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RE: Comments on the Urban Water Use Efficiency Recommendations in the *Making Water Conservation a California Way of Life: Implementing Executive Order B-37-16* Public Review Draft

We appreciate the opportunity to provide comments to the Department of Water Resources (DWR), the State Water Resources Control Board (Water Board), the California Department of Food and Agriculture, the California Public Utilities Commission, and the California Energy Commission (collectively EO Agencies). Governor Brown's Executive Order B-37-16 (EO B-37-16, or EO) directed the EO Agencies to elevate water use efficiency as a more integral and central component of water management in the state.

We applaud the Governor's leadership on this critical issue. Technology and innovation have made it possible for California to realize greater benefits than ever before from more efficient use of our considerable developed water supplies, more affordably and with greater opportunity to preserve natural resources for future generations. The draft framework for implementing the EO is an important piece of work that moves California in the right direction, and positions the state as a national leader in promoting a sustainable approach to water management, and to substantially increase local resilience in this time of climate change. We want to also thank the EO agencies and staff for their efforts in spearheading a collaborative process over the last four months as they worked closely with the Urban and Agricultural Advisory Groups (UAG/AAG), along with numerous stakeholders, in developing a framework for implementation that balances a variety of perspectives and priorities.

Our comments focus specifically on the recommendations in the Public Review Draft ("Draft" or "framework") for the water use standards and targets; water waste, leaks, and losses; Water Shortage Contingency Plans, and drought planning for small water suppliers and rural communities, and financial and technical assistance. These comments and recommendations are summarized for easy reference in Attachment 1, on page 20. We also offer a suite of complementary policies that we believe would help facilitate implementation of EO B-37-16 in Attachment 2, on page 21. Finally, we conclude with a section on the State's legal authority to implement many of action items proposed in the Public Review Draft.

A. Water Use Standards and Targets

EO B-37-16 directs the Water Board and DWR to develop new standards that "generate more statewide water conservation than existing requirements, and shall be based on strengthened standards" for (1) indoor residential per capita water use; (2) outdoor irrigation; (3) commercial, industrial and institutional water use; and (4) water loss through leaks. The Public Review Draft establishes a solid framework for the development and implementation of those standards leading fundamentally in the right direction. We offer the following recommendations to improve the framework and better support implementation of the EO:

1. Apply water-use standards and targets to recycled water;
2. Adopt a practice-based approach for commercial, industrial, and institutional water users;
3. Require installation of dedicated irrigation meters on commercial, industrial, and institutional landscapes of 1,000 square feet or more by 2020 and 500 square feet or more by 2024;
4. Adopt a "good enough" approach for landscape area measurements and refine as technology improves;
5. Develop indoor residential and outdoor standards by 2018, with formal adoption in 2020;
6. Require reporting on all elements of the water use standards and targets;
7. Update and extend water-use standards on a regular basis; and
8. Develop a clear and transparent framework for enforcement.

Additional detail on each of these recommendations is provided below:

1. Apply water use standards and targets to recycled water.

Various stakeholders have recommended that the water-use standards and targets only be applied to potable water, while others have recommended that even some forms of potable water be exempted from the standards. The Public Review Draft recommends that water use standards and targets be applied to all ***uses*** and ***forms*** of water. We strongly agree with this approach and urge the state to maintain it in the Final Report.

Providing exemptions for recycled water or other water supplies would effectively incentivize their development in preference to water conservation and efficiency measures, notwithstanding that water conservation and efficiency are broadly recognized as the least expensive, fastest, and most environmentally-sound way to meet water needs.[1,2] They also save energy, reduce greenhouse gas emissions, lessen water and wastewater treatment costs, and defer or eliminate the need for costly new water and wastewater infrastructure. Incentivizing more

[1] See California Water Plan Update 2013 at Table 1-3 Range of Strategy Unit Costs comparing resource management strategies. (http://www.waterplan.water.ca.gov/docs/cwpu2013/Final/Vol3_Ch01_Introduction.pdf).
[2] See Cooley and Phurisamban. 2016. The Cost of Alternative Water Supply and Efficiency Options in California. Pacific Institute: Oakland, CA. (http://pacinst.org/app/uploads/2016/10/PI_TheCostofAlternativeWaterSupplyEfficiencyOptionsinCA.pdf).

expensive water supplies effectively increases the cost of providing water service and exacerbates affordability concerns for low-income households, and could undercut the new water ethic the State has been working to foster.

The energy sector provides directly relevant guidance regarding the balance between supply and demand management. In California, energy utilities have efficiency targets *and* a renewable portfolio standard. This approach maximizes the value of investments in renewables and opportunities to reduce greenhouse gas emissions. Likewise, efforts to manage water demand and water supplies should be separated to maximize the value of those investments. There are numerous incentives (financial and non-financial) to expand water supplies in California, including Proposition 1 and water reuse and stormwater capture goals. Water conservation and efficiency promote the efficient use of *all* water resources in California, including recycled water, and help to ensure that we maximize the *value* of these investments.

2. Adopt a practice-based approach for commercial, industrial, and institutional water users.

There are significant opportunities to reduce commercial, industrial, and institutional (CII) water uses in California. The failure to use water efficiently and sustainably manage water resources threatens future economic growth and development. Further, saving water reduces business costs, making California businesses more competitive in the global market. Finally, the technologies and processes developed in California to use water more efficiently can be exported to other states and other countries, providing an invaluable business opportunity.

The proposed framework recognizes the diversity of CII water uses and, thus, recommends a practice-based approach rather than quantitative water use targets for the CII sector. Specifically, water suppliers would be required to implement three practices to reduce CII water use: converting all landscapes over a certain size threshold to a dedicated irrigation meter or similar technology; classifying all CII accounts using North American Industry Classification System (NAICS) or similar system; and conducting water-use audits or requiring water management plans for CII accounts over a certain threshold.

