

What's the Water Demand and Where Does it Go?

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Abstract

Municipalities, water districts, and engineers are always in need of good methods to determine the quantity of water needed when designing a water distribution system. Provisions also need to be made to estimate the future water demand requirements. This was the task faced by the West Harris County Regional Water Authority (WHCRWA) located on the western city limits of Houston, Texas.

A variety of data sources were available to determine the current and future water demand projections. Data sources included: U.S. Census Bureau, the Texas Commission on Environmental Quality (TCEQ), the University of Houston's Center for Public Policy (CPP), the Harris-Galveston Coastal Subsidence District (HGCSA) and information provided by the Municipal Utility Districts (MUDs) located within WHCRWA.

Population projections were developed for individual census tracts within the WHCRWA utilizing CPP data. Projected water demands were determined for these census tracts as well as for individual MUDs within the WHCRWA based on the sources of data listed above. A critical factor in the projection methodology is to accurately account for the projected water use of the individual MUDs within the WHCRWA. A Geographical Information System (GIS) proved vital to facilitate the analyses due to the large number of MUDs located in the WHCRWA. Use of GIS helped to ensure agreement and consistency between information provided by the active MUDs and the population projections identified within census tracts.

A significant number of inactive or dormant MUDs are located within the WHCRWA in addition to the 86 active Utility Districts. Dormant MUDs are assumed to possess greater potential for future growth than other undeveloped portions of the WHCRWA. Therefore, dormant MUDs are addressed separately in the methodology process.

The remaining portions of census tracts outside of active and dormant MUDs are largely undeveloped areas referred to as "Remainders" of census tracts. The remainder of each census tract is addressed specifically in the methodology.

Finally, data for the year 2000, especially results of the 2000 Census, formed the baseline for development of key factors used in projections of future water demand.

The population and water demand projection methodology varied depending on whether the census tracts contained active MUDs, dormant MUDs, or remainder of tracts. This paper discusses the process used to develop and project demands for each of these cases.