



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

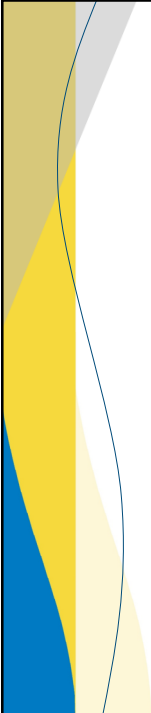
**Regional Water Planning  
Group Meeting**

etexwaterplan.org




April 19, 2023

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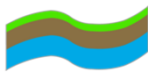


**Agenda Item No. 10**


Report from Consultant Team




**PLUMMER**



**AGS**  
Advanced Groundwater Solutions, LLC



**FREESE  
AND  
NICHOLS**

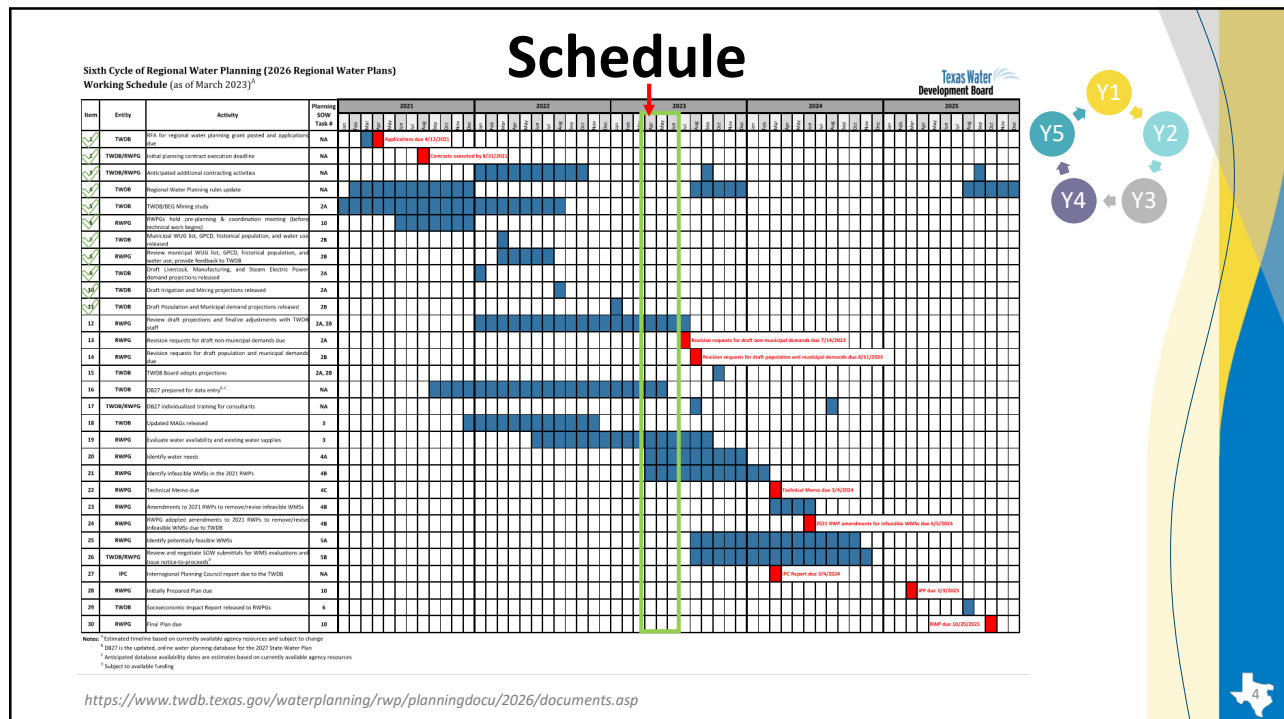


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# Today's Discussion

- Update on Planning Process Schedule
- Summary & discussion of recommended revisions to Draft Non-Municipal Demands
- Update on Draft Municipal Population and Demand Projections

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## 2026 Plan Short-Term Schedule

Date	Schedules Events/Tasks
April 2023	Region I Meeting <ul style="list-style-type: none"> <li>• Summary of draft municipal population and demand projections</li> <li>• Summary of proposed revisions to non-municipal demand and projections</li> <li>• Regional planning update</li> </ul>
June 2023	Region I Meeting <ul style="list-style-type: none"> <li>• Summary of proposed revisions to non-municipal demand and projections</li> <li>• Actions required to approve submittal of non-municipal revision memorandum (due 7/14)</li> <li>• Summary of proposed revisions to municipal population and demand projections</li> <li>• Actions required to approve submittal of municipal revision memorandum (due 8/11)</li> <li>• Summary and discussion on strategies</li> </ul>
?? 2023	Review Draft Projections and finalize adjustments with TWDB staff (non-municipal and municipal)
Oct 2023	TWDB Board adopts projections



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## Regional Water Planning – Next Up

- Update contracts
- Identification of Infeasible Water Management Strategies
- Follow-up on Non-Municipal and Municipal Surveys
- Hold Major Water Provider Meetings
- Review Water Supply Availability & Assumptions



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## Demand Projection Letters

- County Judges
  - Response by 4/10/23
- Water User Groups (WUGs)
  - Response by 4/14/23
- Mail, e-mail, website
- Next Up: Major Water Providers



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## Projection of Future Water Demands

Non-  
Municipal

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

Municipal

- Utilities (2020 Census)
- County-Other (Outside utility boundaries)



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## Non-Municipal Demands

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



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## Considerations

- TAC Section 357.10 (39)
  - Water Demand: “Volume of water required to carry out the anticipated domestic, public, and/or economic activities of a Water User Group during drought conditions.”
- TWDB Exhibit C Guidelines
  - Identify what information is required by TWDB for justification of changes to draft projections.



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## Irrigation

- Draft methodology: Estimate 2030 demand based on 5-year average from 2015-2019. 2030-2080 demand held constant.
  - Similar approach as 2021 East Texas Regional Water Plan (used 2010-2014 period instead for 5-year average)



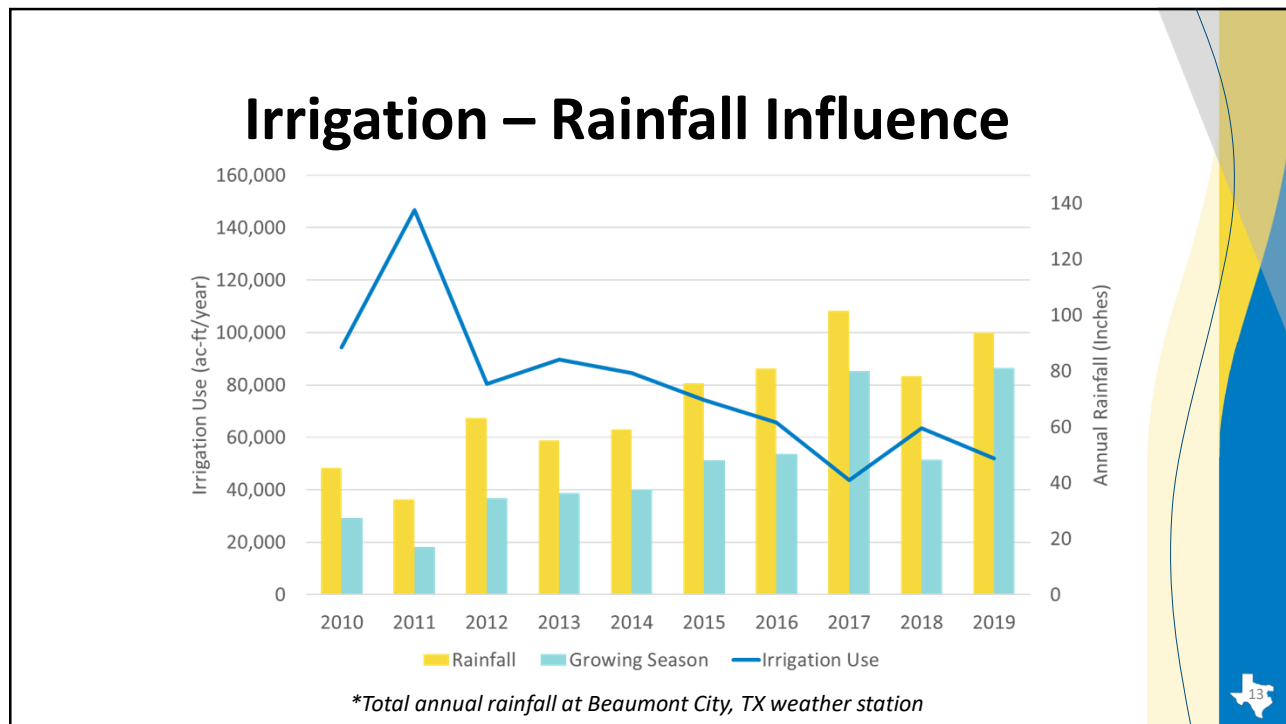
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## Irrigation

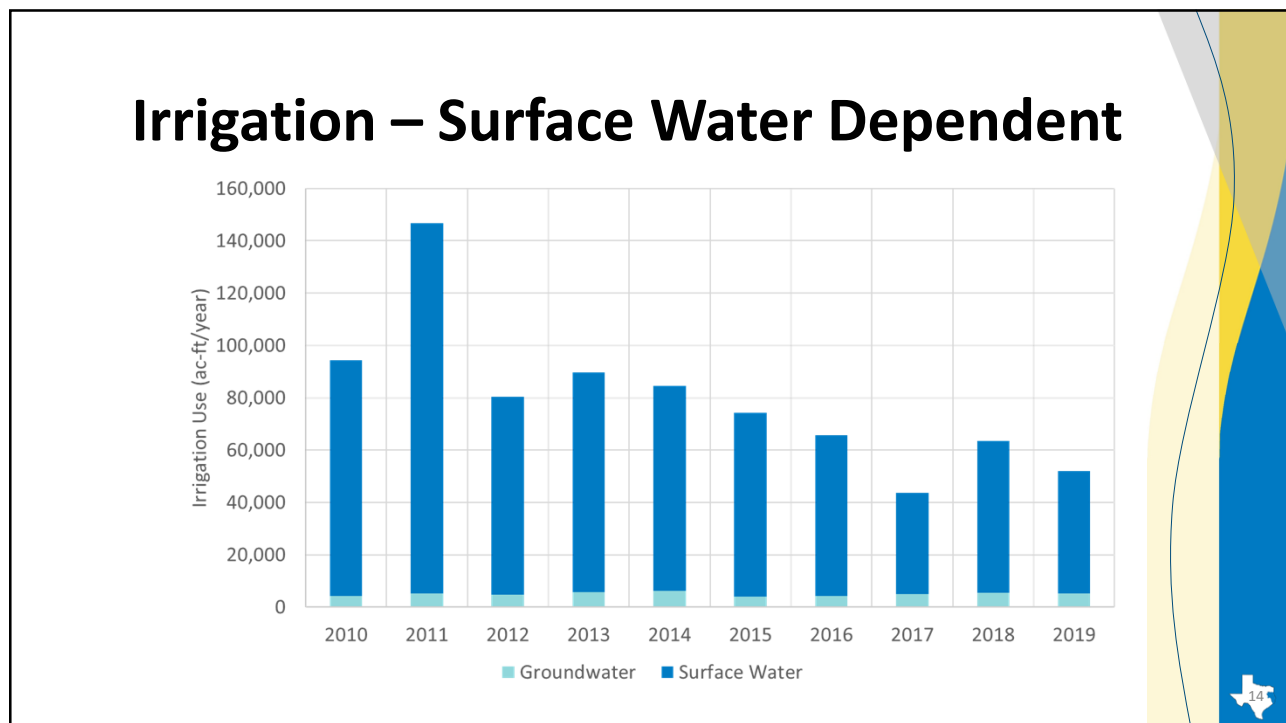
Crops Considered		
COTTON	FORAGE HAY PASTURE	SUGARCANE
SORGHUM	PEANUTS	VEGETABLES
CORN	SOY OIL	OTHER
RICE	VINEYARD	GOLF COURSES
WHEAT	ORCHARD	FAILED
OTHER GRAIN	ALFALFA	COTTON



