

Pop/Meter Ratio Modeling

As discussed in Work Group #3 meetings, determination of population to be used in GPCD calculations presents some special problems. As noted, water systems know how many meters they have but have difficulty in determining the population that is actually served. Issues in obtaining population data identified in the SAWS presentation include:

- Census occurs once every 10 years (with some larger areas having intra-decadal updates)
- Census boundaries probably won't have an exact match to service area boundaries
- Day workers within the service boundaries are hard to account for
- Local utilities may not have GIS systems to help them map boundaries
- Utility assets (customer meters in particular) may not be mapped out for GIS analysis

These issues combined with the sheer magnitude of matching census population data with water system boundaries for all water systems in Texas makes the effort of having good and current population data for GPCD calculations very difficult and expensive. Perhaps the best option would be to develop pop/meter ratio models for various area types so that water systems can use the best model or combination that applies to their service area. By doing some sample modeling, the area types and variability in results can be better determined. Modeling may well establish ratios that are well within the accuracies that can be achieved by correlating census data.

Applying these ratios will allow some degree of consistency between systems and will allow better comparison of water use between systems. The use of this data should always be to allow a system to better assess it's own conservation results and to provide some comparisons with other systems for the purpose of learning about successful water conservation methodologies. The granularity of data to allow a better understanding of the service area is obviously key to making comparisons and identifying improvement opportunities.

Following is an example of what modeling results might look like (This is just an example and all ratios are fictitious values):

<u>Area Type</u>	<u>Description</u>	<u>Pop/ Meter Ratio</u>	<u>GPCD Impact</u>
Residential and light commercial	Rural communities and bedroom communities	3.7	All water use to be included in calculation.
Light Industrial	Industrial parks, warehouse areas, and transportation facilities	0.3	All water use to be included in calculations. A separate “Light Industrial GPCD” would be a useful conservation metric.
Heavy Industrial	Manufacturing and processing facilities	0.0	Water use not included in GPCD calculations. Water use should have production related metrics.
Public area	Parks and recreation areas including city parks, street esplanades, golf courses, etc.	0.0	All water use to be included in calculations. A separate “Public Area GPCD” would be a useful conservation metric.
Heavy commercial	Areas with predominantly retail and other commercial business including restaurants, hotels, hospitals, government buildings, etc.	0.4	All water use to be included in calculations. A separate “Heavy Commercial GPCD” or some other comparison would be a useful conservation metric.

The variation of single-family and multi-family ratios can also be explored in a model. Perhaps reviews of a system that can identify the number of units served on a single meter will show that the number of units should be used in determining the pop/meter ratio.