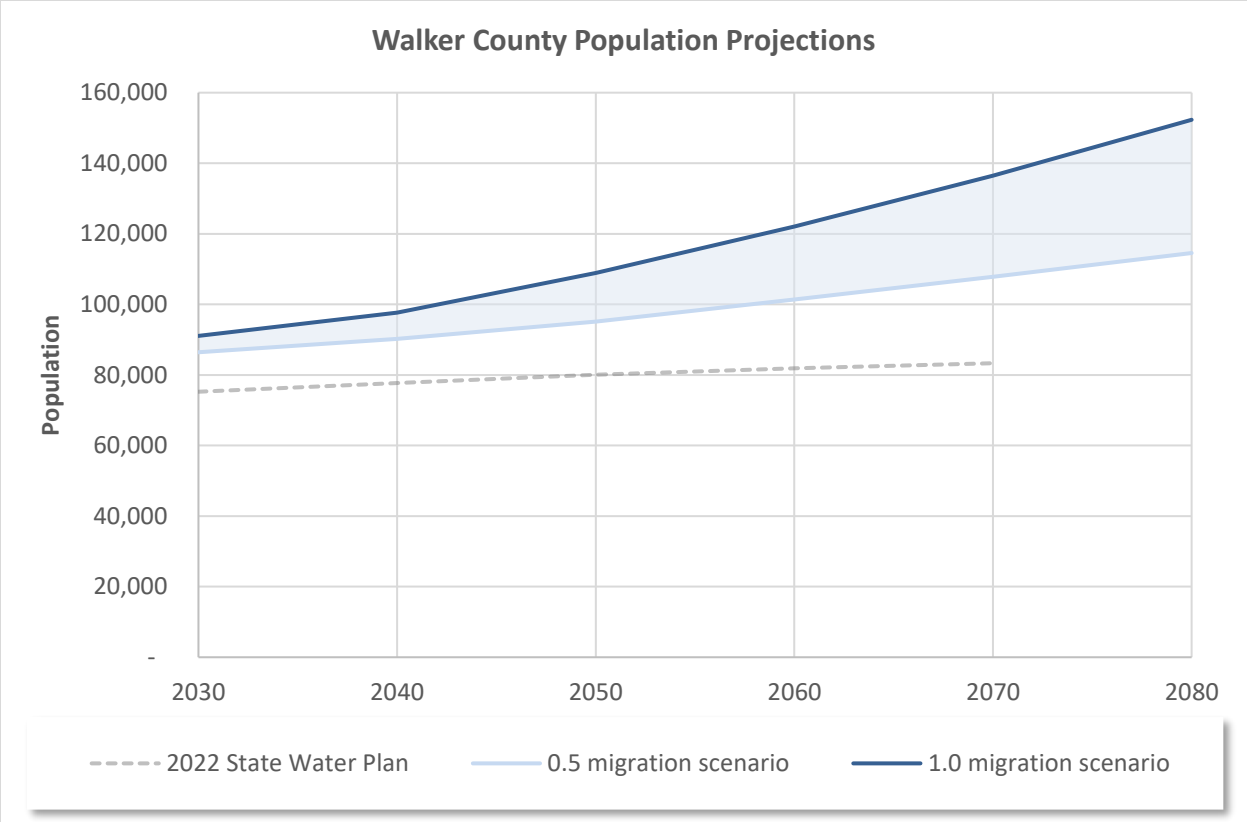

Polk County Municipal Demand Projections
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
-
Water Demand (ac-ft)
2030
2040
2050
2060
2070
2080
2022 State Water Plan
0.5 migration scenario
1.0 migration scenario

