CFWI Regulatory Team Discussion Document – Uniform Demand Calculation by Use Class (Utility)

A. Elements of Demand Calculation for Utility/Public Supply >100,000 gallons per day :

The general formula for calculating projected water demand is the multiplication of a five-year historic average per capita water use times a projected service area population. For the methods being contemplated, several key components must be developed:

- **Historic annual gross per capita water use** based on a gross water use and an estimate of same year service area population – whether that population is permanent, functional or some combination of both (such as served dwelling units times an estimated persons per household).
- **Base year service area population** if this population is to be increased by growth rate based on utility historic data or derived from other projections, such as county or parcel-level BEBR;
- **Projected service area (future) population** (not a growth rate) whether derived from historic utility population data or county or parcel level BEBR projections.

Note: at a recent (3/23) CFWI RWSP committee meeting there was significant interest among those in attendance in the use of a parcel based population demands that would be prepared by BEBR. The BEBR proposed methodology has the combined advantages of consistency across an entire county (so the permanent population projections sum to BEBR total medium projections in split counties) and provision of reasonable spatial distribution of future population based on buildout and standardized growth drivers/inhibitors, and preparation by a neutral third party. While most would agree that this methodology would best further the State's objective of CFWI consistency, there is no budgeted source of funding to produce the necessary parcel based estimates and projections outside of the SWFWMD. Required data and methodologies integral to a parcel based methodology are retained as options below for areas where the parcel-based method is currently possible or if funding for the BEBR parcel based population estimation and projection methodology becomes available. See further discussion below in section C.2.

Possible options for developing these components for regulatory demand projections are addressed below.

Commented [kja1]: Confirm what is meant by regulatory with SWFWMD.

1. **Historic Annual Gross Per Capita Water Use** is the total or gross historic annual service area water use for a given year to be divided by the estimated service area population for the same year (year of interest, e.g., 2014). The most common year used is calendar year. Historic annual gross per capita is used in the development of public supply projections.

Commented [kja2]: Discussion point.

   a. **Historic Annual Gross Water Use** - Gross water use encompasses the water withdrawn and supplied to the customers of the water utility (residential, commercial, irrigation, etc) defined as annual average gallons per day of potable water and stormwater used for year of interest.
   Calculated as **Historic Annual Gross Water Use** = Withdrawals + Imports – Exports – Treatment Loss
   ~~*Alternately, the utility can provide metered "finished" water delivered to the distribution system calculation for Existing Demand Gross Use = Metered "Finished" Water delivered to distribution system + Imports – Exports*~~

Commented [kja3]: Recommend removal to avoid confusion. The withdrawal data should be the area of interest for Regulatory.

   To develop gross water use, the following data must be provided by the utility or estimated by the appropriate district:
   - **Withdrawals**: Annual average gallons per day ground water, surface water and stormwater withdrawals as metered at the wellhead(s), wellfield's departure point, or surface/storm water intake. Does not include reclaimed wastewater.
   - **Imported Water**: Annual average water imported or purchased from other supplier(s). Irrigation water, excluding reclaimed water, provided to the applicant's service area by a separate utility shall be counted as imported water. Imported water shall be determined at the departure point from the supplier's (e.g., based on seller's invoice).

Commented [kja4]: Need further discussion on how the permitting aspect of stormwater differs from reclaimed water. As stormwater is for non-potable use, should it be included?

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- **Exported Water**: Annual average gallons per day of water transferred in bulk quantities from your utility to other water suppliers. Determine quantities at the departure point from your service area (e.g., based on seller's invoice).
- **Water Treatment Loss**: Annual average gallons per day which are lost in routine treatment for potability or its intended use (e.g., stormwater for irrigation~~?~~). Examples of treatment loss types are desalination reject, membrane cleaning, lime softening treatment loss and sand filtration backwash. Treatment losses are calculated as raw water into the plant minus treated water out of the plant.
- **Metered "Finished" Water:** Treated water out of the plant and measured by a meter at the point of entry to the distribution system.

b. **Historic Population** will be utilized for/as a *uniform planning and permitting base method* described in (1) below, but allow for modification based on demonstration of appropriate circumstances to warrant ~~correction using~~ an consistent alternative method as described below in (2). Historic service area population is required for calculation of per capita water use for a given year and for the calculation of an historic average per capita water use to be used in projecting public supply water demand.