We support this approach and urge the EO Agencies to convene a new CII workgroup immediately to develop the classification scheme and identify size thresholds and content requirements for water management plans. We further urge the workgroup to consider classification methods and approaches used outside California, including in Australia. Finally, we urge the state to conduct periodic detailed surveys of CII businesses in California to develop metrics and performance measures that can be used to develop benchmarks for evaluating progress in improving water-use efficiency among CII sectors. Several cities across the country, including most recently the City of Los Angeles, are already developing reporting requirements and benchmarks to improve water (and energy) efficiency at commercial buildings. This could serve as a model for the state and could be expanded to include other sectors.

3. Require installation of dedicated irrigation meters on commercial, industrial, and institutional landscapes of 1,000 square feet or more by 2020 and of 500 square feet or more by 2024.

The Public Review Draft defers the identification of size thresholds for dedicated irrigation meters until December 2018 and does not provide a timeframe for requiring installation. We recommend that the EO Agencies, using the Model Water Efficiency Landscape Ordinance as a guide, require the installation of dedicated irrigation meters on landscapes equal to or greater than 1,000 square feet by January 1, 2020 so that these landscapes can be included in the reporting starting in 2021. We further recommend that the EO Agencies require the installation of dedicated irrigation meters on landscapes equal to or greater than 500 square feet by January 1,

2024 so that these landscapes can be included in the reporting starting in 2025. The Final Report should provide and/or reinforce the authority of water suppliers to install dedicated irrigation meters on new and existing connections as necessary to meet the requirements of this regulation.

Finally, we recommend that the EO Agencies develop a methodology to estimate outdoor water use for *all* CII landscapes, i.e., those served by dedicated irrigation meters and mixed-use or master meters. Given that the landscape area measurements for the water supplier service area will capture landscape area for residential and CII accounts, outdoor water use for CII customers without dedicated landscape meters must be estimated and used to evaluate progress in outdoor water efficiency.

4. Adopt a "good enough" approach for landscape area measurements and refine as technology improves.

Outdoor water use represents about half of all urban water use in California. As noted in the Public Review Draft: "The EO Agencies anticipate that the greatest water efficiency savings will be achieved through changes in outdoor landscape water use, due to the relatively high use of water in this sector compared with others" (page 3-4). The proposed outdoor water use standard will be based on local evapotranspiration requirements and landscape area measurements for each water supplier provided by the State. While we appreciate the State's efforts to develop more accurate landscape measurements, we urge the State to develop a "good enough" approach for these measurements. Some of the issues raised by water suppliers, such as concerns about tree canopy, are relevant when estimating landscape area for a household or account but are less relevant for estimates at the scale of the water supplier service area. This suggests that high degrees of accuracy may not be needed at larger spatial scales. Furthermore, technology - and the accuracy of that technology - will improve over time, which would allow for refinements in the landscape area measurements by the 2025 compliance date. Slowing down the process now will give the water suppliers less time to develop programs and policies and allocate adequate resources to meet their 2025 targets, reducing the likelihood of successful implementation of the framework.

5. Develop indoor residential and outdoor standards by 2018, with formal adoption in 2020.

Californians have been successful in reducing water use in response to the drought, exceeding the State's 20x2020 target in many regions well ahead of schedule. We urge state and local entities to build on recent conservation successes to prepare for the deepening challenges to long-term water reliability posed by climate change and continued population and economic growth. Timely implementation of the water use standards and targets will help put the State on firm ground to address these challenges.

The Public Review Draft calls for the EO Agencies to recommend final 2025 compliance standards for indoor residential and outdoor standards and to develop regulations and guidelines for the implementation of the CII measures by 2018. It also calls for the EO Agencies to complete rulemaking and adopt final 2025 compliance standards for indoor residential, outdoor, and water loss standards in 2020. We urge the state to maintain this timeline, as it balances the need to build on existing opportunities while providing sufficient time for conducting studies to inform the process. Additionally, we urge the state to ensure all necessary measures (i.e., installation of dedicated irrigation meters, etc.) are implemented in a timeframe that allows this schedule to be met.

The role of interim targets in the proposed framework is unclear, and we urge the state to clarify their role in the Final Report. We recommend that water suppliers develop interim targets for 2021. These targets would be

developed in 2018 based on indoor residential and outdoor standards. Given that these are annual targets, we recommend that compliance with the 2021 interim targets be examined by the Water Board and DWR in 2022, when 2021 data are available. Starting in 2022, water suppliers that fail to meet interim targets and show insufficient progress to meeting the 2025 targets would then be provided with compliance assistance and/or face enforcement actions from the Water Board. Further, we recommend that the Final Report develop a quantitative definition of "sufficient" progress.

6. Require reporting on all elements of the water use standards and targets.

Regular and consistent reporting of data is essential for the development and refinement of the water-use standards and for evaluating implementation of those standards. The Public Review Draft states that water suppliers will be required to submit limited annual progress reports beginning in 2019 showing their implementation of the CII measures and progress toward achieving the interim and final targets. Starting in 2022, more comprehensive annual progress reports would be required.

We urge the state to develop a robust reporting framework. As part of that framework, we recommend that water suppliers be required to report on their performance for each element of the standard, i.e., residential use, CII outdoor irrigation from dedicated landscape meter data, estimated CII outdoor irrigation using the DWR methodology proposed above, and water losses. This would allow the local utilities, the state and the public to better understand where progress is being made and what additional actions may be needed to help water suppliers achieve their targets. Further, we recommend that these data are made available to the public in a timely manner and be in a form that can be easily analyzed.

