Assessment of Municipal Population and Water Demand Projections in Texas Regional and State Water Supply Planning

Background & Purpose

The TWDB is tasked with developing population and water demand projections by water planning region, county, and Water User Group (WUG) per 31 Texas Administrative Code (TAC) § 357.31 and § 358.4 every five years. After six iterations of developing regional water plan projections, the shift to utility-based planning, and the addition of hundreds of municipal WUGs, a detailed review of TWDB's population and municipal water demand projection methodologies is needed. The purpose of this work is to assess the accuracy of TWDB projections in previous plans, consider the related uncertainties associated with projecting population and water demands and, as appropriate, recommend modifications to improve the quality of the projections and the efficiency of the process required to draft and finalize the projections. The benefit will be to make this foundational planning process more accurate, predictable, flexible, and simple for the agency, Regional Water Planning Groups (RWPG), and other stakeholders. This study is estimated to be completed in the Summer of 2026 and will inform the projections process for the 2031 Regional and 2032 State Water Plans.

Project Summary

This contract consists of five subtasks as follows:
1. A literature review of other organizations' population and municipal water demand projection methodologies.
2. Statistical analysis to assess the accuracy of past state and regional water plans population projections, and the Texas Demographic Center's population projections.
3. Statistical analysis to assess the accuracy of past state and regional water plans' municipal demand projections (with consideration of dry-year conditions).
4. Quantifiable margin of error translated to reasonable degree of uncertainty.
5. Assess uncertainty in projections as a means of providing flexibility in selecting the magnitude of and/or shifting the geographic locations of some portion of projected populations (these would also translate into equivalent water demand shifts) and determine the right geographic scale(s) at which to allow various degrees of flexibility.

Project Deliverables

1. A written literature review and bibliography.
2. An assessment of the population projections accuracy from the State Demographer and in the draft and final Texas regional water plans at various geographic levels.
3. Assessments of Texas municipal water demand projection accuracy at various geographic levels.
4. Assessment of the margin of errors identified in Subtasks 2 and 3 and how those can translate into degrees of uncertainty applied to improve the accuracy of future water plans and develop a framework to be distributed to RWPGs which has built in allowances for revisions based on the above-mentioned degree of uncertainty.
5. Recommendations for potential improvements to TWDB's population and municipal water demand projection methodologies for implementation in the future.

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