Commented [kja5]: Need further discussion on actual charge to subgroup whether for permitting or permitting and planning.

1) Historic Uniform Base Method for Utility Service Area Residential Population: Total residential dwelling units served) multiplied by the census-based persons per household for the county (or utility, if available). The methodology does not include the group quarters portion of permanent population.

   Utility service Area Residential Population is based upon ***total*** historic year residential dwelling units, which include Single Family Residential, Multi-Family Residential (apartments, townhomes, condos, duplexes) and Mobile Homes, [as an annual average for a select year].

   Served dwelling units can be reported by utilities on an annual basis or estimated by the districts from GIS parcel layers overlain by utility service area boundaries and adjusted where possible to exclude areas known to be domestic self-supplied. The collection and reporting of served single family and total residential units by utilities is recommended.

2) Alternative method: Use GIS-parcel layer that has permanent population included by county-level or utility service area level delineation for that year. The collection and reporting of served single family and total dwelling units by utilities is recommended here as well to serve as another means of controlling for domestic self-supply in a service area where domestic self-supply areas can't be easily delineated for exclusion.

3) Alternative method for future consideration: SWFWMD has developed a process for calculating Total Functional Population, which is defined as "the served permanent population as adjusted by the seasonal resident, tourist, group quarters and net commuter population within a utility's service area. This is calculated based on the dwelling units served by the utility." With the assistance of population cohorts per utility developed and provided by the District, the utility would select the appropriate service area and provide the number of total residential dwelling units served. The population cohort data is derived from methodologies developed by the SWFWMD using decennial Census, State of Florida AHCA, State of Florida DBPR, Census ACS, and purchased lodging data. The data is not provided by BEBR or GIS Assoc. However, BEBR has indicated that it would be able to provide annual estimates and projections of permanent population if their proposed parcel based methodology were adopted. The reason that the SWFWMD calculates and projects functional population is to create a more level playing field among utilities that must comply with the 150-gpcd requirement that applies to all utilities. In

the absence of the need for a single per capita standard, permanent population estimates for per capita calculations and permanent population projections would provide suitable results for projecting service area demand.

c. The **Uniform Gross Per Capita** is defined by the 2008 FDEP Guidance Memo and shall be used in the historic demand estimation and the projection methodology. It is defined as

$$\frac{\text{Utility Service Area Finished Water Use}}{\text{Utility Service Area Residential Population}}$$

Utility Service Area Finished Water Use is defined as withdrawals + imports – exports – treatment losses and the water use includes the water use of all sectors (residential, industrial, commercial, etc.) served by a utility.

Again, Utility Service Area Residential Population is based upon ***total*** residential dwelling units, which include Single Family Residential, Multi-Family Residential (apartments, townhomes, condos, duplexes) and Mobile Homes, multiplied by an estimate of persons per household.

d. **Uniform Residential Per Capita** is defined by the 2008 FDEP Guidance Memo as

$$\frac{\text{Utility Service Area Finished Water Use by Dwelling Units (or Total Residential Water Use)}}{\text{Utility Service Area Residential Population}}$$

Where:

- **Utility Service Area Finished Water Use by Dwelling Units** is the sum of finished water used by all dwelling units served by a utility.
- **Utility Service Area Residential Population** is the number of dwelling units served, multiplied by an estimate of persons per household (exactly the same as for the Uniform Gross Per Capita measure)

Recommend per capita goals based on Uniform Residential Per Capita rate per water use permit in accordance with new legislation (Subsection 373.0565(2), F.S.). This will require the collection and reporting of served dwelling units and their use by the utilities and may require rulemaking. Compliance with any rules regarding utility reporting of dwelling units and residential use outside of the SWFWMD should be phased to allow utilities to develop the means to collect the data if not currently available.