7. Update and extend water use standards and targets on a regular basis.

The Public Review Draft recommends that the EO Agencies review and consider updates to the standards, starting in 2025 and every five-years thereafter. Further, updated standards would be made available six months to a year prior to the July deadline for submitting UWMPs. We agree with this approach, but recommend the state develop a rolling framework that extends standards by 10 years.

For example, after an initial set of studies are completed in 2018, we recommend that the state adopt interim standards for 2021 and a compliance standard for 2025. In 2021, we recommend that the state (1) evaluate the 2025 standard to determine if an adjustment is needed (based on available data) and (2) adopt a provisional 2030 standard. Likewise, in 2025, we recommend that the state develop a final 2030 standard and a provisional 2035 standard. This process of updating the standards would allow for an adaptive management approach based on new water-use data as well as the development of technologies and practices likely to be developed over the coming years that could further reduce water use. This process would also send a clear message that these standards are going to continue to go down, where appropriate, and provide further incentive to begin work to meet them immediately. Finally, providing a rolling framework that extends standards by 10 years provides water suppliers with time to dedicate resources to meet these standards and to integrate them into their financial, programmatic, and operational planning processes.

8. Develop a clear and transparent framework for enforcement.

The credibility of the new framework depends on state agencies assuming the role of identifying and promptly addressing instances of non-compliance. Effective enforcement will help to ensure that the new proposed framework is recognized by all as a fair, level playing field.

The Public Review Draft provides that water suppliers not in compliance with the standards-based water use targets by 2025 would be ineligible for State grant and loan funding, and that those suppliers not on track to meet interim or final standards-based targets "may be provided with additional compliance assistance and/or face enforcement actions from the Water Board" (page 3-10). Suppliers who fail to submit the requisite reports may also be subject to enforcement actions. We support these recommendations and urge the state to maintain them in the Final Report.

The Final Report would provide greater value if it is also expanded to clearly describe enforcement roles, priorities, and protocols. DWR and the Water Board should each play specific but differing roles in the enforcement process. Data to evaluate progress toward meeting the water use standards and targets should be reported directly to the Water Board. DWR, in coordination with the Water Board, should then provide technical and financial assistance to help utilities meet the standards, while the Water Board should evaluate compliance on an ongoing basis and maintain independent enforcement authority.

Further, the Water Board should develop a clear and transparent enforcement framework by communicating enforcement priorities at the outset of adopting the water use standards and targets. The Public Review Draft identifies Conservation Orders as one enforcement option. We support the Water Board's use of Conservation Orders and urge the Board to develop a sample Order that identifies requested actions under forthcoming orders. Finally, we encourage the Water Board to consider developing a schedule of minimum mandatory penalties for non-compliant suppliers to allow for efficient enforcement, given Water Board's limited staff resources to implement this new program.

B. Water Waste, Leaks, and Losses

EO B-37-16 includes several provisions relevant to water waste, leaks, and losses under the heading "Eliminate Water Waste." Three specific directives call for the following actions by state agencies:

Directive 4. The Water Board shall permanently prohibit practices that waste potable water, such as:

- Hosing off sidewalks, driveways and other hardscapes;
- Washing automobiles with hoses not equipped with a shut-off nozzle;
- Using non-recirculated water in a fountain or other decorative water feature;
- Watering lawns in a manner that causes runoff, or within 48 hours after measurable precipitation; and
- Irrigating ornamental turf on public street medians.

Directive 5. The Water Board and the Department shall direct actions to minimize water system leaks that waste large amounts of water. The Water Board, after funding projects to address health and safety, shall use loans from the Drinking Water State Revolving Fund to prioritize local projects that reduce leaks and other water system losses.

> Directive 6. The Water Board and the Department shall direct urban and agricultural water suppliers to accelerate their data collection, improve water system management, and prioritize capital projects to reduce water waste. The California Public Utilities Commission shall order investor-owned water utilities to accelerate work to minimize leaks.

The Public Review Draft responded to these directives with few substantive proposals beyond current law and policy. For example, in response to Directive 4, water waste regulations could have been initiated within weeks of the EO, but have yet even to begin. The Public Review Draft offers no further detail and covers no topics other than the initial list contained in the EO itself.

Likewise, in response to Directive 5, the Public Review Draft is largely a discussion of actions to be taken under prior existing law (SB 555), with delayed rather than accelerated implementation. The statutory deadline of January 1, 2017 for DWR adoption of SB 555 water loss reporting regulations will be missed. The water loss standard to be set by 2020 in the Public Draft Report is proposed to carry a 2025 compliance date, even though SB 555 would allow for the standard to be enforceable upon adoption. Additionally, the directive to the Water Board to prioritize the State Revolving Fund (SRF) for local projects that reduce leaks is not addressed.

Finally, in response to Directive 6, the Public Review Draft offers no response to the directive to DWR and the Water Board to direct urban and agricultural agencies to accelerate data collection, improve water system management, and prioritize capital projects to reduce water waste. For instance, there is no discussion of the role of automated metering infrastructure (AMI) or other data-driven approaches to customer leak notification. Conversely, DWR proposes to *eliminate* currently required reporting of farm gate water delivery data by agricultural water suppliers. In contrast, the CPUC has prepared a draft order to investor-owned water companies to accelerate work to minimize leaks.

To respond more effectively to the Governor's directives, we offer the following recommendations.

1. Clarify and strengthen the list of permanently prohibited practices that waste water.
2. Maintain the schedule for setting water loss performance standards laid out in SB 555.
3. Require annual testing of production and import meters to improve the validity of water audits.
4. Begin preparation for component analysis, which is the critical transition from performing water audits to making cost-effective investments and practices that actually reduce water losses.
5. Prioritize water loss funding from the Drinking Water State Revolving Fund (DWSRF) to local agencies reporting high levels of water loss and to small systems.
6. Expand and accelerate meter installation and improve meter accuracy to reward customers who conserve and to better record flows indicative of customer-side leakage.
7. Make customer leak notification a statewide practice.