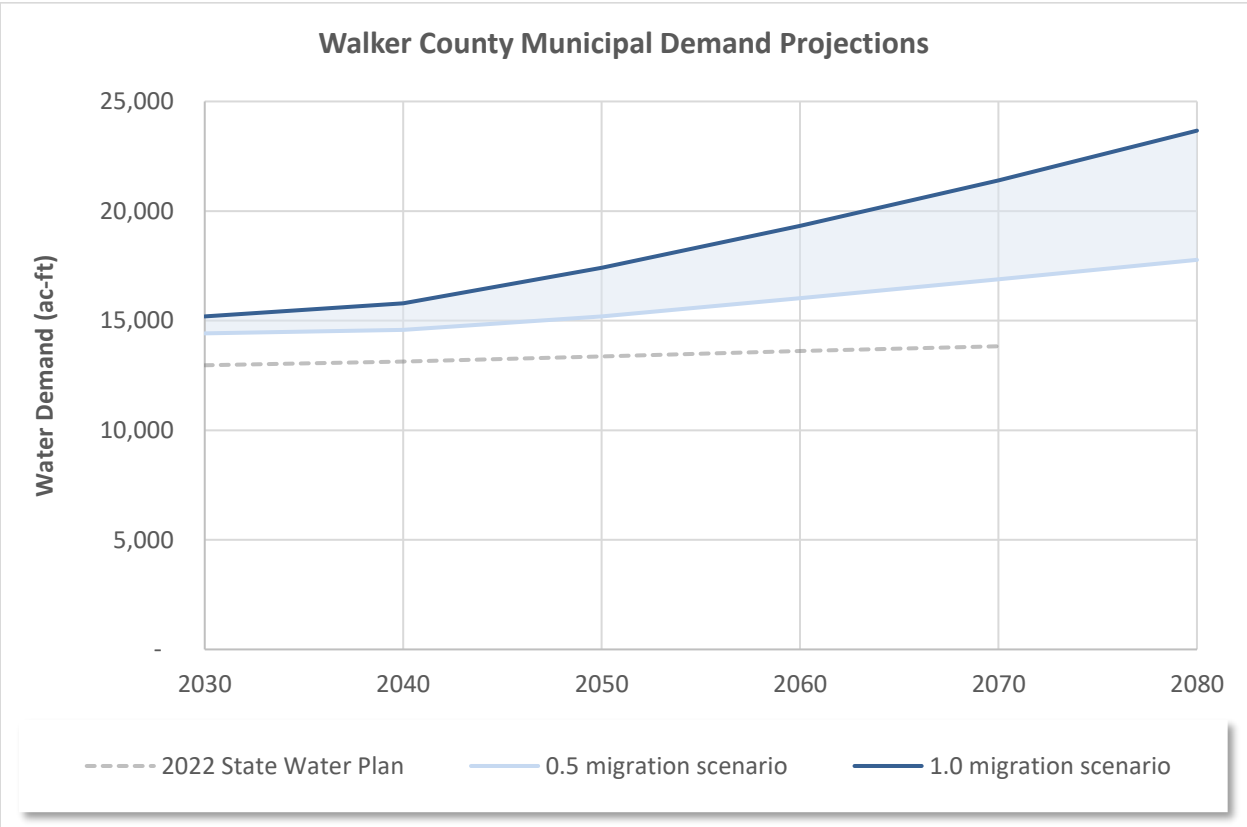

San Jacinto County Population Projections
Population
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
-
2030
2040
2050
2060
2070
2080
2022 State Water Plan
0.5 migration scenario
1.0 migration scenario