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## Irrigation

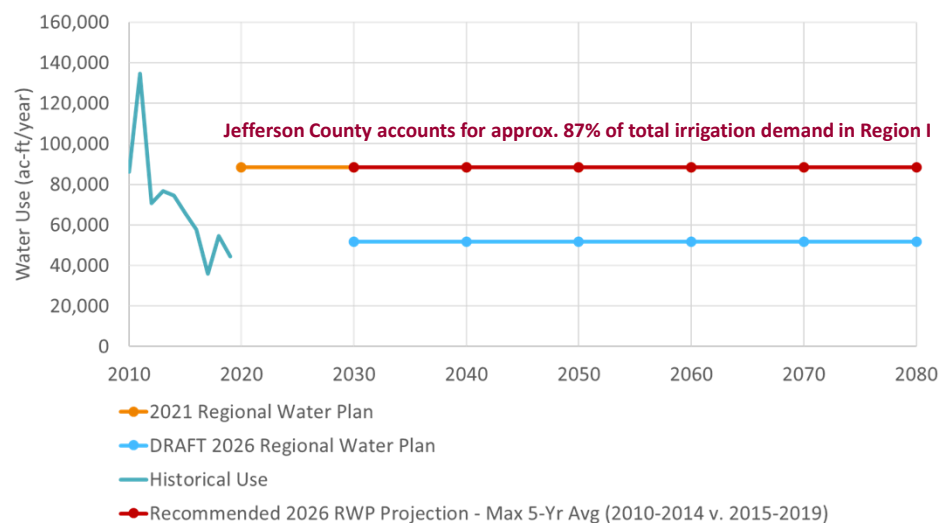
- Recommendation:
  - Apply the higher 5-year average irrigation demand in each county between 2010-2014 v. 2015-2019 periods
    - ✓ 16 counties higher in 2010-2014 period
    - ✓ 4 counties higher in 2015-2019 period



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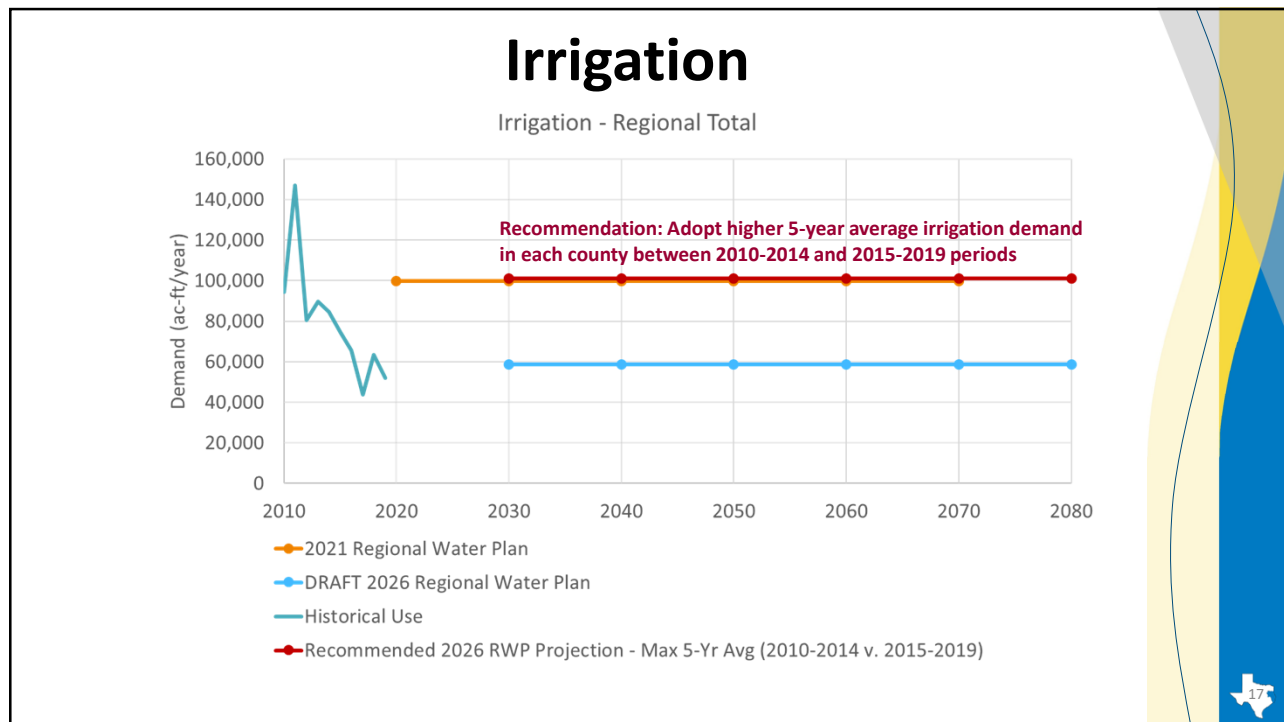
## Irrigation

Irrigation - Jefferson County



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## Livestock

- Draft methodology: Estimate baseline demand based on 5-year average from 2015-2019. Apply same decadal growth rates as 2021 East Texas RWP
  - Similar approach as 2021 RWP (used 2010-2014 period instead for 5-year average)
- Livestock baseline demand changes:
  - Estimates for chickens based on USDA inventory instead of production numbers
  - Updates to the water use geographic splits (2015 forward)
  - Changes in assumed water use for 5 livestock types

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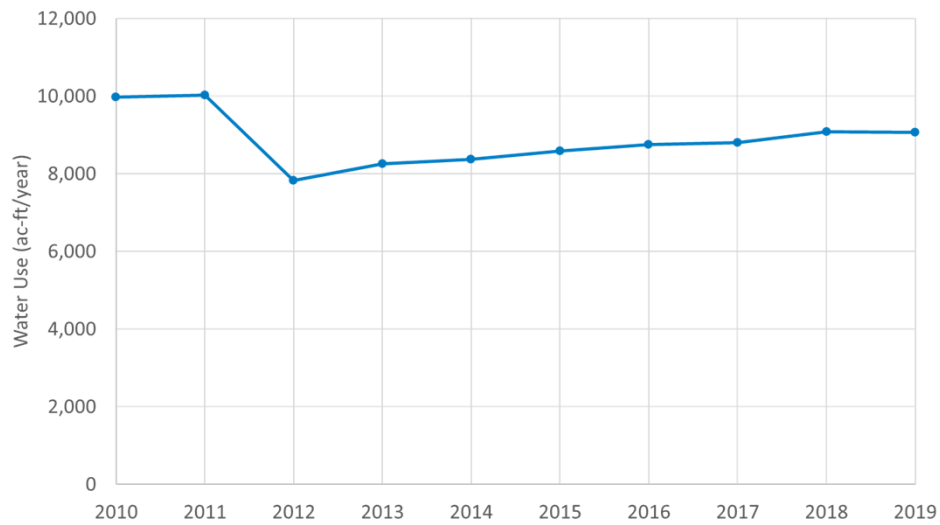
**Updated Water Use Coefficients**  
(constant through planning period)

TWDB Category	USDA Subcategory	2021 RWP water use (gal/head/day)	2026 RWP water use (gal/head/day)
Cattle	Milk	75	55
	Fed & other cattle	15	15
Chickens	Non-broilers	0.086	0.09
	Broilers	0.077	0.09
Turkeys	Turkeys	0.2	0.2
Equine	Horses & ponies	12	12
	Mules, burros, & donkeys		
Hogs	Hogs	11	5
Sheep	Sheep	2	2
Goats	Milk	0.5	2
	Meat		
	Angora		