These points identify ways in which the EO agencies can be responsive to the Governor's directive to "*accelerate*" efforts to reduce water waste in a manner that is constructive and consistent with ongoing efforts by urban water suppliers. Additional detail on each of these recommendations is provided below:

1. Clarify and strengthen the list of permanently prohibited practices that waste water.

The EO calls for the Water Board to adopt permanent rules prohibiting the wasteful use of water. The illustrative list of prohibited wasteful practices by end-users in the EO should be clarified and expanded. We recommend that the state permanently prohibit practices that waste water (in any form), including:

- Washing automobiles with a hose not equipped with a shut-off nozzle;
- Irrigating during or within 48 hours after measurable precipitation;
- Application of water to outdoor landscapes, including parkway strips, in a manner that causes runoff or overspray such that water flows or falls onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures;
- Application of water for dust or other pollutant suppression purposes other than by means of a hose fitted with a flow cut-off device or a vehicle fitted with sprinklers;
- Operating a fountain or other decorative water feature without a water recirculation system;
- Application of water to sidewalks, driveways, or other hardscapes, except where required by sanitation or health codes;
- Irrigating ornamental turf or water-intensive plants on public street medians;
- Sprinkler irrigation between the hours of 10am and 4pm;
- Installation of non-recirculating systems in any new commercial in-bay or conveyor car washes and commercial laundry systems;[3,4]
- Installation of single-pass cooling systems in buildings requesting new water service;[5]
- Serving drinking water to customers in restaurants and other food service establishments, unless requested by the customer;
- Laundering the towels and bed linens provided to a hotel or motel customer on a daily basis, unless requested by that customer;
- Watering landscapes in excess of 1.0 ET;[6] and
- Continued use of inefficient plumbing as defined and prohibited by SB 407(2009).

While state agencies cannot hope to directly enforce each prohibition, it is reasonable to expect water suppliers to develop and implement strategies and policies to discourage, prevent, and ultimately eliminate practices deemed wasteful by the State. Where not otherwise captured by the permanent conservation regulations, urban water

[3] In a conveyor car wash system, the car moves on a conveyor belt while the exterior of the car is washed. At an in-bay automatic car wash, the vehicle is parked in a bay and remains stationary while a machine moves back and forth over the vehicle to clean it.

[4] Commercial laundry systems include (1) on-site facilities, or On Premises Laundry (OPL), dedicated to washing fabrics used at the location, such as in hotels, hospitals, nursing homes, prisons, universities, etc.; and (2) centralized contract laundries, or industrial laundries, that launder fabrics from other businesses, such as uniforms, restaurant table cloths, bed linens, etc.

[5] "Single-pass cooling systems" means equipment where water is circulated only once to cool equipment before being disposed.

[6] This would be a quantitative metric distinct from the prohibition against run-off, overspray, etc. Also, more stringent criteria should apply to landscapes installed after January 1, 2010.

suppliers should be directed by the Water Board to develop and submit water waste prevention plans to effectuate these prohibitions.

2. Maintain the schedule for setting water loss performance standards laid out in SB 555.

We support the proposal in the Public Review Draft that the Water Board adhere to the statutory schedule established in SB 555 (2015) to adopt a performance standard for water system losses. Performance standards should be informed by a robust set of validated water audit reports from California water suppliers, and as anticipated in the legislation, this will take at least two more years. These performance standards are due to be completed no sooner than January 2019 and no later than July 2020.

The Public Review Draft proposed that the water loss standard adopted in 2020 would not require compliance until 2025 (p. 3-8). We believe it is exceedingly premature to settle upon a deferred compliance date when the structure of the standard itself has yet to be developed. The water loss standard may include staged requirements, rolling averages, or some other structure with phased increases in stringency. We recommend that the standard, in whatever form, be enforceable upon adoption.

Regrettably, DWR is already slipping behind *its* statutory deadline for finalizing rules for the preparation and submission of water audit reports, even though the stakeholder process for the draft rule was completed in September. It is important that administrative delays not postpone the schedule laid out in the statute for California's water suppliers to begin submitting validated audit reports each year, beginning October 2017.

3. Require annual testing of production and import meters to improve the validity of water audits.

The AWWA water audit software used by California water suppliers ranks the quality of data for the audit on a scale of 1 to 10 (with 10 being the highest quality data). The software automatically generates a recommendation to improve the validity of production and import meter data as a top priority if the submitted values do not carry a high data-quality score.

By rule, the Water Board should require annual testing of large system input meters, under procedures that would be equivalent to at least level "6" in the AWWA data validity matrix for audits to be filed in October 2018 and level "8" for audits to be filed in October 2020. The specifics of the data validity scores of 6 and 8 are indicated in the note below.[7]

The Water Board may wish to refine and clarify these requirements further, such as allowing electronic calibration results to satisfy the accuracy requirement in level 6. Additionally, a rule should allow for case-by-case extensions to be issued by the Water Board upon a water supplier's showing of exceptional physical or financial constraints that preclude timely compliance. Where extensions are granted, utility procedures for input meter error adjustment should be reviewed for adequacy.

[7] As per the AWWA software: "Level 6. At least 75% of treated water production sources are metered, or at least 90% of the source flow is derived from metered sources. Meter accuracy testing and/or electronic calibration of related instrumentation is conducted annually. Less than 25% of tested meters are found outside of +/- 6% accuracy."
"Level 8. 100% of treated water production sources are metered, meter accuracy testing and electronic calibration of related instrumentation is conducted annually, less than 10% of meters are found outside of +/- 6% accuracy."

