

Metrics and Trends Workgroup

Recommendations to the Water Conservation Advisory Council

April 1, 2010

Summary of GPCD Reporting Today:

Municipal GPCD: This is calculated by the TWDB every year. It is intended to represent water usage inside the city limits and excluding industrial and power plant usage. Timing for release of municipal GPCD each year is determined by availability of population data from the state. For example, the most recent Municipal GPCD figures released were from 2007 even though 2009 water use data was just turned in. This is because no official state population data is available for 2008 to do a GPCD calculation by this method. The recently added “residential municipal GPCD” is an estimate of the residential usage inside the city limits.

Conservation Report GPCD: Water providers that are required to complete conservation reports each spring fill in a portion on GPCD. This includes a total GPCD, a residential GPCD, and a water lost GPCD. The population is self-reported on the form. There are also targets on the form and dates for these to be achieved. This is an on-line report.

Summary of Recommendations:

The Metrics and Trends Workgroup recommends that the Water Conservation Advisory Council work toward a comprehensive approach to GPCD reporting that brings together the work the group did in 2008 with the New Mexico Office of the State Engineer to create a highly functional conservation GPCD report that could be ready to launch in 2012. This report would be intended as a new section of the TWDB Water Conservation Program Annual Report completed by all entities with 3,300 connections.

This very large jump forward in reporting could be possible for large utilities this quickly because the tool has been developed in New Mexico and has been tested by several utilities already successfully (Dallas, Austin, San Antonio). It would require modification for Texas needs, but could be adjusted fairly easily for inclusion with the TWDB Conservation Reports. It would not be necessary for it to replace the TWDB Municipal GPCD if these numbers are necessary for water supply projections.

Reasons for Proposal:

1) A Comprehensive Tool Results In Clear Reports

When a GPCD calculation is only partially broken down or when the population is self-reported, there is too much room for doubt and confusion. People do not understand and the format is not the same. Very few people understand that “municipal GPCD” for example does not really represent all water usage within a community or that it is only within a city limits. A

comprehensive tool allows the data to be clearly detailed as to where it came from, exactly which water provider it is from, if it is from an entire community (multiple providers), etc.

2) Sector GPCD Analysis Provides Necessary Planning Tools

The most important reason to have sector data is to drive conservation programs where they are needed. Without a sector analysis, a community can't know if their residential GPCD is a "low hanging fruit." Knowing the average multifamily GPCD is also very important in analyzing the usage of specific apartment complexes. This can help identify specific ones needing help in fixing up leaking fixtures or irrigation.

3) Sector GPCD Analysis is Fair to Different Communities

The commercial GPCD might help a community with a large commuter population explain why their total GPCD is higher. The sector analysis encourages further discussion instead of a quick conclusion that might be incorrect.

Specifics of the Proposal:

The Metrics and Trends Workgroup recommend the following in regards to establishment of a common methodology for the calculation of gallons per capita per day (GPCD) and the determination of a service population between national census years:

1. In regards to **a common methodology for the calculation of GPCD**, the workgroup recommends the use of a tool similar to the one created by the New Mexico Office of the State Engineer (NMOSE). This tool establishes a method to combine consumption data with commonly available population data for the calculation of overall and sector based GPCD. Although it is a good tool in its current format, the workgroup would like to explore modifications to this tool prior to a final recommendation on its use
2. The sectors broken down in the GPCD analysis in the New Mexico model are somewhat different from those analyzed by the Metrics workgroup. It would be recommended that the sectors analyzed by the metrics workgroup be the ones used in the tool for Texas purposes for the water user groups able to break them down in this detailed a manner. For example, if a water utility were able to break down their customer data into: residential, commercial, industrial, multifamily, and institutional then the tool would allow it. But if the utility software made these distinctions impossible then the tool would divide the customer data only as far as the utility could provide. The better the data, the better the resulting report.
3. In regards to **the determination of service population between national census years**, the workgroup would like to recommend a "bottom up" process of calculating service population by using a ratio of customers to connections at the census block level. This will allow for a more precise estimation of population at a very fine level of geography and sector based demand. This "bottom up" process would have the utility apply a predetermined and specific persons-

per-connection ratio at the census block level to determine a population for that block, and then add up all of the block populations for the utility service area.

