

California Department of Water Resources
Division of Statewide Integrated Water Management
Water Use and Efficiency Branch

FOURTH TARGET METHOD
PRELIMINARY DWR STAFF ASSESSMENT OF PROPOSED ALTERNATIVES

August 23, 2010

The Department of Water Resources (DWR) is required by California Water Code section 10608.20(b)(4) to develop a fourth method that urban water agencies may select to establish urban water use targets for the year 2020. Four alternatives have been formally proposed for consideration by stakeholders and DWR for the fourth target method. The purpose of this document is to provide a preliminary assessment by DWR staff of how well these proposals meet the U4 Technical Subcommittee charge and evaluation criteria.

Criteria

Seven criteria are specified in section 10608.20(b)(4) to guide DWR in developing this method. In addition, three additional criteria were identified in the “Urban Stakeholder Committee, U4 Technical Subcommittee, Charge and Evaluation Criteria,” dated 26 May 2010. The first seven below are quoted from the law.

1. Statewide Savings: “The method developed by the department shall identify per capita targets that cumulatively result in a statewide 20-percent reduction in urban daily per capita water use by December 31, 2020.” This criterion is the basic requirement for the fourth target method. The assessment for this criterion in the table that follows is based on the ability to estimate the statewide cumulative savings to demonstrate that a proposed methodology can satisfy this requirement.
2. Climatic Differences: “Consider climatic differences within the state.”
3. Population Density: “Consider population density differences within the state.”
4. Flexibility: “Provide flexibility to communities and regions in meeting the targets.”
5. Plant Water Needs: “Consider different levels of per capita water use according to plant water needs in different regions.”
6. Different CII (commercial, industrial, and institutional) Use: “Consider different levels of commercial, industrial, and institutional water use in different regions of the state.”
7. Undue Hardship: “Avoid placing an undue hardship on communities that have implemented conservation measures or taken actions to keep per capita water use low.”
8. Different from 3 Specified Methods: That the method be different from the three legislatively defined methods.
9. Cost of Data Collection: The cost and expense to collect the data required to implement the method.
10. Ease of Implementation: Ease of implementation by the water supplier.

The ten criteria above are not listed in an order of priority, other than number 1, which is an over-arching requirement for the fourth target method. Criteria 2 through 7 are listed in the order

described in the law. Note that “consider” as used in the above criteria does not mean that the method contain a specific calculation or adjustment for the given factor. It means that the factor will be considered with respect to the proposal using such factors as relevancy, importance, how the factor may be mitigated in other ways, or overall equity. The strengths and weaknesses of each proposed alternative for each of the criteria will be assessed. Salient strengths or weaknesses in any one or more criteria may influence DWR’s overall assessment and choice of a methodology.

Preliminary Assessment

DWR assessment of the four proposed alternatives is presented in the following table. Stakeholders and the Subcommittee members have also commented on the four proposed alternatives. These comments are being assembled and will be added to this table before the next meeting of the Subcommittee. The assessments are based on the proposals in their initial form. There are discussions that may result in modifications to the proposals that mitigate their weaknesses or strengthen their ability to meet the objective of the law and the ability to implement them. Proposal descriptions can be found on the DWR Web site at <http://www.water.ca.gov/wateruseefficiency/sb7/committees/urban/u4/#docs> and <http://www.water.ca.gov/calendar/index.cfm?meeting=13904>.

Refer to the discussion after the table for background on how the flexibility criterion was assessed in the table. The lists of data needs and computational needs shown for criteria 9 and 10 are not intended to be comprehensive. Preliminary analysis has been done on DWR’s BMP Proposal and Western Municipal Water District’s (Tim Barr’s) proposal.

Proposal and Criteria	Preliminary Assessment
Western Municipal Proposal	
1. Statewide Savings	Savings can be determined if there are valid correlations in the proposed methodology. Density and climatic adjustments are based on 20x2020 Water Conservation Plan hydrologic region targets, which were developed to achieve a 20% reduction in per capita water use. DWR has done preliminary analysis to verify the correlations. Preliminary findings indicate that there is poor correlation between water supplier service area (land surface area) per capita and water use per capita, after excluding indoor water use or indoor and CII water use. An inverse proportional relationship between service area per capita and outdoor water use per capita is assumed in the proposed methodology.
2. Climatic Differences	Uses reference evapotranspiration adjustment to reflect climatic differences.
3. Population Density	Uses per capita urban area adjustment to reflect density differences.
4. Flexibility	Reflects differences in climate, landscape density. No adjustment for CII use. Because targets are based on hydrologic region average targets, agencies with past conservation