System input meter accuracy is a prerequisite for an accurate and meaningful audit. The annual testing of all production meters has been a requirement of the California Urban Water Conservation Council (CUWCC) water loss BMP since it was adopted in 2009. It is now time for all water suppliers to implement this industry standard within a specific schedule set by the Board.

4. Begin preparation for component analysis, which is the critical transition from performing water audits to making cost-effective investments and practices that actually reduce water losses.

DWR and the Water Board should act to encourage water suppliers to begin work on component analysis – the crucial step between a water audit and a water loss control program.[8] All water suppliers will need to undertake such analyses in order to meet the new water loss performance targets that will be set by the Water Board by 2020 in a cost-effective manner. Component analysis consists of a series of steps that water suppliers take to better characterize their leakage by type and location. Some of these actions could be suitable for state agency consideration, either as prescriptive requirements, reporting requirements, or for financial assistance. Possibilities in this area might include standardized reporting on breaks and repairs, and some aspects of pressure monitoring and management. District metered areas (DMA) work might be considered for financial assistance as well.

5. Prioritize water loss funding from the Drinking Water State Revolving Fund (DWSRF) to local agencies reporting high levels of water loss and to small systems.

The Water Board should move promptly to make DWSRF funds available to address water system losses as called for under Directive 5. Directing funding to water suppliers whose audit reports show high volumes of loss or low data validity scores will encourage greater candor in the preparation of water loss audits, and focus state resources on systems that are most likely to have cost-effective opportunities to significantly reduce losses. Applying a "worst first" prioritization for the water loss funding that will be made available from the DWSRF would encourage agencies to fully account for losses and reduce the perception of stigma that some might associate with reporting high loss levels or low data quality. Systems reporting a high volume of loss per service connection and/or low data-quality scores should be encouraged to seek financial assistance.

Small systems are often in need of the tools widely available in other communities to properly manage their water supplies. Resources for leak detection and repair are essential. One example is the community of Seville, which has been waiting for funding to repair its dilapidated distribution system for years. Recently, residents ran out of water temporarily due to leaks and lack of meters to track water use.

Rather than excluding small systems from requirements to install meters, audit for leaks and losses, report use, and establish drought contingency plans, assistance should be made available to help small systems comply. If California continues the pattern of exempting small systems from these types of requirements, statewide data will never be available on water vulnerability, and these communities will continue to lack the tools to adequately respond to drought conditions and ongoing water challenges.

[8] The 2014 report *Real Loss Component Analysis: A Tool for Economic Water Loss Control*, Report #4372a published by the Water Research Foundation and the US EPA, contains extensive discussion of the elements of component analysis.

6. Expand and accelerate meter installation and improve meter accuracy to reward customers who conserve and to better record flows indicative of customer-side leakage.

State law has long recognized the importance of water meter installation and volumetric billing as essential tools to make efficient use of water and avoid waste (see Section 521 of the Water Code). We recommend several measures that would expand and accelerate the benefits to be realized by universal and more accurate customer metering.

First, amend the Water Measurement Law (§§500 - 535, CA Water Code) to do the following:

a. Accelerate the required completion of meter installation by all urban water suppliers[9] from 2025 to 2020, as the City of Sacramento has already stated its intention to do.
b. Extend the coverage of the law to include full meter installation by all public water systems by 2025. Even the smallest water systems need customer service meters to help encourage efficiency and locate excessive or wasteful use.
c. Require public water systems with 1,000 or more service connections to institute volume-based customer charges (as currently required for all urban water suppliers) by 2025. Such systems typically serve between 3,000 and 10,000 people, and both utilities and customers will benefit from the completion of meter installation and the use of meters for billing purposes.

Any state financial assistance should stipulate these implementation dates as a contractually enforceable requirement.

Metering is one of the most critical strategies for protecting communities from drought and promoting more resilient water systems. Yet, many small rural water systems cannot afford to install and/or maintain water meters for the communities they serve. Without meters, residents cannot conserve water effectively because they don't know their water use, and all households are subject to flat rates, paying the same amount regardless of their water use. Moreover, drought surcharges, if implemented, would most likely be applied to all households equally. Flat rates and surcharges place undue burden on low water users, many of whom are low-income households. Establishing tiered rate structures to create a more resilient water system and more equitably allocate costs is impossible until meters are in place.

Second, the Water Board should strengthen voluntary industry standards for service water meter accuracy by establishing a minimum accuracy requirement for volumes recorded at low flow rates indicative of leakage.

AWWA's voluntary standards for the accuracy of new meters are inadequate to effectively ensure that leakage flows are recorded. Although data on the variability of new meter accuracy at extended low flows has been available from the Water Research Foundation since 2011, AWWA's minimum test flows haven't been revised in almost 100 years. For 5/8 inch meters, this standard is lax enough to obscure a leak of more than 300 gallons per day. For 1-inch meters, a leak of up to 1,000 gallons per day may be significantly under-recorded. Mechanical meters are on the market today that achieve greater accuracy than required by the current AWWA standard.[10] A regulation setting an accuracy standard for all new customer service meters purchased by California water

[9] Defined as systems serving over 3,000 customer connections or delivering more than 3,000 acre-feet per year.

[10] NRDC contacted with Utah State University to conduct tests in 2014 on a sample of new mechanical service meters in sizes from 5/8" to 1", and found meters performing substantially better than the AWWA standard to be commercially available at that time from multiple manufacturers.

suppliers would help identify hidden leaks on customer premises much sooner and benefit water suppliers and consumers alike.

7. Make customer leak notification a statewide practice.

By rule, the Water Board should charge each urban water supplier to examine customer accounts and service connections for indications of customer-side leakage and to notify customers where leakage is indicated. The recent *Residential End Uses of Water Study* found average customer-side leakage to be 17 gallons per household per day (gphd), or 12% of total indoor use.[11] Moreover, 32% of homes had leakage rates higher than average, some as high as 600 gphd, indicating that total leakage is highly skewed by homes with significant leaks. This underscores the importance of alerting customers to the likely presence of leaks on their premises.