Detail of Recommendations:

1. Common methodology for the calculation of GPCD:

- a. The workgroup, in general, believes that the GPCD calculation does a very good job of quickly estimating GPCD as a whole and by sector of use and presents the data in an easy to read output of charts and tables.
- b. The NMOSE tool could be used by virtually any utility in the state thanks to its use of commonly available census data for the entire state.
- c. There are some questions that do remain unanswered with regards to this tool. Specifically:
 - i. There is a need to allow for the input of separate single-family and multi-family persons per household statistic. There should be an option to enter another statistic if the utility believes that their population is significantly skewed away from the national averages.
 - ii. There needs to be a better way to account for water that is stored in an aquifer storage and recovery (ASR) facility. It is unclear if this water is accounted for appropriately using the options available in the tool.
 - iii. The output of sector based GPCD numbers should be described and a percentage of the total GPCD, as opposed to a gallon amount. The numbers that are presented in the tool are misleading and are subject to misinterpretation by anyone not intimately familiar with the data.
- d. Provided that modifications can be made to address to aforementioned concerns and questions, the workgroup recommends that the modified tool be distributed quickly, that clear guidelines be developed in the form of a manual for Texas, and that the tool be used for reporting beginning in 2011.

2. Determination of service population between national census years:

- a. In the time period immediately after census figures are released, utilities and other water purveyors can get:
 - i. a good estimate of what their service population is and
 - ii. a good persons-per-service-connection ratio that *can be* used for the calculation of future years service populations.
- b. If the persons-per-service-connection ratio is very generic (i.e. total population as determined by service area divided by number of connections) then, over time, it becomes less reliable if there is great change in the service area demographics. For many larger utilities there is significant change in demographics, both in terms of expansion into new service areas and change in composition of existing service areas.
- c. Because of the variability in the amount of change between utilities over time, the workgroup is recommending a new process in the calculation of the persons-per-service-connection ratio. This new process will help utilities be more flexible and more

- precise in the calculation of population in non census years. Furthermore, the workgroup is recommending that the very generic calculation, as described above, be left available to those utilities that either don't change much demographically over time or don't have access to very detailed information that would be require for the new process.
- d. The basic mechanics of this new process are very similar to the generic process. Simply put, it would remain total population divided by number of connections. The difference would be that this would occur at the census block level and not at the service area level. This would provide beneficial data is a couple of ways.
 - i. A statistically solid **generic persons-per-service-connection ratio** can be developed for census blocks that have a diverse mix of sector demands.
 - ii. Specific **persons-per-sector-of-service-connection ratio** could be developed from census blocks that are either primarily or totally filled by one sector of the service accounts (e.g. all industrial connections, all multi-family connections, etc.)
 - e. Utilities with large service areas that are found in large cities probably have thousands of blocks in their service area.
 - f. The end result of this new process may be a total of several ratios that can be applied in various ways.
 - g. Once the ratios are determined, the utility would take the following steps each year:
 - i. For census blocks that are wholly within the service area boundaries:
 1. Determine the sector characteristics of each census block using the most up-to-date customer data.
 2. Determine if a generic or specific ratio is to be used.
 3. Apply the ratio and calculate the population.
 - ii. For census blocks that are bisected by a service area boundary:
 1. Define the area of the census block that is inside the service area.
 2. Determine the customers that are inside the portion of the block inside the service area.
 3. Determine the sector characteristics of this block sub-area based on customer data.
 4. Apply the specific ratio and calculate the population.
 - h. Once all the blocks (whole and partial) have population estimates, the grand population can be calculated.
 - i. If the utility has some combination of the following characteristics, then the workgroup would recommend that the utility use a single generic ratio as mentioned in b):
 - i. Small service area.
 - ii. Rural location.
 - iii. Small population with lower than average growth rates over time.
 - iv. Less sophisticated customer billing records.