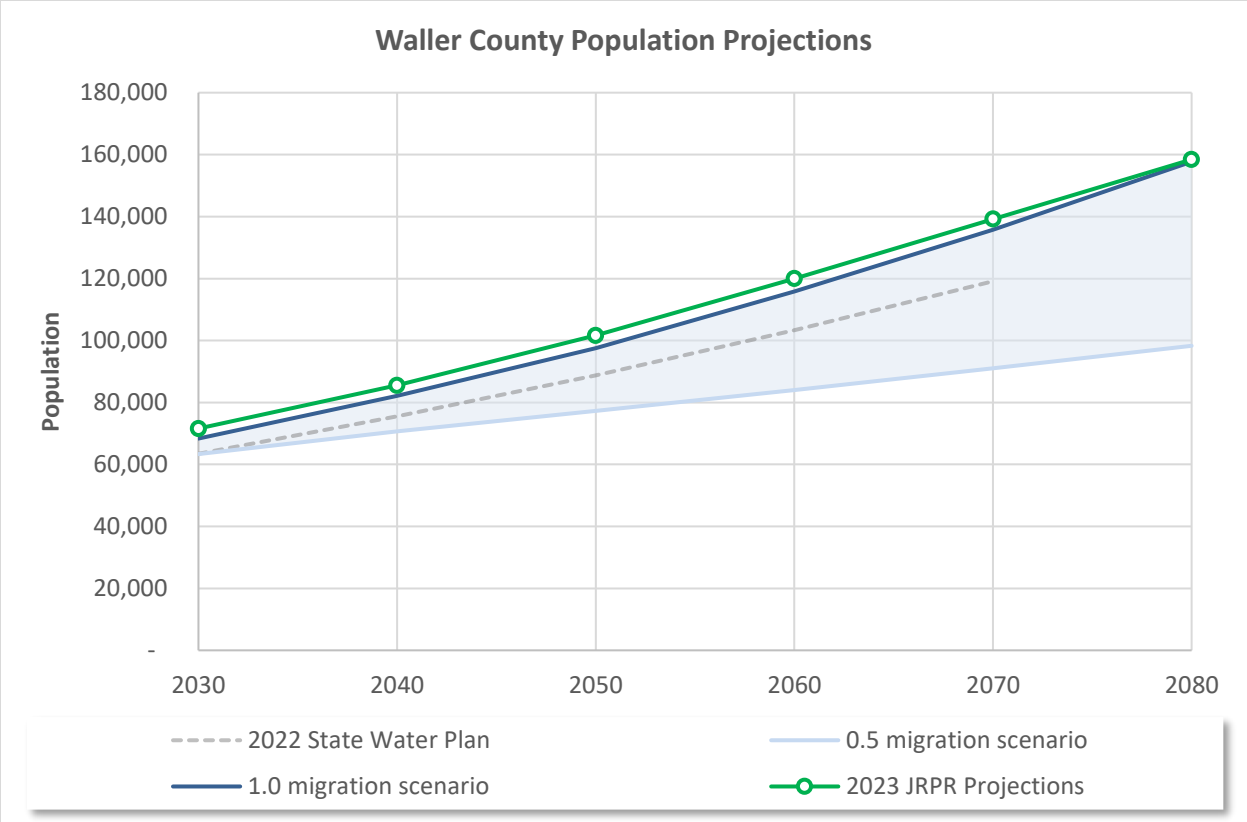

San Jacinto County Municipal Demand Projections
Water Demand (ac-ft)
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
-
2030
2040
2050
2060
2070
2080
2022 State Water Plan
0.5 migration scenario
1.0 migration scenario