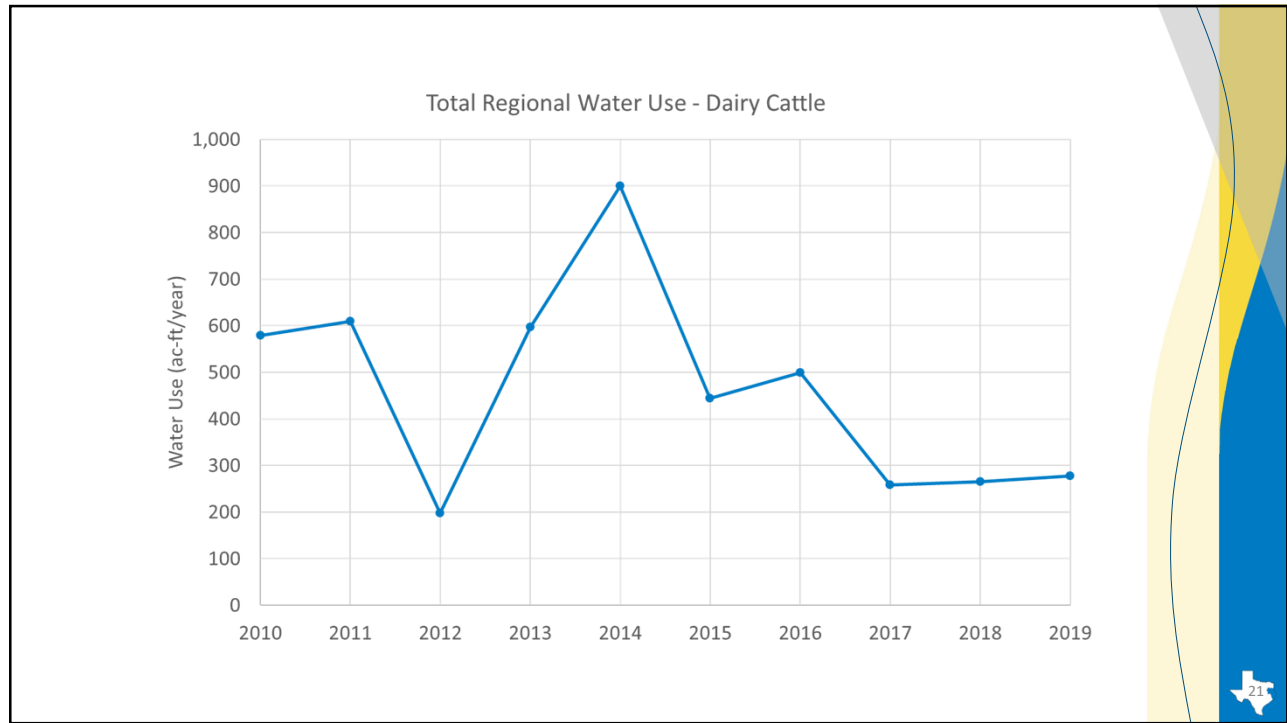


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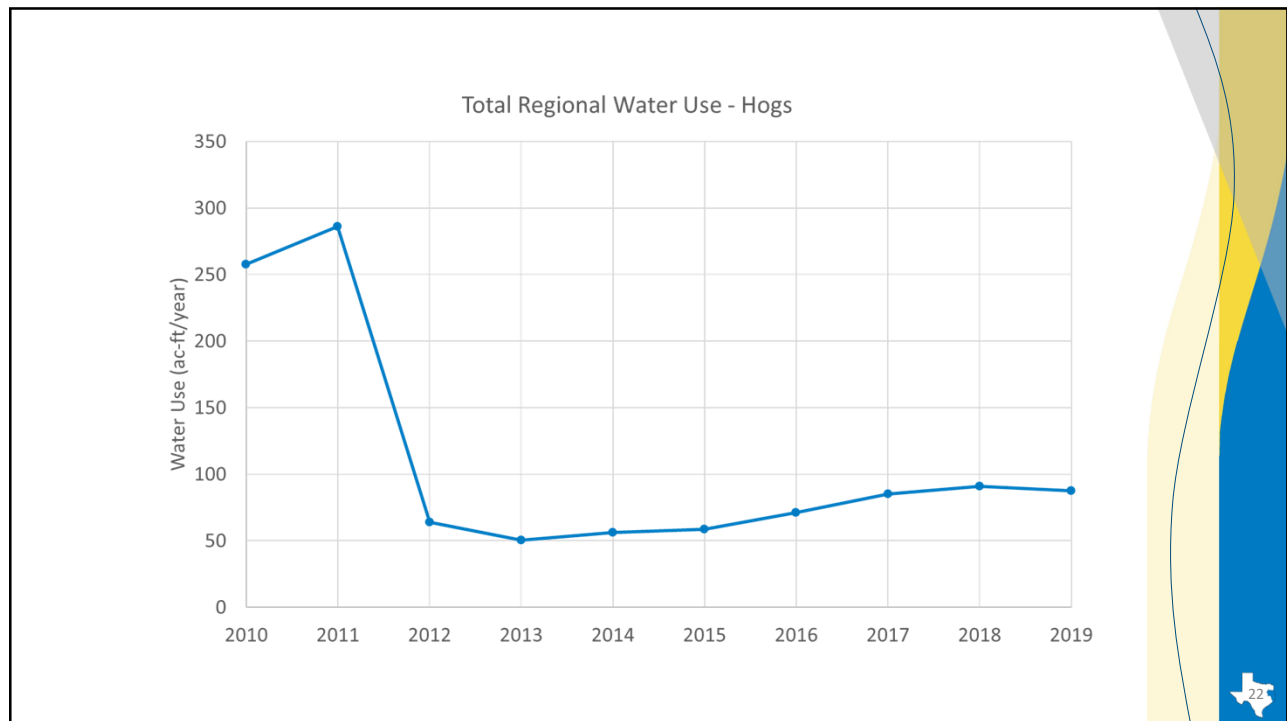
Total Regional Water Use - Fed & Other Cattle



