watersmart™
INNOVATIONS

This presentation premiered at
WaterSmart Innovations 2010

Join us this fall in Las Vegas, October , 2011

watersmartinnovations.com

California Urban Water Conservation Council

Urban Water Use Target Technical Methodologies

Chris Brown

CUWCC

Placeholder presentation for WSI 2010

California Urban Water Conservation Council

Methodologies

The legislation specifically calls for developing seven methodologies and a set of criteria for adjusting daily per capita water use at the time compliance is required (the 2015 and 2020 compliance years) under Section 10608.20(h):

(1) The department, through a public process and in consultation with the California Urban Water Conservation Council, shall develop technical methodologies and criteria for the consistent implementation of this part, including, but not limited to, both of the following:

(A) Methodologies for calculating base daily per capita water use, baseline commercial, industrial, and institutional water use, compliance daily per capita water use, gross water use, service area population, indoor residential water use, and landscaped area water use.

(B) Criteria for adjustments pursuant to subdivisions (d) and (e) of Section 10608.24.

California Urban Water Conservation Council

Methodologies

- Methodology 1: Gross Water Use
- Methodology 2: Service Area Population
- Methodology 3: Base Daily Per Capita Water Use
- Methodology 4: Compliance Daily per Capita Water Use
- Methodology 5: Indoor Residential Use
- Methodology 6: Landscaped Area Water Use
- Methodology 7: Baseline Commercial, Industrial, and Institutional Water Use
- Methodology 8: Criteria for adjustments to Compliance Daily Per Capita Water Use
- Methodology 9: Regional Compliance

California Urban Water Conservation Council

Methodology 1: Gross Water Use

Definition of Gross Water Use

Section 10608.12(g) of the Water Code defines "Gross Water Use" as:

the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier, excluding all of the following:

(1) Recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier

(2) The net volume of water that the urban retail water supplier places into long-term storage

(3) The volume of water the urban retail water supplier conveys for use by another urban water supplier

(4) The volume of water delivered for agricultural use, except as otherwise provided in subdivision (f) of Section 10608.24

Methodology 1: Gross Water Use

Calculation of Gross Water Use

- Step 1: Define the 12-month Calculation Period
- Step 2: Delineate Distribution System Boundary
- Step 3: Compile Water Volume from Own Sources
- Step 4: Compile Imported Water Volume
- Step 5: Compile Exported Water Volume
- Step 6: Calculate Net Change in Distribution System Storage
- Step 7: Calculate Gross Water Use before Indirect Recycled Water Use Deductions
- Step 8: Deduct Recycled Water Used for Indirect Potable Reuse from Gross Water Use
- Step 9: Calculate Gross Water Use after Deducting Indirect Recycled Water Use
- Step 10 (Optional): Deduct from Gross Water Use the Volume of Water Delivered for Agricultural Use
- Step 11 (Optional): Deduct Volume of Water Delivered for Process Water Use
- Step 12: Calculate Gross Water Use after Optional Deductions

California Urban Water Conservation Council

Methodology 2: Service Area Population

Definition of the Service Area Population

Section 10608.20(f) states:

When calculating per capita values for the purposes of this chapter, an urban retail water supplier shall determine population using federal, state, and local population reports and projections. The legislation directs DWR to develop consistent methodologies and criteria for determining Service Area Population.

California Urban Water Conservation Council

Methodology 2: Service Area Population

Estimating the Service Area Population

- Retail water suppliers will generally fall into one of the following three categories:
- Category 1: Water suppliers whose *actual distribution area* overlaps substantially (≥95%) with city boundaries (may be a single city or a group of cities) during baseline and compliance years
- Category 2: Water suppliers not falling in Category 1 but having an electronic Geographic Information System (GIS) map of their distribution area
- Category 3: Water suppliers not falling in Category 1 and lacking an electronic GIS map of their distribution area

California Urban Water Conservation Council

Methodology 3: Base Daily Per Capita Water Use

Definition of Base Daily Per Capita Water Use

- Base daily per capita water use is defined as average gross water use, expressed in GPCD, for a continuous, multiyear base period. The Water Code specifies two different base periods for calculating Base Daily Per Capita Water Use under Section 10608.20 and Section 10608.22:
- The first base period is a 10- to 15-year continuous period, and is used to calculate baseline per capita water use per Section 10608.20.
- The second base period is a continuous 5-year period, and is used to determine if the 2020 per capita water use target meets the legislation's minimum water use reduction requirement per Section 10608.22.
- Unless the urban retail water supplier's Base Daily Per Capita Water Use per Section 10608.20 is 100 GPCD or less, Base Daily Per Capita Water Use must be calculated for both baseline periods. Figure 4 provides a flow diagram showing the Base Daily Per Capita Water Use calculations required.

California Urban Water Conservation Council

Methodology 3: Base Daily Per Capita Water Use

Calculation of Base Daily Per Capita Water Use

- Estimate Service Area Population for each year in the base period. Use Methodology 2:Service Area Population to estimate the Service Area Population for each year in the base period.
- Calculate Gross Water Use for each year in the base period. Use Methodology 1: Gross Water Use to calculate the service area Gross Water Use for each year in the base period. Express Gross Water Use in gallons per day (gpd).[1]
- Calculate daily per capita water use for each year in the base period. Divide Gross Water Use (determined in Step 2) by Service Area Population (determined in Step 1).
- Calculate Base Daily Per Capita Water Use. Calculate average per capita water use by summing the values calculated in Step 3 and dividing by the number of years in the base period. The result is Base Daily Per Capita Water Use for the selected base period.