2. **Future Demand** = **Future Population X 5-year Average Gross Per Capita**

a. **Future Population:** For all options, allow for modification based on demonstration of appropriate circumstances to warrant adjustment using a consistent alternative method: Examples to consider include:

- Consideration of conservation goals
- Identified potential changes in demographics or planned development
- Other documented changes

Option 1: Utilize County-level/parcel level forecast of population based on published BEBR-Medium projections for target year(s). If using service area parcel based projections of permanent population, should be multiplied by averaged historic permanent population based per capita.

Option 2: Utilize historic growth rate at utility-level based on average of 5 years of historic population times the base year served dwelling unit population (estimate of total residential dwelling units x estimate of persons per household).

Commented [JY6]: This should probably be put at the end unless it is proposed to be a part of the regulatory demand estimation and projection methodology.

Commented [kja7]: Check WMD rules for specific wording

Commented [JY8]: Some people may have issues with using only 5 years of population data.

Option 3. Utilize a service area growth rate derived from parcel-based projections such as those supplied by GISA, TAZ data or proposed to be supplied by BEBR. The growth rate could be applied to the historic base year estimated service area population whether it is applied to dwelling unit (residential) population, permanent or functional population estimate. This assumes that the various population cohorts grow at the same rate.

b. **Five Year Uniform Gross Per Capita***:* Utilize the most recent 5-year historic average uniform gross per capita

Option 1: Uniform Gross Per Capita (as defined above) - this can be applied to population projections based on total dwelling units times an estimate of persons per household.

Option 2: Permanent Gross Per Capita is the ~~5 year average~~ uniform gross use divided by estimated service area permanent population. This can be applied to permanent population only projections of service area population.

Option 3: Functional Gross Per Capita is the uniform gross use divided by estimated service area functional population. This can be applied to functional population only projections of service area population.

Commented [kja9]: Additional options provided by SWFWMD.

B. Domestic Self Supply (for planning quantities only) and Utility/Public Supply <100,000 gallons per day

Commented [kja10]: Need clarification on whether these should be included in this effort.

- Domestic Self Supply calculations would be for planning purposes only, not permitting.
- Utility/Public Supply <100,000 gallons per day - Recommend same uniform process for calculating existing and future demand as for Utility/Public Supply >100,000 gallons per day for planning and permitting.

C. Additional Concepts for Inclusion in Proposed Rule-making:

1. Submittal of information by utilities to calculate uniform demand estimates. It is anticipated that the rule language should include the phasing in of providing the requested information to allow utilities to make necessary arrangements for compiling the data.
   a. Submittal of elements listed above that are necessary to comply with calculating Existing and Future Demand (e.g. withdrawals, imported water, exported water , water treatment Loss);
   b. Submittal of elements listed above that are necessary to comply with calculating Existing and Future Population (e.g. single family residential units and their use and total residential units and their use per year and annual population estimates);
2. Consideration of the use BEBR Medium estimates, population cohorts and projections at county/utility-level, (actual services provided by BEBR would depend upon funding). The RWSP Team is vetting this option for future planning efforts in the CFWI Area to have one consistent methodology and one agency providing the data. The group generally supports any efforts for State agency, Legislative or other funding to have access to this data. Timely State funding for this effort would further the State's interest in planning and regulatory consistency in the CFWI.

Other factors for consideration of methods to incorporate include accounting for new large-scale developments that have accelerated timelines and/or were not included in BEBR drivers for population calculation.

Commented [KPW11]: This is a dicussion relevant to BEBR poulation projections and should be moved to that section of the document.

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Commented [YAGA12]: We probably need a documentation requirement here.