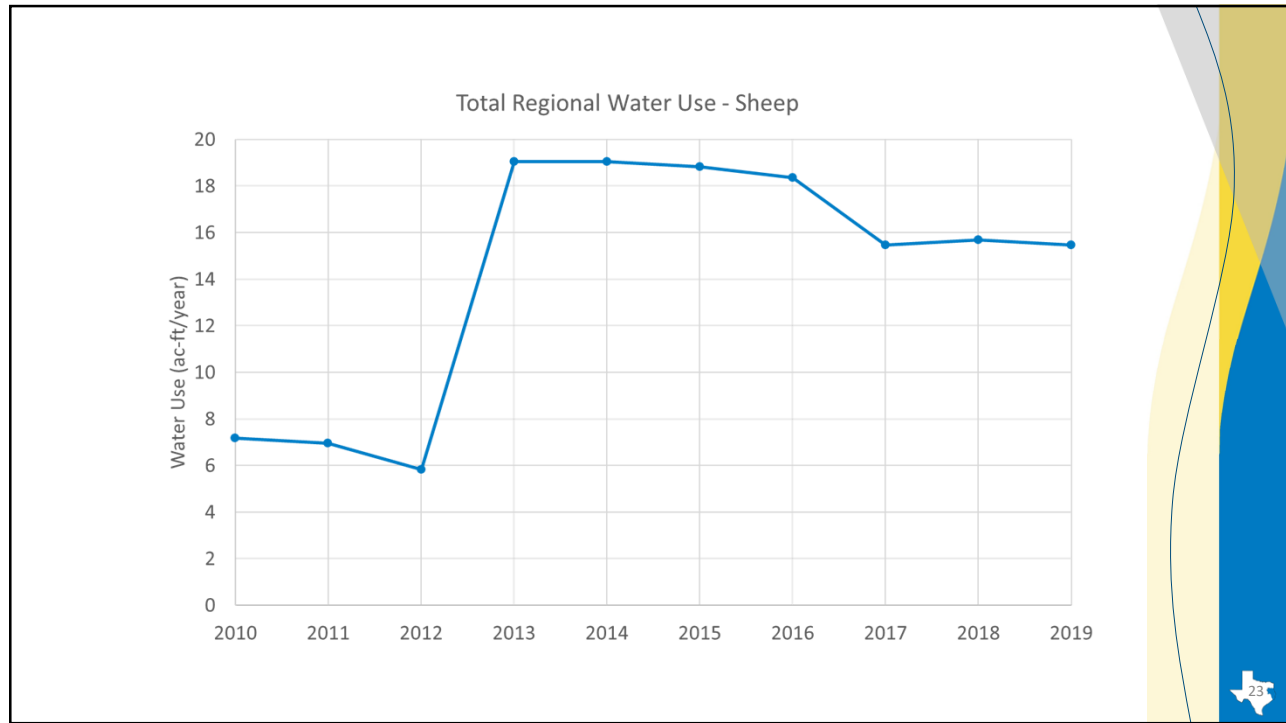
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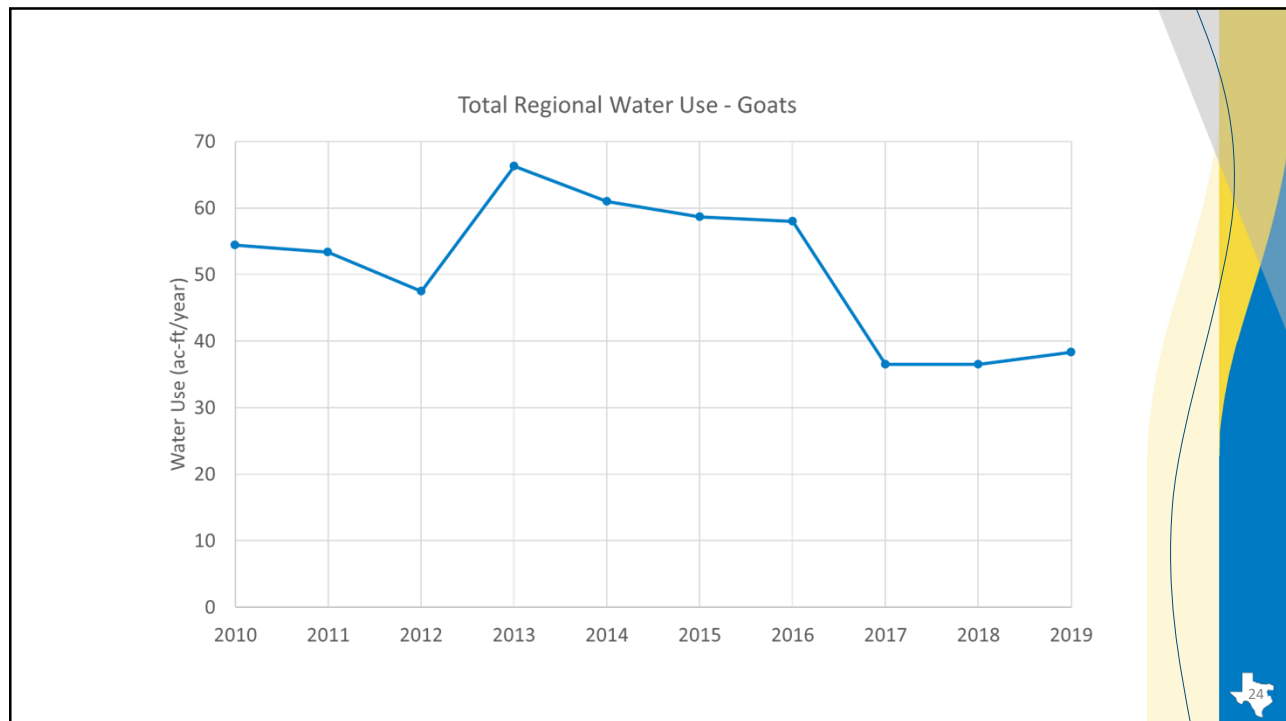
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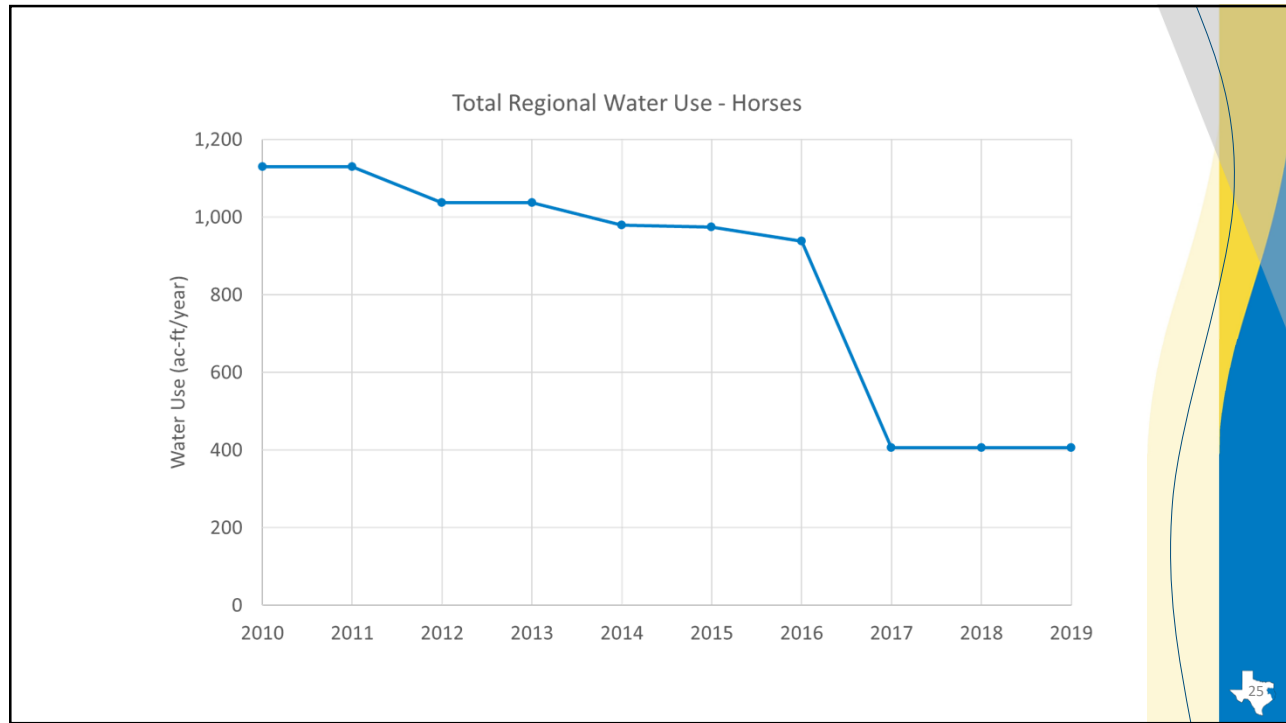
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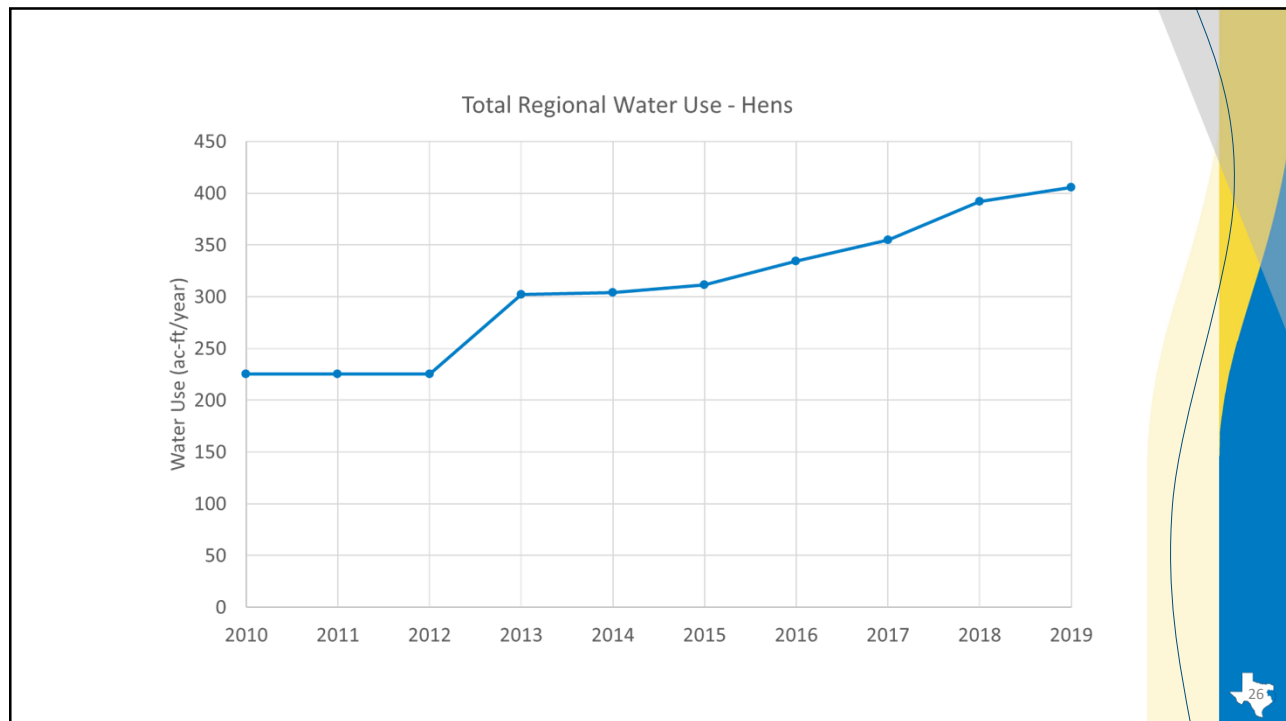
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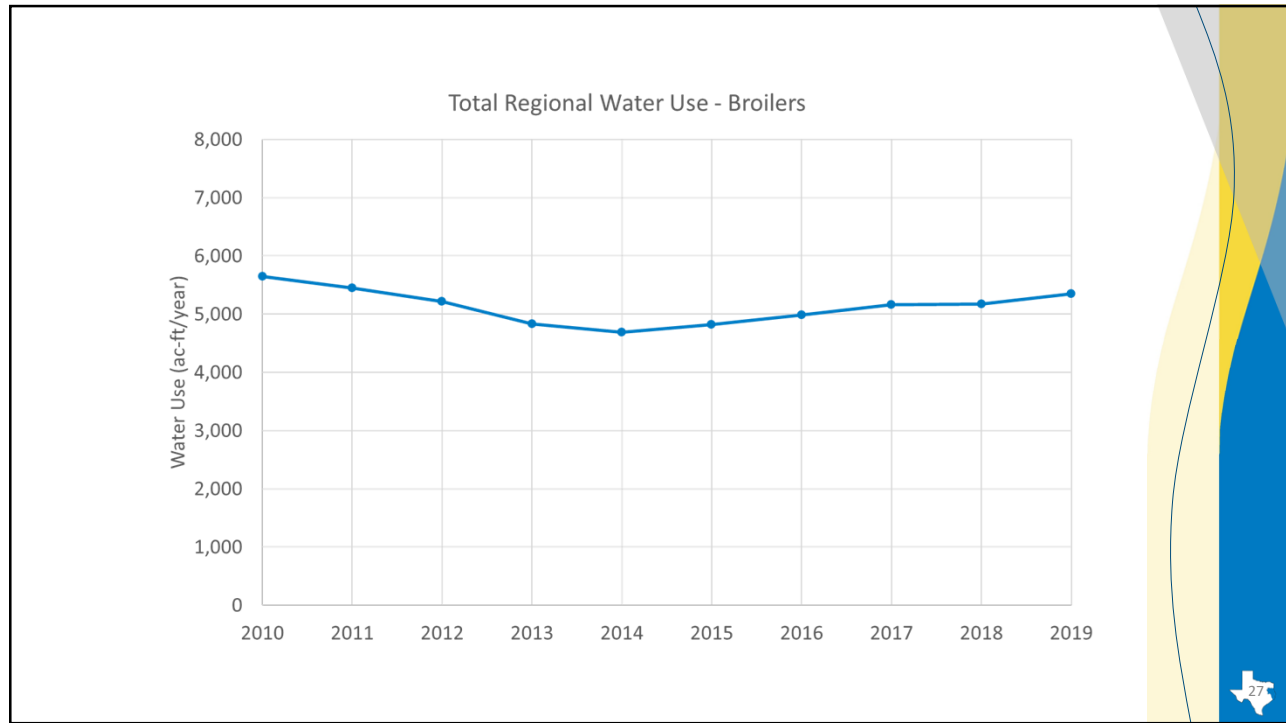
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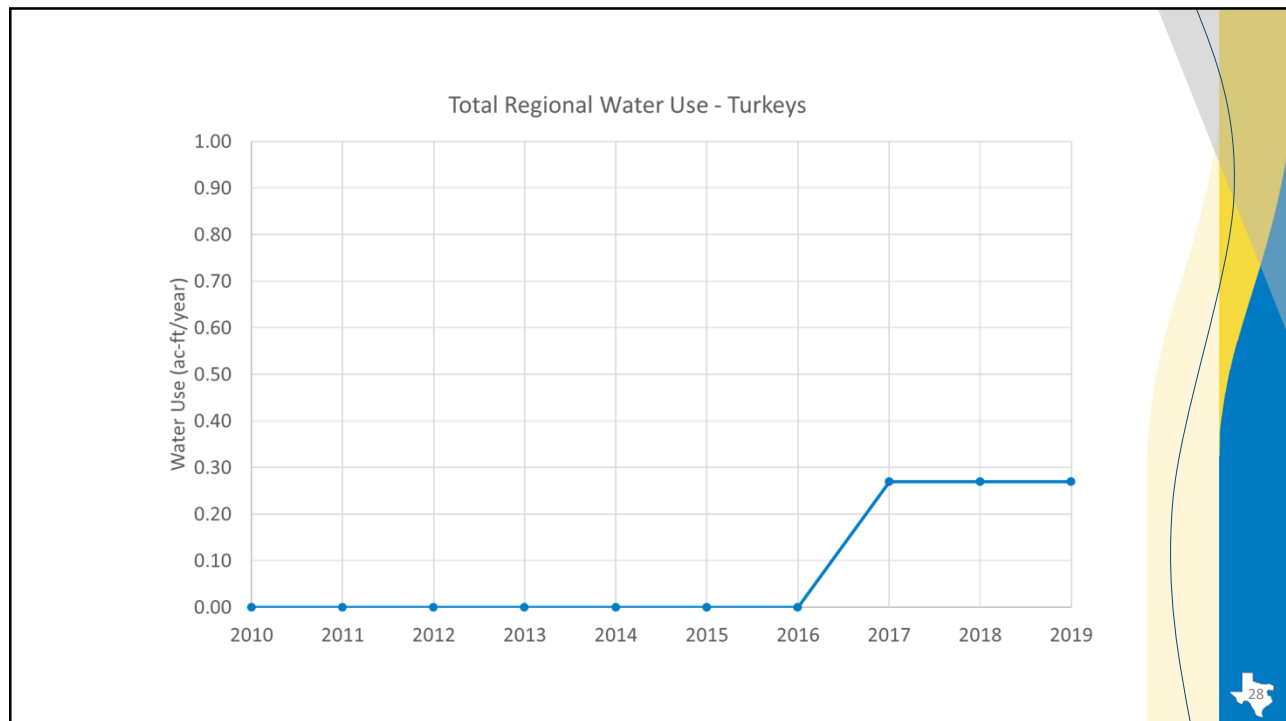
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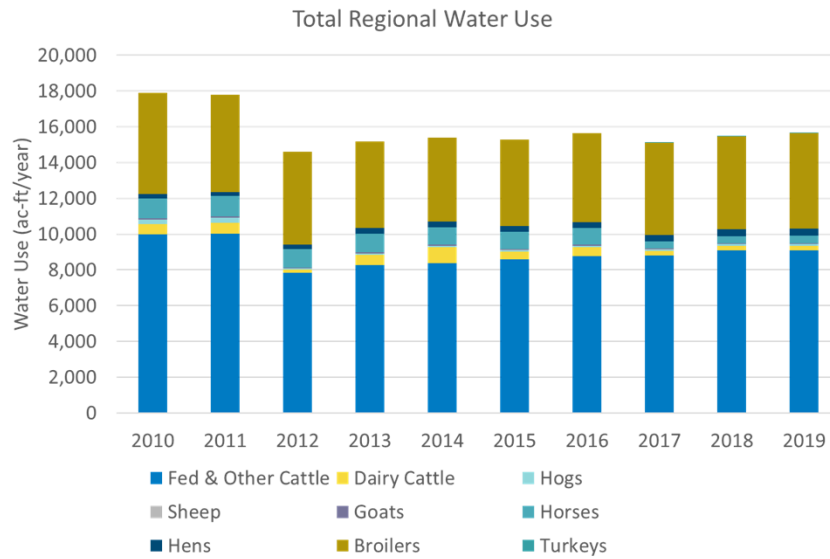