Customer leak notification is a key benefit offered by AMI upgrades to utility metering infrastructure. But customer-side leaks can be indicated on systems without AMI by using other techniques, such as customer bill analysis or acoustic monitoring at meter boxes.[12] Customer leak notification has been a requirement of the CUWCC water loss BMP since it was adopted in 2009, and should now be implemented and reported by all urban water suppliers.[13]

C. Water Shortage Contingency Plans

EO B-37-6 directs DWR to "strengthen requirements for urban Water Shortage Contingency Plans, which urban water agencies are required to maintain. These updated requirements shall include adequate actions to respond to droughts lasting at least five years, as well as more frequent and severe periods of drought. While remaining customized to local conditions, the updated requirements shall also create common statewide standards so that these plans can be quickly utilized during this and any future droughts."

The Public Review Draft includes several new requirements and recommendations. We strongly support the EO Agencies' proposal to require water suppliers to evaluate the impact of plausible climate change effects on existing supplies and demands. While many utilities are already moving in this direction, this support from the state will better enable consistent planning across California. We also concur with the recommendation to review the Water Shortage Contingency Plans for both completeness *and* adequacy. We offer the following recommendations for improving Water Shortage Contingency Plans:

1. Develop a methodology to demonstrate financial preparedness and include reporting on revenue impacts during water shortages;
2. Develop standardized water shortage and demand reduction phases;
3. Develop communications plans for the standardized water shortage and demand reduction phases;
4. Encourage collaboration for plans that include shared regional water supplies; and
5. Identify methods to encourage water suppliers to submit a complete Water Shortage Contingency Plan.

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[11] *Residential End Uses of Water Study, Version 2*, Water Research Foundation, 2016. For Executive Summary, see < http://www.waterrf.org/PublicReportLibrary/4309A.pdf>.

[12] See Attachment B of NRDC's January 7, 2015 letter to the Water Board describing common approaches to customer leak notification and recommending the adoption of a rule.

[13] California Urban Water Conservation Council, *BMP 1.2 Water Loss Control, A.6*, available at -- <http://www.cuwcc.org/Portals/0/Document%20Library/About%20Us/MOU/MOU%2001-04-2016.pdf>. See p. 24.

Additional detail on each of these recommendations is provided below:

1. Develop a methodology to demonstrate financial preparedness and include reporting on revenue impacts during water shortages.

Revenue stability has been one of the greatest challenges for water suppliers during the current drought, yet there are still no substantive changes regarding revenue stability in the Public Review Draft. As we experienced over the past five years, simply providing an "analysis of the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts" are inadequate for ensuring that mechanisms are in place to guarantee the financial viability of water suppliers.

We recommend that by January 1, 2019, DWR conduct an analysis of the challenges and best practices for maintaining financial stability during a water shortage and develop a methodology for water suppliers to demonstrate that they have adequate mechanisms in place to ensure revenue stability for a drought of at least five years in duration. In addition, we recommend water suppliers be required to include the following information for each of the standard water shortage phases:

- The net financial impact of reduced sales and reduced water production or costs associated with supply augmentation for the first 12 months of a water shortage phase; and
- Policies and practices adopted or in place that will go into effect within 90 days of the declaration of a water shortage phase that will offset at least 50% of the net financial impact projected to result from such declared water shortage phase.

2. Develop standardized water shortage *and* demand reduction phases.

We are supportive of the new requirement for Water Shortage Contingency Plans to include six *standardized* water shortage phases. The Public Review Draft also requires water suppliers to develop a series of progressive shortage response actions (SRAs) that include a locally appropriate mix of short-term water efficiency and/or demand reduction actions, supply augmentation, and/or operational changes necessary to respond to actual or predicted shortage conditions. However, given the uncertainty associated with California's water supplies, water suppliers must also be prepared to implement demand reduction actions in response to water shortages.

We recommend that the state also require water suppliers to develop standardized demand reduction plans, using the same six standardized water shortage levels in the Public Review Draft that specify the water use reduction methods to be implemented at each stage. Standardized demand reduction stages would provide both the public and the state with a better understanding of the actions being taken at the local level.

3. Develop communications plans for the standardized water shortage and demand reduction phases.

We are supportive of the inclusion of a plan describing "the planned communications approach and anticipated actions intended to quickly inform customers, the public, and regional and State interests, about current shortages or predicted shortages as determined by the Water Budget Forecast, expected implementation of SRAs, and other necessary communications."

We recommend that water suppliers be required to include specific communication plans for each of the six standardized water shortage phases. Furthermore, we recommend that the EO Agencies require water suppliers to have a communication strategy for each demand reduction stage.

4. Encourage collaboration for plans that include shared regional water supplies.

The annual water budgets may not consider the amount of water that other suppliers are counting on from the same sources. The lack of a regional perspective means suppliers may not recognize that certain sources are over-allocated until production falls short of demand; this is especially true in certain groundwater basins. We therefore recommend Urban Water Agencies within a region share their annual water budget to ensure sustainable levels of water production among nearby water agencies.

5. Identify methods to encourage water suppliers to submit complete and adequate Water Shortage Contingency Plans.

Current statutes direct urban suppliers to provide a water shortage contingency analysis as a component of their UWMPs, which are updated every five years. A water supplier that fails to submit a complete plan is ineligible for state grants and loans. However, some urban water suppliers have yet to prepare Water Shortage Contingency Plans while other water suppliers prepared plans that were found to be inadequate during the current drought. We must ensure that all suppliers are adequately prepared for future droughts and other water shortages. In order to encourage water suppliers to submit complete and adequate plans, we recommend that DWR be required to publish a report on the completeness and adequacy of the Water Shortage Contingency Plans, which will be made publicly available and submitted to the Water Board; akin to the UWMP reporting website but specific to Water Shortage Contingency Plans.