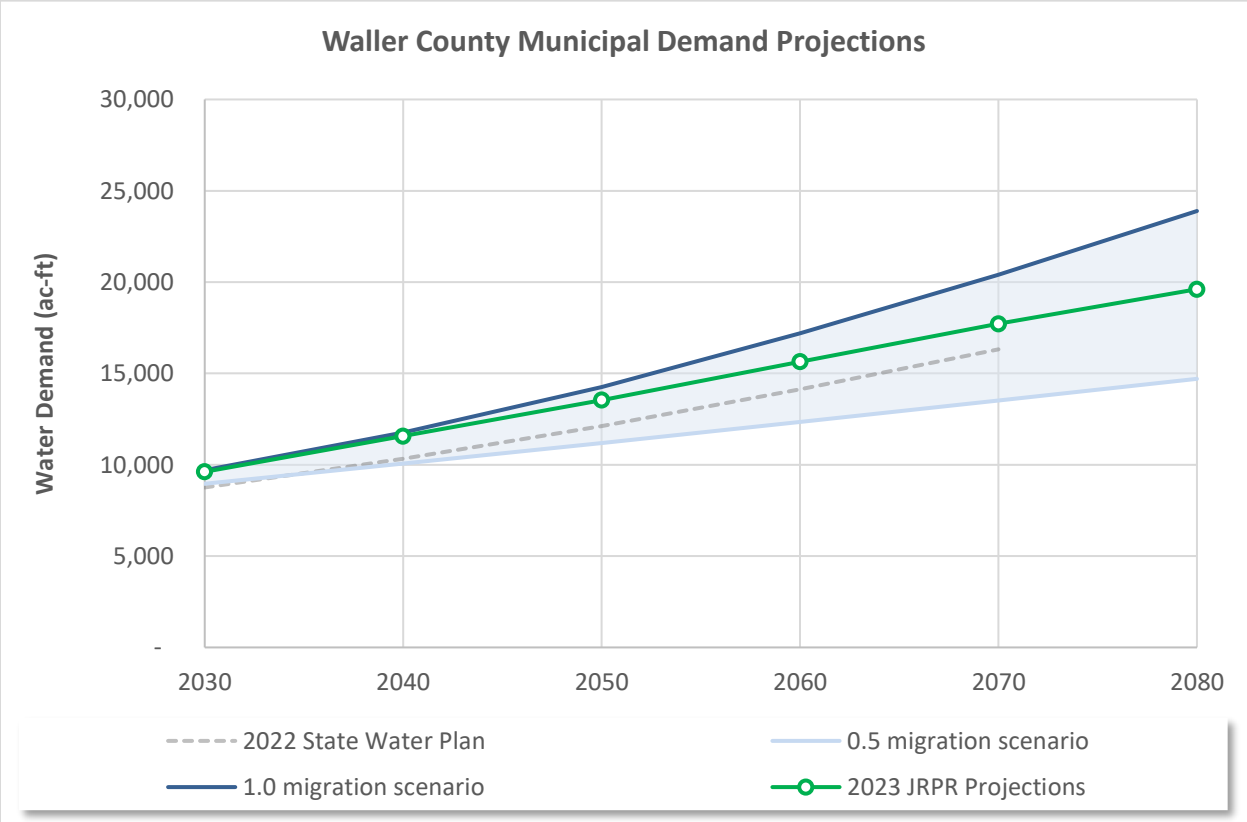

Trinity County Population Projections
Population
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
-
2030
2040
2050
2060
2070
2080
2022 State Water Plan
0.5 migration scenario
1.0 migration scenario


Trinity County Municipal Demand Projections
Water Demand (ac-ft)
1,600
1,400
1,200
1,000
800
600
400
200
-
2030
2040
2050
2060
2070
2080
2022 State Water Plan
0.5 migration scenario
1.0 migration scenario


Walker County Population Projections
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
-
Population
2030
2040
2050
2060
2070
2080
2022 State Water Plan
0.5 migration scenario
1.0 migration scenario


Walker County Municipal Demand Projections
25,000
20,000
15,000
10,000
5,000
-
Water Demand (ac-ft)
2030
2040
2050
2060
2070
2080
2022 State Water Plan
0.5 migration scenario
1.0 migration scenario


Waller County Population Projections
Population
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
-
2030
2040
2050
2060
2070
2080
2022 State Water Plan
0.5 migration scenario
1.0 migration scenario
2023 JRPR Projections


Waller County Municipal Demand Projections
Water Demand (ac-ft)
30,000
25,000
20,000
15,000
10,000
5,000
-
2030
2040
2050
2060
2070
2080
2022 State Water Plan
0.5 migration scenario
1.0 migration scenario
2023 JRPR Projections

Agenda Item 8

Discuss methodology for surveying Water User Groups (WUGs) for input regarding population projections and other data for use in the development of the 2026 Regional Water Plan.

REGION H
Water Planning Group

Agenda Item 8
WUG Survey

- Regular part of planning process
- Gather information from WUGs:
  - Projections
  - Existing supplies and infrastructure
  - Interconnect facilities
  - Future projects
  - Conservation and Drought Contingency
- New and Improved!

Agenda Item 8
WUG Survey

- Finalizing format and content
- Goal to distribute April 2023
  - Survey link
  - Entity-specific data
- ≈370 named WUGs + County-Other
- Coordinating with neighboring Regions on split WUGs

Introduction

Thank you for logging on to the Region H Water Plan Survey. The Region H Planning Group is currently in the process of developing the 2026 Regional Water Plan (RWP). This plan is submitted to TWDB and will be used to compile the 2027 State Water Plan. Accurate representation of your water system in the Plan is essential to the securing of TWDB funding for water supply projects and is also necessary for any water rights applications that may be required as part of future supply strategies.