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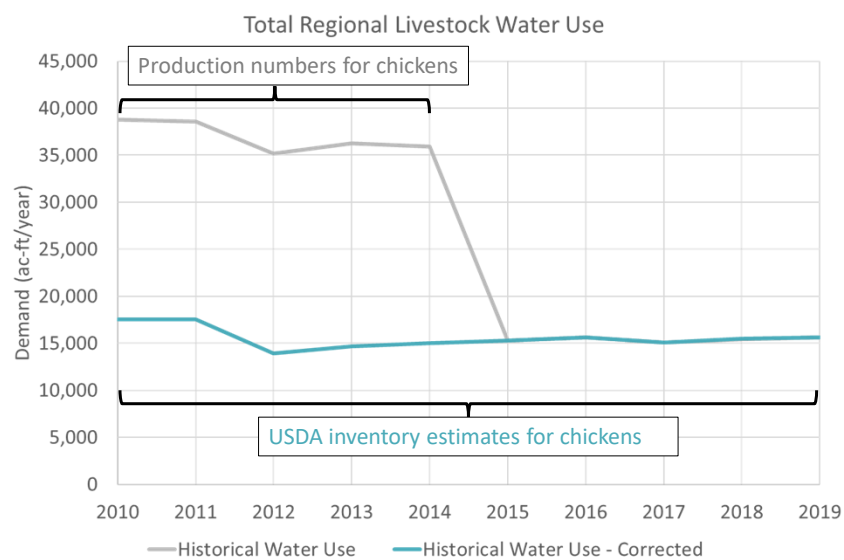
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## Livestock Historical Use – By Type



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## Livestock Historical Use - Corrected



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# Livestock

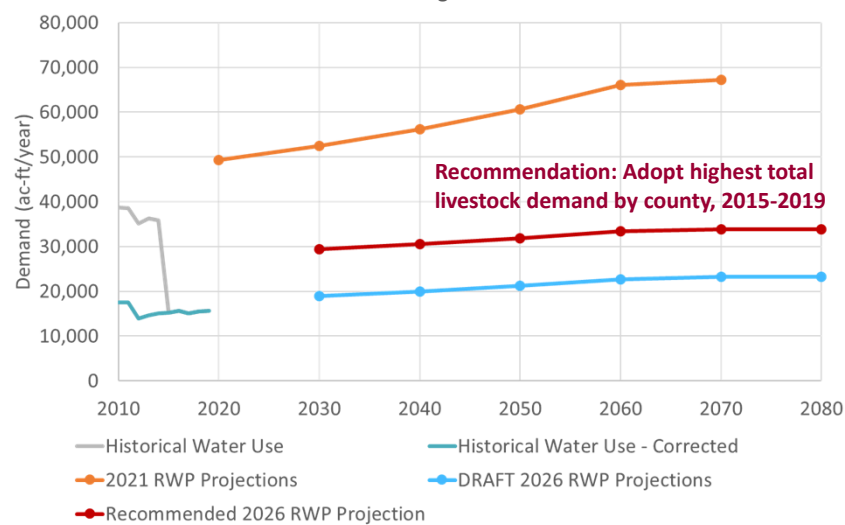
- Recommended methodology
  - Estimate baseline demand based on the maximum livestock use in each county in 2015-2019 period
  - Increase Jasper County demand to 10,000 ac-ft/year
  - Apply same decadal growth rates as 2021 Regional Water Plan



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# Livestock

Livestock – Regional Total



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## Manufacturing

- Draft methodology:
  - Baseline estimated from highest use by county from 2015-2019. Add estimate for unaccounted (missing) water.
  - Baseline to 2030: Growth rate based on statewide trend in manufacturing water use survey from 2010-2019 (0.96%)
  - 2040 to 2080: Growth rate based on statewide County Business Patterns (Census Bureau) growth in historical number of establishments from 2010-2019 (0.37%)



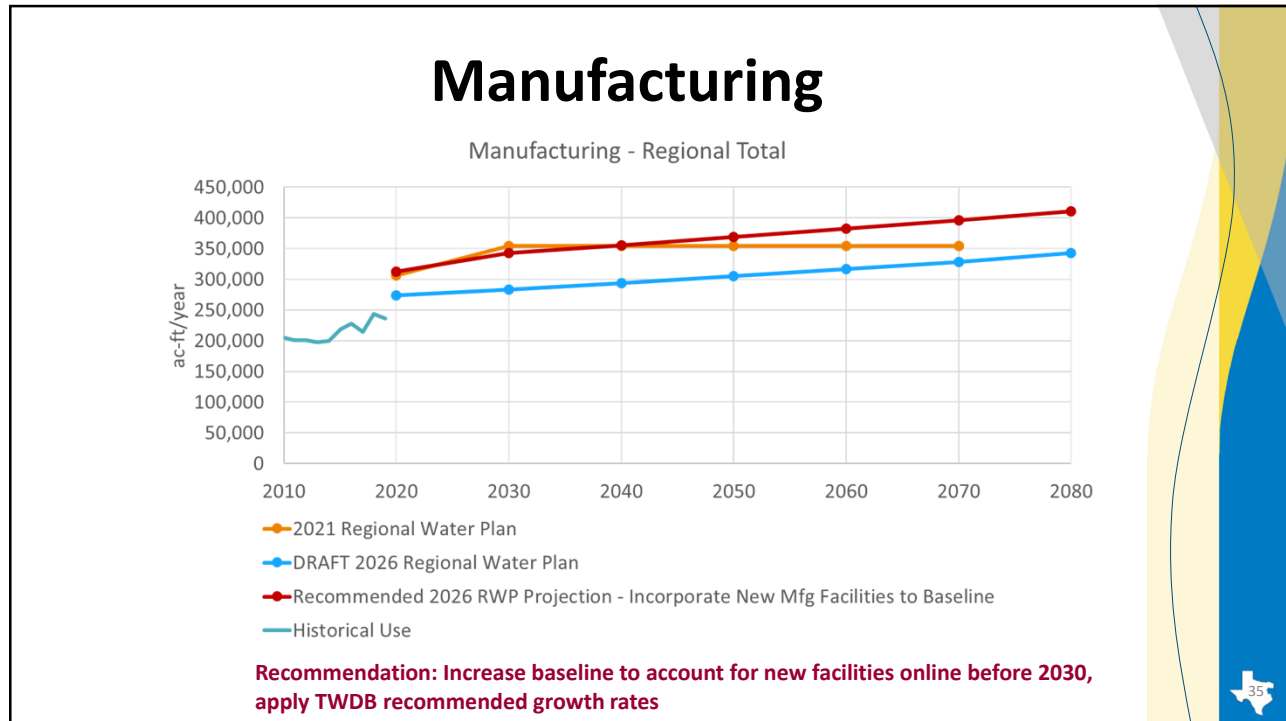
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## Manufacturing – Potential New Facilities