In instances where technical and financial assistance do not result in the timely submission of adequate and complete contingency plans, the Water Board should take enforcement action. Enforcement of this planning requirement will serve to benefit the water suppliers and their ratepayers by ensuring preparedness for future water shortage emergencies. Enforcement action to ensure timely submission of planning documents is a critical feature of numerous other Water Board policies and permitting schemes. For example, the Water Board is currently required to fine dischargers who do not submit annual reports under CHAPTER 5.9. The Storm Water Enforcement Act of 1998 [13399.25 - 13399.43] (Chapter 5.9 added by Stats. 1998, Ch. 998, Sec. 3.). Additionally, under the recently enacted Sustainable Groundwater Management Act (SGMA), the State Water Board has the authority to intervene and assess fees on groundwater basins that have not adopted a sustainability plan or in instances where the plan or its implementation is inadequate (Water Code Chapter 11. 10735.2).

D. Drought Planning for Small Water Suppliers and Rural Communities

Many small and rural communities lack the technical and financial capacity to develop drought or water shortage contingency plans. This problem is particularly severe for the state's smallest water systems as well as self-supplied domestic water users. As the thousands of well outages throughout the state have demonstrated, these communities are the most vulnerable to drought and urgently need to plan for water shortages.

Although drought contingency planning is essential for small and rural communities, "improved drought planning" as required by the EO requires more than an emergency plan for responding to drought conditions after they appear. Small community water systems (CWS) and domestic self-suppliers have few, if any, warning

systems to indicate a problem *prior* to a supply failure and even when they have notice, they have very little capacity to mitigate drought impacts on their own. Thus, the proposed framework, which includes monitoring, assessment, and planning for both preventative and corrective actions, is critically important.

A key shortcoming of the Public Review Draft is that it fails to provide a timeline for determining the roles and responsibilities of local and state agencies as well as enforcement mechanisms. Rather, these key components are to be determined as "development progresses." We urge the EO agencies to develop and adhere to a timeline to ensure that small and rural communities are not left behind.

Further, we provide the following recommendations for each of the five areas identified in the Public Review Draft:

1. Develop tools that build reporting and data collection capacity for small systems and rural communities.

Guidance is needed for establishing an inventory of all non-urban water suppliers (i.e., those without an Urban Water Management Plan), especially State Smalls, for all counties in California. Some counties with Local Primacy Agencies (LPA) already have monitoring systems that could serve as models. These inventories could mirror what the Water Board now collects on the PWS and could include other information needed for drought vulnerability assessments, such as public-supply well water levels. Data collection should be standardized across all counties and be made available electronically to stakeholders in a timely manner. Given the limited staff time and capacity of smaller systems, and to ensure consistent reporting, EO agencies should create a tool that enables local agencies (systems and counties) to identify vulnerabilities to water shortage and appropriate response strategies and policies.

Additionally, to conduct drought vulnerability assessments for systems reliant on groundwater, DWR should provide statewide information on well logs for domestic wells and partner with the Water Board to do something similar for public supply wells that not subject to Urban Water Shortage Contingency Plans.

2. Develop clear communications protocols.

Communication is key to successful drought planning and response. Plans must have clear communications protocols, including local government contacts for each community and state level contacts, for periods leading up to and during an emergency drought declaration. Lack of such protocols was a major barrier to effective response during the current drought and is needed to ensure efficient and effective drought response in the future. Communication can also be improved by enhanced data collection, management, analysis, sharing, and transparency at all levels.

3. Ensure consistent drought planning requirements for all counties.

County drought plans could be embedded in various existing policy vehicles, as suggested in the Public Review Draft. However, they should not solely rely on current requirements. There needs to be consistency across counties for data collection and planning, and this will require clear and standardized requirements regardless of which mechanism a county employs. As urban suppliers are required to update their Urban Water Management Plan every 5 years, counties should also be required to reevaluate and update their drought response plans.

4. Clarify the roles and responsibilities of local, regional, and state agencies.

The county should have the opportunity to act as the lead agency in developing their Water Shortage Contingency Plan, but if they are unable or unwilling to take on that responsibility in a timely fashion, the State or Regional Water Board should take the lead. When drought conditions strike, the state and county should work together to identify and respond to systems at-risk of being unable to provide safe drinking water within 30-60-100 days.

5. Facilitate regional collaboration and coordination between small systems.

Regional collaboration and coordination are key avenues through which small systems operators and board members can share information, experiences, and effective drought response strategies. Where possible, drought technical assistance extended to individual systems should be done in coordination with nearby systems - both small and large - to ensure coordinated responses, especially in areas with shared water sources.

Many small, rural communities are dependent on groundwater and are, thus, disproportionately vulnerable to regional conditions and management and often have limited technical, managerial and financial capacity to adapt. Drought planning for small and rural populations should leverage the opportunities presented by the Sustainable Groundwater Management Act (SGMA). The process of developing Groundwater Sustainability Plans, through SGMA, should be used to provide thorough drought vulnerability assessments and stress tests for small systems and domestic well owners.

E. Financial and Technical Assistance

The Public Review Draft refers throughout to "technical and financial" assistance that the State, specifically the Water Board, DWR and CPUC, will provide to utilities in connection with implementation of the EO Framework. Such assistance is critical to ensuring successful implementation of the EO provisions. While there is little question that making conservation a way of life in California will serve to make utilities stronger and more financially sound in the long run, the draft correctly acknowledges that the shift to eliminating waste and becoming more efficient can pose financial challenges for water suppliers. We support the recommendation that water suppliers be encouraged to adopt conservation-oriented water rates, including drought surcharges, and/or rate stabilization/reserve funds to better manage revenue fluctuations that occur during droughts or other unexpected conditions.