This survey should take approximately 10 minutes to complete. A response by XXXX XX, 2023 would be appreciated to allow proper representation of your entity's water needs in the 2026 Region H Water Plan. If you have any questions, please contact Philip Taucer at philip.taucer@freese.com or by phone at 713-600-6835.

Please take a moment to review the following guidance before starting the survey:

- If you wish to return to an earlier portion of the survey, use the "Prev" button at the bottom of the page. Please do **NOT** use the "Back" button on your browser. You can navigate back to previous sections at any time as long as you have not yet submitted the completed survey.
- You can close your browser and return to your stopping point later, but to do so without losing your data you **MUST** be on the same computer **AND** allow your browser to store cookies. Each page is only saved after you click "**Next**" at the bottom.

General Information

*** Please enter the name of the entity for which you are completing this survey:**

*** Please enter your preferred contact information below (required items indicated with *).**

Name*	
Representing*	
E-Mail	
Phone Number	

Section 1 – Population and Water Demand

Estimation of future population and water demands is a crucial first step for the planning process. Before completing this section, please review the reference document provided to you with the survey request. If you indicate that you wish to modify the projections for your entity, we will contact you for additional information.

Do you have significant disagreement with and wish to make modifications to the projected population for the water users directly supplied by your entity?

◯ Yes

◯ No

Do you have significant disagreement with and wish to make modifications to the projected water demand for your direct retail service area?

◯ Yes

◯ No

Section 2 – Water Supply and Infrastructure

This portion of the survey includes questions regarding your entity's water supply sources and infrastructure. Based on your responses, we may contact you for additional information.

What water supplies does your system own and/or operate? Please select all that apply.

- [ ] We own or operate groundwater wells
- [ ] We have surface water rights
- [ ] We have a reclaimed water (reuse) system
- [ ] Not sure

If you know the production capacity of your system, please specify below. Include units (mgd, gpm, etc.).

Does your entity have existing agreements to purchase water from other entities or to sell water on a wholesale basis to other systems? Please select all that apply.

- [ ] We purchase water supply from others
- [ ] We sell water to systems outside our retail service area
- [ ] Not sure
- [ ] Other (please specify)

Does your entity have existing emergency interconnect facilities either to supply your entity or provide emergency supply to another user?

- ◯ Yes
- ◯ No
- ◯ Not sure

Section 3 – Projects for the Future

In the Regional Planning process, projects are activities with non-zero capital cost that would develop, deliver, treat, or conserve water for an entity. Before answering the questions in this section, please review the reference document provided to you with the survey request for information on any projects that were recommended for your entity in the 2021 Region H Water Plan. Based on your responses, we may contact you for additional information.

Do you agree with the recommended projects listed for your entity in the 2021 Regional Water Plan?

- ◯ Yes
- ◯ No
- ◯ N/A - no listed projects

If "No", please specify which projects.

Are any of the listed projects already implemented or in the process of being implemented (permitting, design, or construction)?

- ◯ Yes
- ◯ No
- ◯ Not sure
- ◯ N/A - no listed projects

If "Yes", please specify which projects.

Have there been significant changes to timeline or size of any recommended projects?

- ◯ Yes
- ◯ No
- ◯ Not sure
- ◯ N/A - no listed projects

If "Yes", please specify which projects.

At this time, are there any other future projects that you would like the Planning Group to consider for recommendation in the Region H Water Plan? If "Yes", we will contact you for more information.

- ◯ Yes
- ◯ No

Section 4 – Promoting Efficient Water Use

An understanding of local water conservation and drought response practices is a key component of the regional planning process.

Does your entity have a Water Conservation Plan or Drought Contingency Plan? Please select all that apply.

- [ ] We have a Water Conservation Plan
- [ ] We have a Drought Contingency Plan
- [ ] Not sure

If you have a Water Conservation Plan or Drought Contingency Plan, please upload using the button below. If the files are larger than 16 MB, please email to philip.taucer@freese.com.

Choose File Choose File No file chosen

Please click "Done" below to submit your response.