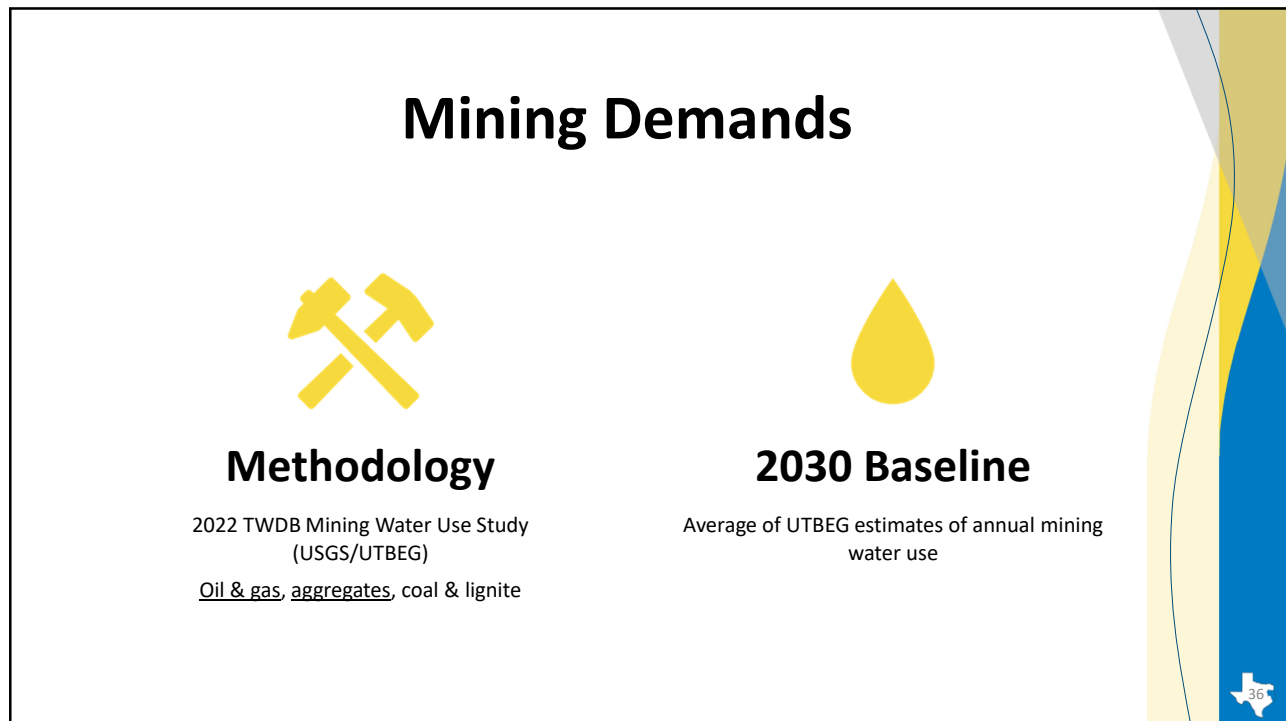
Facility	County	Region	Process Type	NAICS	<b>DRAFT</b> Estimated Water Use (ac-ft/year)
Chevron Philips Chemical and QatarEnergy	Orange	I	Plastics and Rubber Products Manufacturing	326	56,000
USA BioEnergy Bon Wier biorefinery	Newton	I	Chemical Manufacturing	325	5,600
OCI Beaumont	Jefferson	I	Chemical Manufacturing	325	1,622
Franics Innovation Operations	Angelina	I	Plastics and Rubber Products Manufacturing	326	85
Trane Technologies	Smith	I	Machine Manufacturing	333	6
<i>Skeeter Boats</i>	<i>Gregg</i>	<i>D</i>	<i>Transportation Equipment Manufacturing</i>	<i>336</i>	<i>8</i>



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## Mining Demands

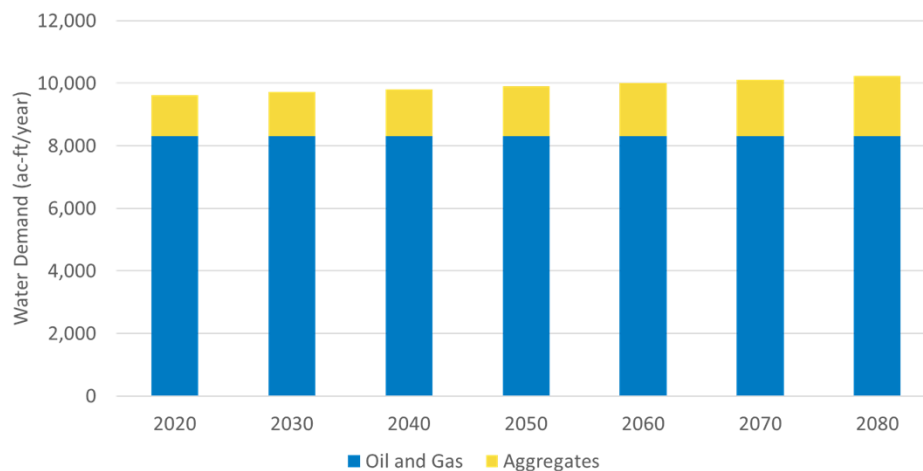
- Oil & gas mining (majority of Region I mining demand)
  - Projected to remain constant
  - Mostly from hydraulic fracturing and produced water in Haynesville Play region
- Aggregate:
  - Increase (~500 ac-ft) through 2080 due to increased demand in aggregate industry products
- Coal:
  - No projected use from coal mining



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## Mining Demands

Mining - Regional Total



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## Mining Demands

- Overall reduction in projected mining demands
  - Observed decreases in reported use
  - Updated BEG estimated for cessation of coal mining
- **Recommendation:**
  - No revisions to 2026 draft projections

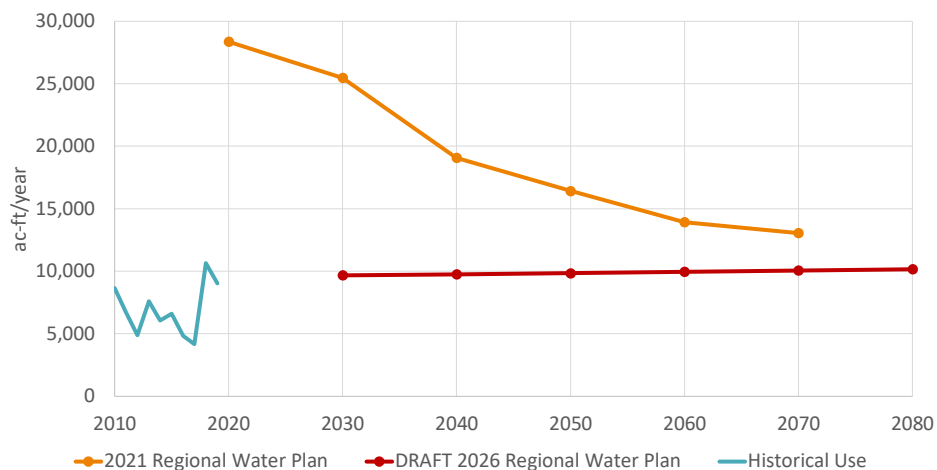


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## Mining Demands

Recommendation: Adopt 2026 TWDB Proposed Demand

Mining - Regional Total



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## Steam Electric Power

- Methodology similar to 2021 RWP
- 2030 Baseline
  - Highest single-year, county-surveyed water use 2015-2019
  - Account for near-term facility additions and retirements
  - Holding constant projected use through 2080
- **Recommendation:**
  - No revisions to 2026 draft projections



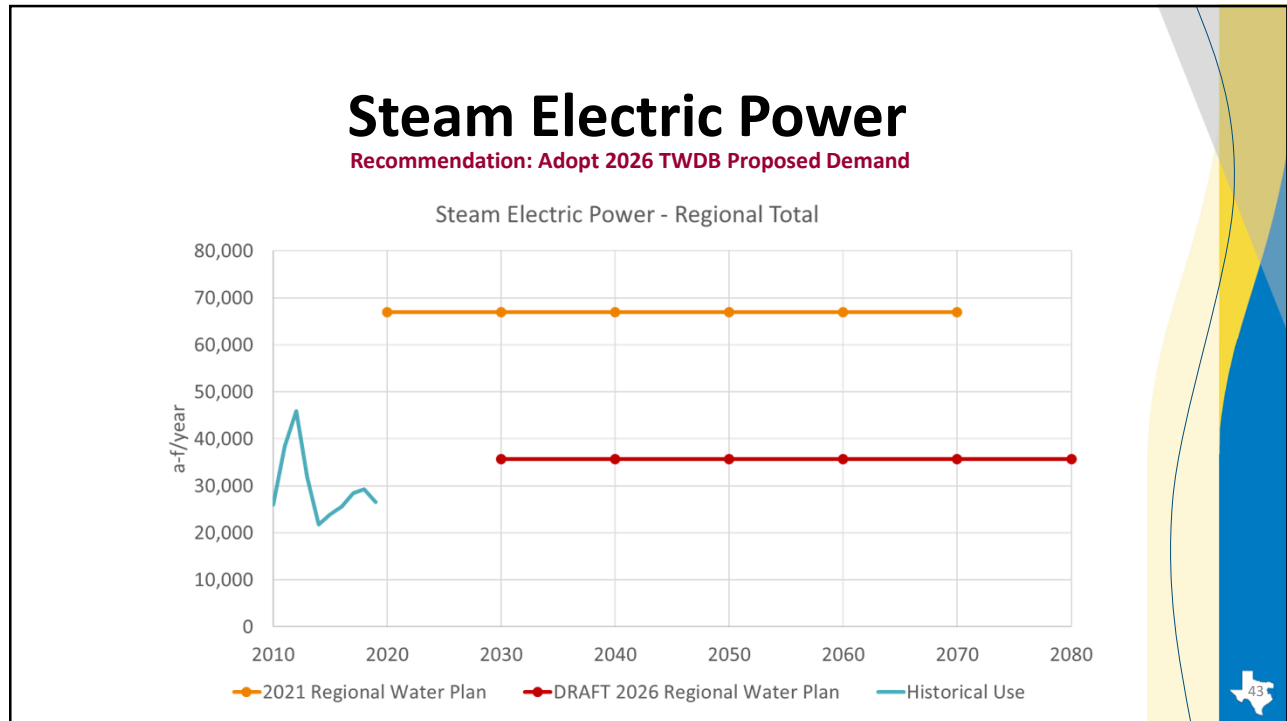
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## Steam Electric Power