California Urban Water Conservation Council

Methodology 4: Compliance Daily per Capita Water Use

Definition of Compliance Daily Per Capita Use

Section 10608.12(e) states:

"Compliance daily per-capita use" means the gross water use during the final year of the reporting period, reported in gallons per capita per day.

California Urban Water Conservation Council

Methodology 4: Compliance Daily per Capita Water Use

Estimation of Compliance-Year GPCD

- Distribution Area Expansion Caused by Mergers
- Distribution Area Contraction
- Distribution Area Expansion by Annexation of Already Developed Areas
- Distribution Area Expansion by Annexation of Undeveloped Areas
- Existing Large Partial Customers Become Whole Customers

Water Supplier Subject to Urban Water Management Plan Reporting Requirements between 2010 and 2020

California Urban Water Conservation Council

Methodology 5: Indoor Residential Use

Definition of Indoor Residential Use

Section 10608.20(b)(2)(A) states:

For indoor residential water use, 55 gallons per capita daily water use as a provisional standard. Upon completion of the department's 2016 report to the Legislature pursuant to Section 10608.42, this standard may be adjusted by The Legislature by statute.

Section 10608.42 states:

The department shall review the 2015 urban water management plans and report to the Legislature by December 31, 2016, on progress towards achieving a 20-percent reduction in urban water use by December 31, 2020. The report shall include recommendations on changes to water efficiency standards or urban water use targets in order to achieve the 20-percent reduction and to reflect updated efficiency information and technology changes.

Methodology 6: Landscaped Area Water Use

California Urban Water Conservation Council

Definition of Landscaped Area Water Use

For the Landscaped Area Water Use component of target Method 2, Section 10608.20 (b)(2)(B) states:

For landscape irrigated through dedicated or residential meters or connections, water efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance set forth in Chapter 2.7 (commencing with Section 490) of Division 2 of Title 23 of the California Code of Regulations, as in effect the later of the year of the landscape's installation or 1992. An urban retail water supplier using the approach specified in this subparagraph shall use satellite imagery, site visits, or other best available technology to develop an accurate estimate of landscaped areas.

California Urban Water Conservation Council

Methodology 6: Landscaped Area Water Use

Approach to Calculating Landscaped Area Water Use

- Identify Applicable MWELO for Each Parcel
- Measure Landscaped Area
- Measurement Techniques
- Estimate Reference Evapotranspiration
- Apply MAWA Equation to Calculate Annual Volume
- Convert Annual Volume to GPCD
- Summary of Steps to Calculate Landscaped Area Water Use

California Urban Water Conservation Council

Methodology 7: Baseline Commercial, Industrial, and Institutional Water Use

Definition of Baseline CII Water Use

Section 10608.12 defines Baseline CII Water Use and related concepts as follows:

(c) *"Baseline commercial, industrial, and institutional water use" means an urban retail water supplier's base daily per capita water use for commercial, industrial, and institutional users.*

(d) *"Commercial water user" means a water user that provides or distributes a product or service.*

(h) *"Industrial water user" means a water user that is primarily a manufacturer or processor of materials as defined by the North American Industry Classification System code sectors 31 to 33, inclusive, or an entity that is a water user primarily engaged in research and development.*

(i) *"Institutional water user" means a water user dedicated to public service. This type of user includes, among other users, higher education institutions, schools, courts, churches, hospitals, government facilities, and nonprofit research institutions.*

California Urban Water Conservation Council

Methodology 8: Criteria for Adjustments to Compliance Daily Per Capita Water Use

Definition of Adjustments to Compliance Daily Per Capita Water Use

Section 10608.24(d) states:

(1) When determining compliance daily per capita water use, an urban retail water supplier may consider the following factors:

(A) Differences in evapotranspiration and rainfall in the baseline period compared to the compliance reporting period.

(B) Substantial changes to commercial or industrial water use resulting from increased business output and economic development that have occurred during the reporting period.

(C) Substantial changes to institutional water use resulting from fire suppression services or other extraordinary events, or from new or expanded operations, that have occurred during the reporting period.

(2) If the urban retail water supplier elects to adjust its estimate of compliance daily per capita water use due to one or more of the factors described in paragraph (1), it shall provide the basis for, and data supporting, the adjustment in the report required by Section 10608.40.

California Urban Water Conservation Council

Methodology 9: Regional Compliance

Legislative Guidance for Regional Compliance

Section 10608.20(a)(1) states the following:

Each urban retail water supplier shall develop urban water use targets and an interim urban water use target by July 1, 2011. Urban retail water suppliers may elect to determine and report progress toward achieving these targets on an individual or regional basis, as provided in subdivision (a) of Section 10608.28, and may determine the targets on a fiscal year or calendar year basis.

Methodology 9: Regional Compliance

- Criteria for Water Suppliers that May Report and Comply as a Region
- **Calculation of Targets and Compliance GPCD**
- **Calculation of Regional Compliance Daily Per Capita Water Use**
- **Data Reporting for a Regional Alliance**

California Urban Water Conservation Council

Methodology 9: Regional Compliance

Memoranda of Understating or Agreements for Regional Alliances

Compliance Assessment for Water Suppliers Belonging to a Regional Alliance

The following guidelines will be used to assess compliance:

- If a regional alliance meets its regional target, all suppliers within the alliance will be deemed compliant.
- If a regional alliance fails to meet its regional target, water suppliers within the alliance that meet their individual targets will be deemed compliant.
- Water suppliers in alliances that meet neither their individual targets nor their regional targets will be deemed noncompliant. These suppliers can still apply for grant funds if their application is accompanied by a plan that demonstrates how the funds being sought will bring them into compliance with their targets (Section 10608.56).