Thank you for your input. Your information will assist in the development of the 2026 Region H Water Plan. If you have any questions related to this survey or the regional planning process, contact Philip Taucer by e-mail at philip.taucer@freese.com or at 713-600-6835. To learn more about Region H and for the latest on upcoming meetings, please visit www.regionhwater.org.

Agenda Item 9

Receive presentation on identification of Major Water Providers for Region H and consider recommendations to the RHWPG.

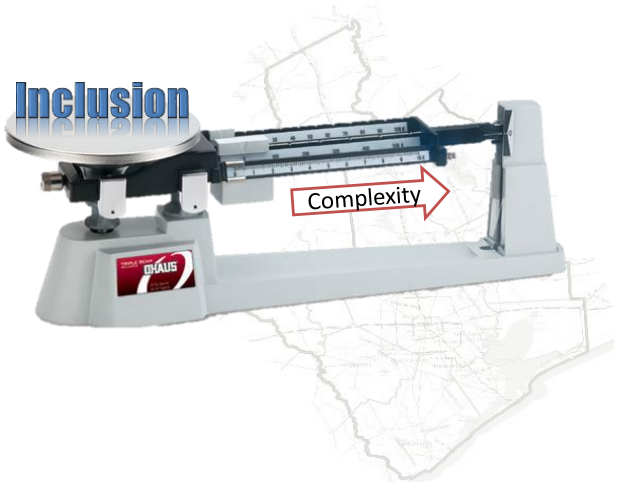
REGION H
Water Planning Group

Agenda Item 9
Major Water Providers

- Key significance to Region's supplies
- Determined by RWPG
- Not necessarily just old MWP list
- Used in select Plan and Database summaries

Agenda Item 9
Major Water Providers

- Supply volume most viable metric
- More than single year sales
- Not just existing contracts
- Legacy MWPs and municipal WUGs
  - 2021 RWP Post-WMS self-supply and transfers
  - Draft Projections
- New municipal WUGs
  - Draft projections
  - Maximum demand
- Look for break points

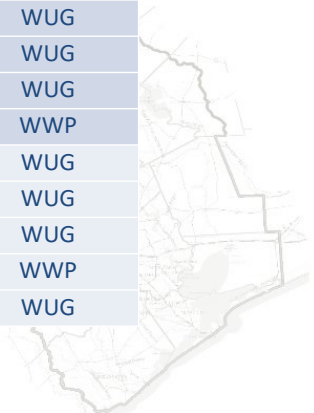


Agenda Item 9
Major Water Providers

Range (ac-ft)	Entity	Type
100,000 (11 MWP)	Houston	WUG
	Gulf Coast Water Authority	WWP
	Trinity River Authority	WWP
	San Jacinto River Authority	WWP
	Dow Inc	WWP
	Brazos River Authority	WWP
	North Harris County Regional Water Authority	WUG
	NRG	WWP
	West Harris County Regional Water Authority	WUG
	North Fort Bend Water Authority	WUG
	Lower Neches Valley Authority	WWP

Agenda Item 9
Major Water Providers

Range (ac-ft)	Entity	Type
40,000 (17 MWP)	Pearland	WUG
	Pasadena	WUG
	Sugar Land	WUG
	League City	WUG
	The Woodlands	WUG
	Chambers-Liberty Counties Navigation District	WWP
30,000 (22 MWP)	Galveston	WUG
	Huntsville	WUG
	Missouri City	WUG
	Brazosport Water Authority	WWP
	Conroe	WUG



Agenda Item 9
Major Water Providers

Range (ac-ft)	Entity	Type
25,000 (24 MWP)	Clear Lake City Water Authority	WUG
	Texas City	WUG
15,000 (30 MWP)	Sienna Plantation	WUG
	Fort Bend County WCID 2	WUG
	Baytown Area Water Authority	WWP
	Quadvest	WUG
	Baytown	WUG
	Friendswood	WUG
10,000 (35 MWP)	North Channel Water Authority	WUG
	Mont Belvieu	WUG
	Central Harris County Regional Water Authority	WUG
	Katy	WUG
	Lake Jackson	WUG