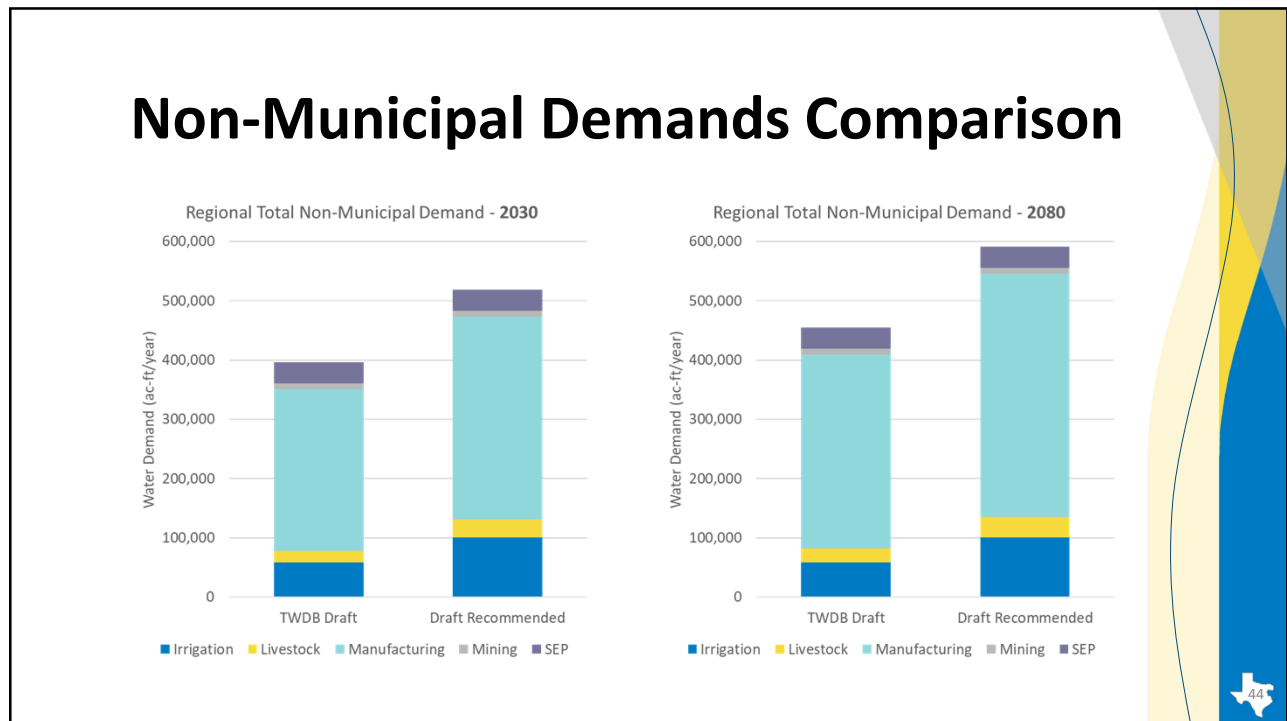
- Retirement/removal of facilities
  - Aspen Power (Angelina County)
  - Port Arthur Steam Energy facility (Jefferson County)
  - Proposed Neches Station Facility (Cherokee County)
- Reduction of historical usage
  - Luminant Energy (Rusk County)



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## Non-Municipal Next Steps

1. Update and finalize draft non-municipal projections
  - Including feedback from major water providers
2. Non-Municipal Projections Technical Memorandum
3. Present and adopt all non-municipal projections recommendations at June RWPG meeting
4. Submit TM & revision requests to TWDB by July 14, 2023 deadline



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## Municipal Demands Update



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## Population Projections

- Based on Texas Demographic Center's county-level projections
  - Cohort component: age/sex/race/ethnicity, birth rates, death rates, migration rates
- Two migration scenarios (2010-2020):
  - Full migration (1.0), half migration (0.5)
- 2030 – 2060
  - Texas Demographic Center (30-year projections)
  - TWDB extends to 50 years

<https://demographics.texas.gov/Data/TPWPP/Projections>



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## Population Projections

- TWDB Methodology
  - New this cycle: If TSC projected a county population decline, the TWDB county population projections will also decline (previously constant)
  - Extended 2070 - 2080
  - Full migration scenario to sub-allocate to WUGs
  - Population projections 2030 - 2080

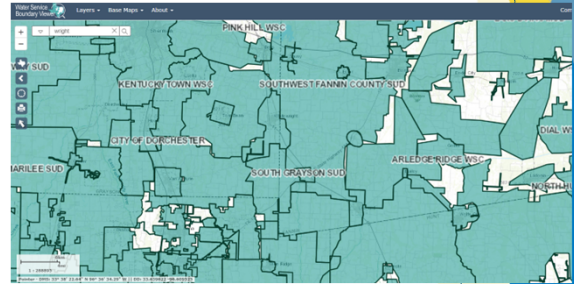


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## Population Projections

- Historical Populations by WUG
  - Permanent resident population
  - Developed 2010 & 2020 population
    - ✓ Census blocks
    - ✓ WUG boundary overlay
  - Reviewed historical population growth rate to develop projections



<https://www3.twdb.texas.gov/apps/WaterServiceBoundaries>



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## Population Projections - WUGs

- Sub-allocate to WUGs
- WUG's historical (2010 – 2020) share of county growth
- WUG's 2020 share of region-county's growth rate/2020 population applied each decade
- Constant: military bases, universities, group quarters
- Buildout: WUGs with buildout in 2021 RWP constant

<https://www3.twdb.texas.gov/apps/WaterServiceBoundaries>



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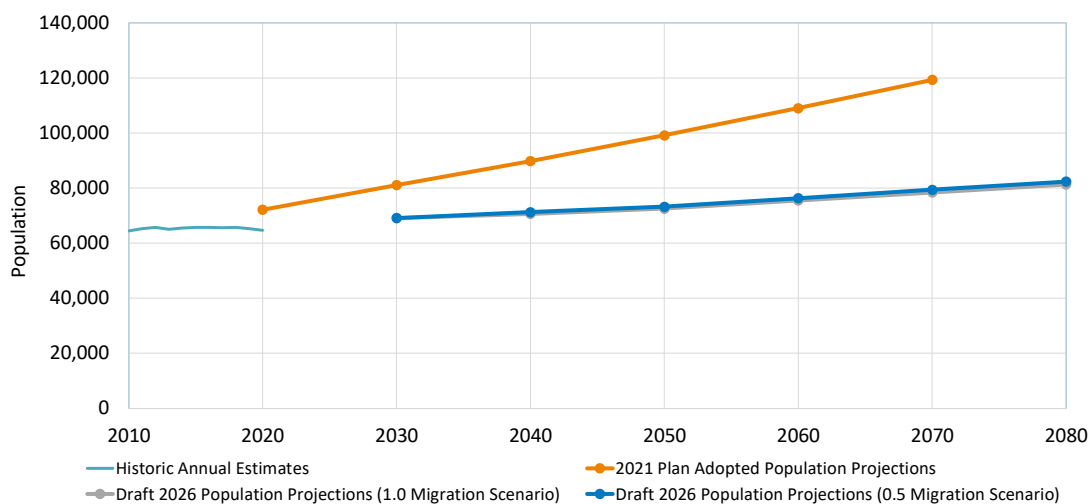
## Population Projections - Scenarios

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

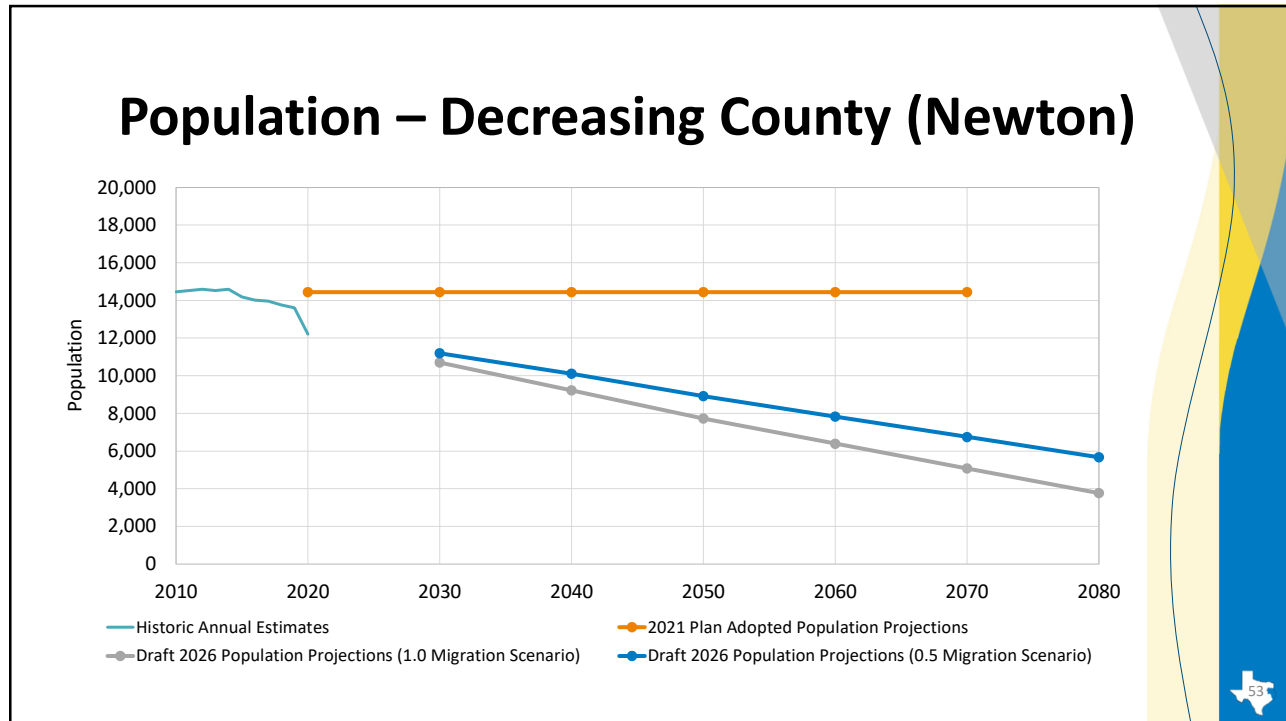


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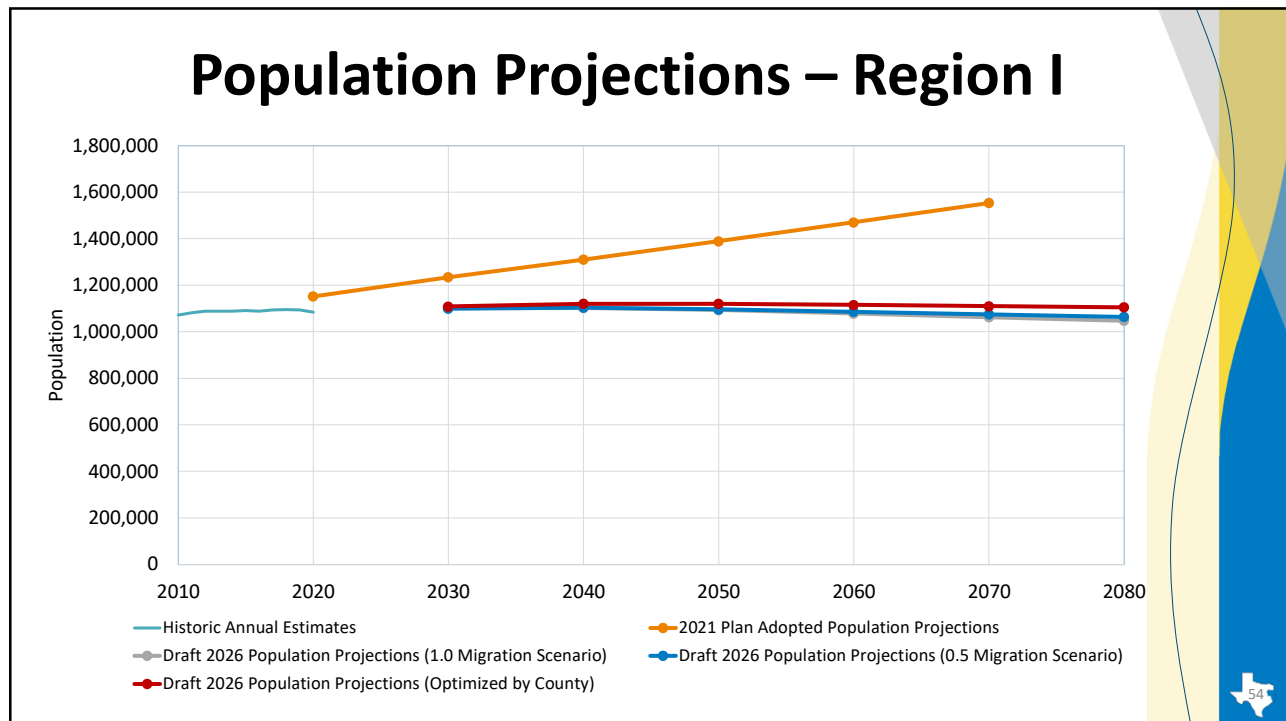
## Population – Increasing County (Nacogdoches)