	implementation should be able to more easily meet target. While this method is similar to target method 3 specified in law, its adjustments allow for better match to local agency conditions.
5. Plant Water Needs	Uses reference evapotranspiration adjustment to reflect climatic differences.
6. Different CII Use	Method does not make an adjustment for CII use.
7. Undue Hardship	Because targets are based on hydrologic region average targets, agencies with past conservation implementation should be able to more easily meet target.
8. Different from 3 Specified Methods	Similar to target method 3 specified in law but has adjustments for local conditions.
9. Cost of Data Collection	Data Needs: Urban area, urban population, and reference evaporation data for each hydrologic region for DWR to provide agencies average population density and reference evaporation for each region. Service area, population served, and reference evaporation for each agency to adjust 20x2020 Water Conservation Plan hydrologic region per capita water use targets for individual targets. Additional data for DWR to verify correlations assumed in proposed methodology. Comment: It is unknown how easily urban service areas can be determined.
10. Ease of Implementation	Computational Needs: To be assured of achieving the estimated 20% statewide savings, DWR needs to analyze sample urban area, population, and water use data to verify correlations assumed in proposed methodology. DWR needs to calculate average population density and reference evaporation data for each hydrologic region to provide to agencies so they can develop their targets. Agencies need to adjust hydrologic region targets by population density and reference evapotranspiration factors to develop individual agency targets. Comment: Difficult for both agencies and DWR to determine population density data. It is necessary for DWR to determine total urban service areas prior to agencies using this method.
Other Comments	Initial attempts by DWR to correlate urban water use with adjustments factors have failed to show a correlation.
DWR BMP Proposal	
1. Statewide Savings	Savings can be quantified using the approach used in the 20x2020 Water Conservation Plan. Refinement of this approach is being evaluated.
2. Climatic Differences	The landscape BMP is based on an agency's reference evapotranspiration.
3. Population Density	BMP implementation adjusts for individual landscape size as well as population, but not for density per se.
4. Flexibility	Reflects differences in climate, landscape density, CII use, and past conservation implementation.

5. Plant Water Needs	Large landscape BMP is based on a water budget approach, which adjusts for differing plant water requirements.
6. Different CII Use	BMP approach is based on a 10% reduction in baseline CII use.
7. Undue Hardship	Agencies that have implemented the BMPs and, thus, have a lower baseline GPCD will have lower water saving requirements.
8. Different from 3 Specified Methods	Very different from the 3 specified methods.
9. Cost of Data Collection	<p>Data Needs: Assuming quantifiable BMPs, for water suppliers and for DWR for sufficient sampling of water suppliers: baseline and future unmetered accounts, baseline and future number of residential customers receiving assistance, number of past and future residential landscape surveys, number of existing and future single-family accounts receiving clothes washer incentives, estimate of market penetration for efficient toilets using several items of data, number of 2008 CII customers and estimated savings from prior CII measures, number of dedicated irrigation accounts with and without water use budgets, number of mixed use CII accounts with landscape and number of these receiving landscape surveys and estimated landscape water use from mixed use CII accounts, estimates of market saturation for water saving toilets and showerheads using several data sources.</p> <p>Comment: Except for refinements to past estimates, data collection by DWR for estimating statewide water savings is accomplished. Agencies would need to collect these data for individual target setting.</p>
10. Ease of Implementation	<p>Computational Needs: Calculators to assist agencies to estimate savings from individual BMPs are needed, using the data described in criterion 9. Such calculators are available from California Urban Water Conservation Council (CUWCC) for many BMPs.</p> <p>Comment: Potentially complex computations are involved, requiring assumptions and calculators to develop individual targets. It may be difficult for local agencies to calculate target if they have not tracked past conservation or BMP implementation.</p>
Other Comments	
Irvine, Long Beach, SLO Proposal	
1. Statewide Savings	Savings can be quantified using the approach used in the 20x2020 Water Conservation Plan. Refinement of this approach is being evaluated.
2. Climatic Differences	The landscape BMP is based on an agency's reference evapotranspiration.
3. Population Density	BMP implementation adjusts for individual landscape size as well population, but not population density per se.

4. Flexibility	Reflects differences in climate, landscape density, CII use, and past conservation implementation.
5. Plant Water Needs	Large landscape BMP is based on a water budget approach, which adjusts for differing plant water requirements.
6. Different CII Use	BMP approach is based on a 10% reduction in baseline CII use.
7. Undue Hardship	Agencies that have implemented the BMPs and, thus, have a lower baseline GPCD will have lower water saving requirements.
8. Different from 3 Specified Methods	Very different from the 3 specified methods.
9. Cost of Data Collection	<p>Data Needs: Assuming quantifiable BMPs, for water suppliers and for DWR for sufficient sampling of water suppliers: baseline and future unmetered accounts, baseline and future number of residential customers receiving assistance, number of past and future residential landscape surveys, number of existing and future single-family accounts receiving clothes washer incentives, estimate of market penetration for efficient toilets using several items of data, number of 2008 CII customers and estimated savings from prior CII measures, number of dedicated irrigation accounts with and without water use budgets, number of mixed use CII accounts with landscape and number of these receiving landscape surveys and estimated landscape water use from mixed use CII accounts, estimates of market saturation for water saving toilets and showerheads using several data sources. Except for refinements to past estimates, data collection by DWR for estimating statewide water savings from quantifiable BMPs is accomplished. Agencies would need to collect these data for individual target setting.</p> <p>Comment: Except for refinements to past estimates, data collection by DWR for estimating statewide water savings is accomplished. Agencies would need to collect these data for individual target setting.</p>
10. Ease of Implementation	<p>Computation Needs: Calculators to assist agencies to estimate savings from individual BMPs, both quantifiable and nonquantifiable, are needed, using the data described in criterion 9. Such calculators are available from CUWCC for many BMPs.</p> <p>Comment: Potentially complex computations are involved, requiring assumptions and calculators to develop individual targets. It may be difficult for local agencies to calculate target if they have not tracked past conservation or BMP implementation.</p>
Other Comments	As part of the method proposal, compliance would be based on performance of the BMPs rather than meeting the 2020 numeric per capita target. This method of compliance has been

	determined by DWR to be inconsistent with the law.
ACWA Proposal	
1. Statewide Savings	An approach has not been offered to be able to estimate statewide water savings using calculations relating to the methodology for setting individual agency targets. Statewide savings are assumed to reach the mandated statewide target of 20% based on the assumption that the savings will occur if Water Plan Update projections are achieved. It further assumes its reference areas provide an appropriate standard of water use efficiency for the state.
2. Climatic Differences	Uses reference evapotranspiration adjustment to reflect climatic differences.
3. Population Density	Uses per capita landscape adjustment to reflect population density.
4. Flexibility	Reflects differences in climate, landscape density, CII use. Target based on “Reference Area”, which should favour agencies with past conservation implementation.
5. Plant Water Needs	Uses reference evapotranspiration adjustment to reflect climatic differences.
6. Different CII Use	Uses 10% reduction in baseline CII use.
7. Undue Hardship	Because the target is based on a “Reference Area” that is intended to represent areas of low water use, agencies that have implemented water conservation should have per capita water use equal to or less than Reference Area, so no undue hardship is envisioned.
8. Different from 3 Specified Methods	Very different from 2 of specified methods. While there are similarities to specified “Method 2”, there are key differences, such as using the Reference Area instead of the Model Water Efficient Landscape Ordinance as the benchmark for the landscape component of the target.
9. Cost of Data Collection	Data Needs: Water use data for 2005 by sector from many suppliers to allow DWR to identify efficient water use suppliers to include in Reference Area. Irrigated landscape area, reference evapotranspiration, and population for 2005 of each supplier in Reference Area for DWR to compute averages for use by suppliers. Irrigated landscape areas and reference evapotranspiration from sufficient sampling of all suppliers for DWR to estimate statewide water savings. Irrigated landscape area and reference evapotranspiration for each water supplier to calculate individual target. Comment: Development of this method is potentially expensive and difficult for agencies as well as DWR.
10. Ease of Implementation	Computational Needs: DWR needs to evaluate data from candidate suppliers to identify which suppliers to include in Reference Area and calculate average per capita landscape water use, per capita landscape areas, and reference

	<p>evapotranspiration for suppliers selected for Reference Area. Agencies will need to calculate targets by adjusting Reference Area per capita landscape water use and adding indoor residential and CII components to targets.</p> <p>Comment: Potentially expensive and difficult for agencies and DWR to determine irrigated landscape areas and for DWR to identify appropriate water suppliers to include in the Reference Area, which must be determined prior to agencies using this method.</p>
Other Comments	<p>The landscape water use portion of the target as determined by ACWA approach may be inconsistent with the State Model Water Efficient Landscape Ordinance requirements for landscape where maximum applied water allowance is determined by area’s reference evapotranspiration, landscape area, plant factor of 0.5 and irrigation efficiency of 71%. The assumption that the “reference area” meets standard of water use efficiency may not be valid. Some water agencies with low overall water use that might be in the reference area may have excessive outdoor water use.</p>

Flexibility Criterion

The flexibility criterion, number 4 in the list above, is stated as, “Provide flexibility to communities and regions in meeting the targets.” The law does not require that water suppliers implement water conservation in the same manner as their targets are determined. Regardless of which method a water supplier selects to establish its 2020 target, the supplier has the flexibility to use any means of water conservation or water recycling to achieve compliance with the target. The methodology used to calculate the target does not govern how the target is met. In this respect, any option DWR adopts for the fourth target method will have the same flexibility. Also, suppliers have the flexibility to choose which of the four target methods to use.

In terms of the target calculation methodologies, the four most commonly cited areas of desired flexibility are differences in climate, landscape area per capita, proportionate water demand in the CII sector, and degree of past water conservation implementation. These factors are addressed in criteria 2, 3, 5, 6, and 7. The flexibility assessments in the table above reflect the distinctions in these four factors between the proposed options for Target Method 4. To some extent it is a reiteration of the assessments for criteria 2, 3, 5, 6, and 7.

Past water conservation is generally reflected in baseline water use. For any of the proposed options, it is expected that agencies with strong past conservation implementation will have lower baseline use and would be able to meet targets more easily than other agencies. This is especially true if the target methodology does not set the target based on an agency’s baseline water use. Except for CII water use, this is true for the four proposals under consideration.