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## Municipal Demand Projections

- GPCD Usage – gallons per capita daily
- Baseline GPCD → dry-year
- Municipal water use
  - Residential
    - ✓ usage accounts for transient populations
  - Commercial, Institutional, Light Industrial (CII)
    - ✓ Restaurants, hotels, camps



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## Municipal Demand Projections - GPCD

- Baseline GPCD
  - Based on 2021 RWP WUG GPCD
  - Reduced to account for passive savings from historical to projected (2030)
- Accounts for water sources (ground vs. surface)
  - Based on water use surveys



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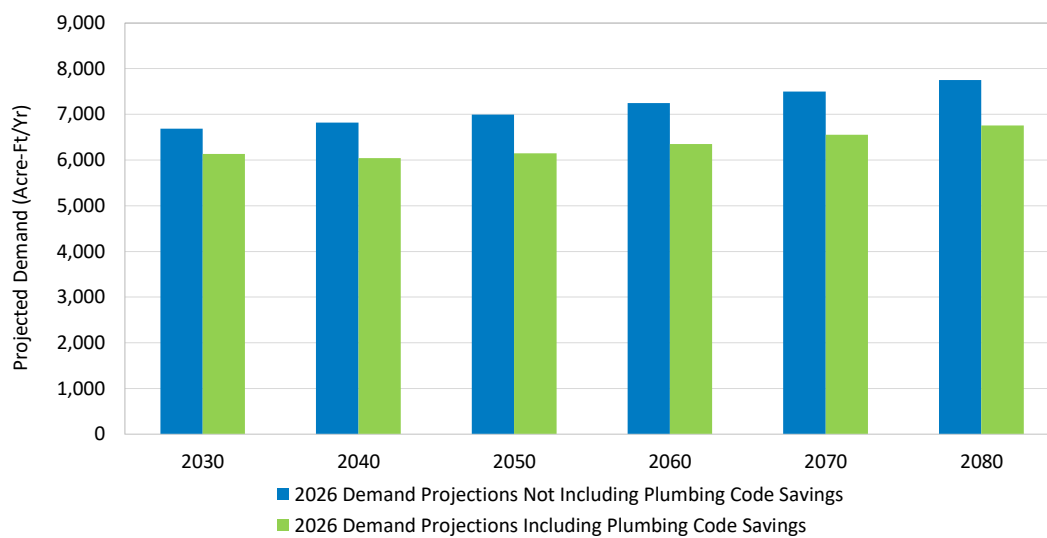
## Municipal Demand Projections - Savings

- Plumbing Code Savings
- Updated this planning cycle
- Residential: Toilets, showerheads, clothes washers
- Commercial: toilet and urinal water efficiency savings



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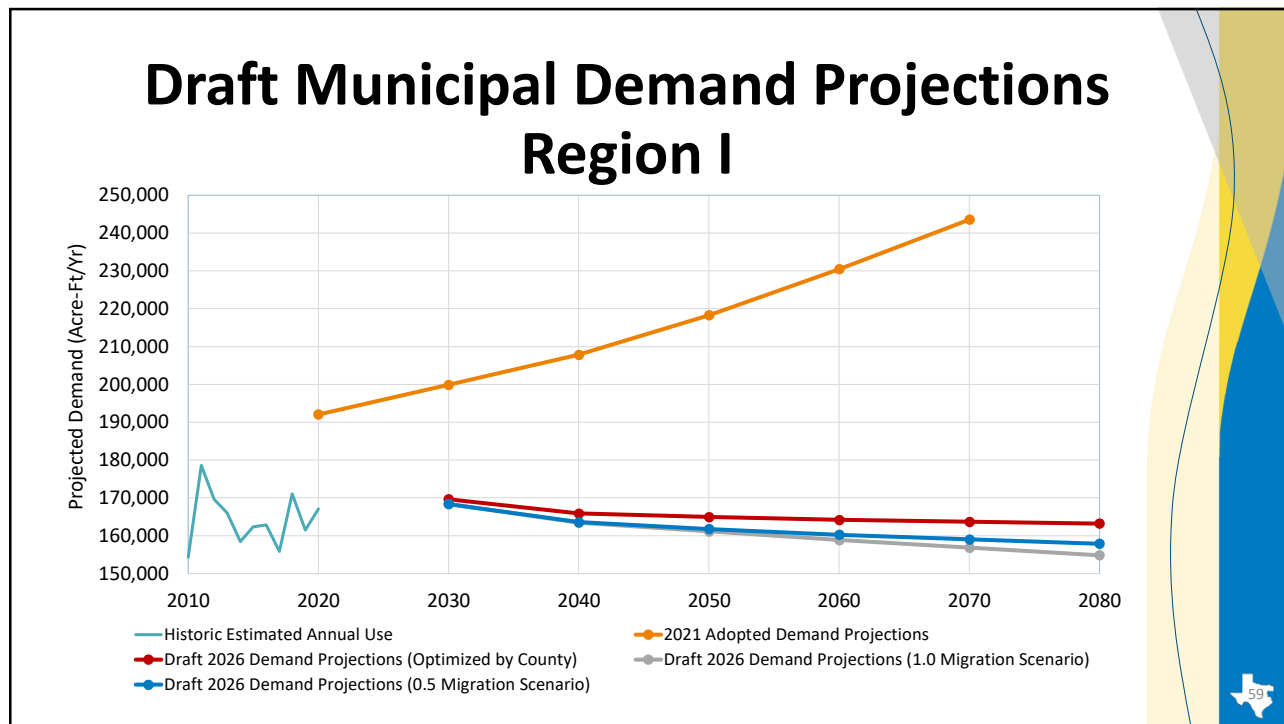
## Municipal Demand Projections - GPCD



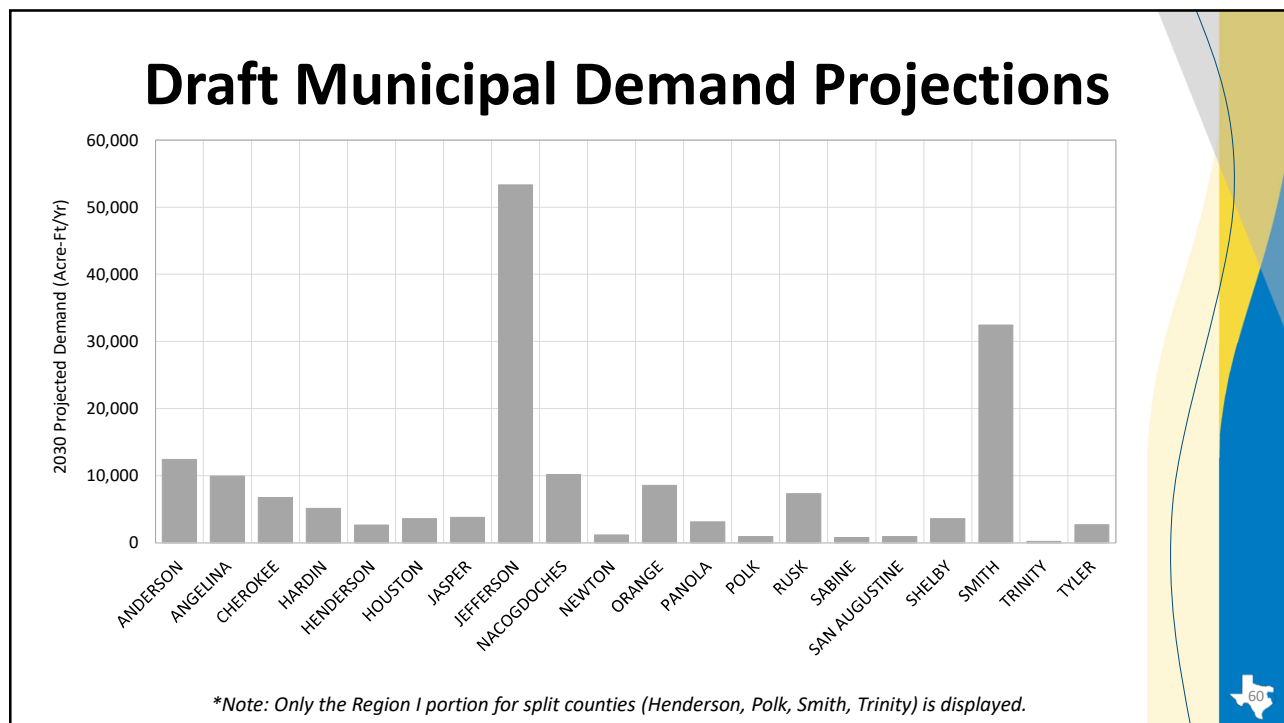
*\*Note: City of Nacogdoches (WUG) 1.0 Migration Scenario data was used in this example.*



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## Draft Municipal Demand Projections

- Considerations:
  - 1.0 vs. 0.5 migration scenario utilization based on county growth
    - ✓ Include evidence of new service areas and major differences in long-term demand
  - Review per-capita use and PCS savings
    - ✓ Use high use, dry-year gpcd for baseline
    - ✓ Use TWDB assumed decadal PCS savings for projections
  - Additional input:
    - ✓ Follow-up with surveys
    - ✓ Major water provider input
- Revisions due to TWBD on August 11, 2023



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## Questions?



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