The Public Review Draft is also correct that State financial assistance will never be sufficient for water suppliers to implement all necessary actions to comply with the requirements outlined in the framework. However, for many if not most urban water utilities, the actions outlined in the Public Review Draft present a number of technical and financial challenges; delineating the technical and financial assistance that will be available to water providers to navigate this transition would substantially strengthen the framework and increase the likelihood of effective implementation. We offer the following recommendations for improving financial and technical assistance:

1. Develop a "one stop shot" for loans and grants available for EO implementation.
2. Provide a menu of technical assistance programs that will be available to water suppliers.

Additional detail on each of these recommendations is provided below:

1. Develop a "one stop shot" for loans and grants available for EO implementation.

We propose that the State establish a central, one-stop shop for loans and grants available to utilities specifically for EO implementation support, with an emphasis on those actions designed to implement the new efficiency standards and targets. These funds could be drawn from existing pots of money, but ideally would involve new funding as well. The Public Review Draft provides little to encourage utilities to believe that they will be able to access additional funds to support the new actions they'll need to undertake under the EO Framework. Instead it lists a number of grant programs that have been available over the last two decades (or longer) that have supported utilities in implementing conservation programs.

The State programs listed are the last four major water bonds, none of which contained significant financial assistance for water conservation and efficiency relative to their total size:

- Proposition 13 (2000)
- Proposition 50 (2002)
- Proposition 84 (2006)
- Proposition 1 (2014)

The draft also references four state and federal programs:

- California Infrastructure and Economic Development Bank's revolving loan fund programs,
- California Lending for Energy and Environmental Need Center's Program, which offers low interest loans of $500,000 to $30 million for water conservation projects,
- WaterSMART, a Bureau of Reclamation program providing funds to water providers for drought contingency planning, and
- The State Revolving Fund (SRF), an EPA loan program managed and administered by the Water Board in California.

Yet, even these programs are fairly limited in the actual support available. For example, WaterSmart is a nationwide program that typically provides few resources to California for efficiency projects. Similarly, the SRFs historically have been used primarily for traditional infrastructure, such as water treatment facilities, not water conservation.

The "one stop shop" should also include the following:

- The EO agencies examine the remaining water bond funds and categories established for spending in each, and determine what remains available that could be directed to a dedicated fund to support utility efforts to implement the EO actions, with a priority for actions implementing the new efficiency standards;
- The EO agencies jointly request the Bureau of Reclamation to consider contributing WaterSmart funds to utility conservation efforts focused on implementing the EO, or directly to the dedicated fund described above;
- The State Board issue guidance clarifying the extent to which SRF resources can be accessed by utilities for efficiency and conservation purposes to implement the EO; and
- The EO agencies prepare a request to the Legislature for additional spending authority to support water providers through this transition period, as indicated in the draft report.

2. Provide a menu of technical assistance programs that will be available to water suppliers.

The Public Review Draft would benefit from greater clarity and precision about the types of technical assistance that the State is planning to provide to water providers in implementing the EO. The programs currently identified in the Public Review Draft focus primarily on water loss, such as the California Water Loss Control Collaborative's Technical Assistance Program for water loss audits. DWR is also directed to provide technical assistance to guide water loss detection programs, targeting urban retail water suppliers with high water losses, in the form of workshops or one-on-one meetings to these suppliers to assist in preparing and implementing water loss reduction plans.

Beyond that, the Public Review Draft is vague about what technical assistance may be provided, although it repeatedly references "compliance assistance" for agencies not on track in meeting the EO Framework's various target requirements and reports. We recommend that the final version of the framework provide a menu of technical assistance options. These could include workshops, one-on-one meetings, data and analytics, reference guides, webinars, etc. Subject areas could include, but not be limited to the following:

(1) Conservation rate restructuring, including drought surcharges and rate stabilization funds
(2) Prop 218 compliance and cost of service studies
(3) Establishing water budgets
(4) Compliance monitoring
(5) Contingency planning
(6) Communications with ratepayers, community leaders, and other local thought leaders
(7) Incorporating efficiency improvements and land-use changes into demand forecasts
(8) Integrating water efficiency into long-range plans

F. Legal Authority

The Public Review Draft suggests that the State may not have sufficient legal authority to take a number of actions laid out in the framework including setting new water use targets and administering uniform contingency planning.

This interpretation is at odds with the expansive authority afforded to the State, and to the Water Board in particular, to protect water resources, prevent waste, and ensure efficient use of water statewide. The California Constitution expressly precludes the waste and unreasonable use of water, and California Water Code §275 delegates broad authority to the Water Board and DWR to take "all appropriate … actions" to address these issues. The Water Board's enabling statute describes its agency function as providing "for the orderly and efficient administration of the water resources of the state" and grants it the power to "exercise the adjudicatory and regulatory functions of the state in the field of water resources." *See* Water Code § 174. In that role, the Board is granted "any powers ... that may be necessary or convenient for the exercise of its duties authorized by law," *id*. at §186(a)(emphasis added), including the power to 'make such reasonable rules and regulations as it may from time to time deem advisable...." *Id*. at §1058.

The Water Board's authority to ensure efficient use extends to all users, regardless of the basis under which the users' water rights are held. *See California Farm Bureau Federation v. State Water Resources Control Bd*. (2011) 51 Cal.4th 421, 429; *Peabody v. City of Vallejo* (1935) 2 Cal. 2d 351, 367-68; *United States v. State Water*

Resources Control Board (1986) 182 Cal. App. 3d 82, 129-130; *Light v. State Water Resources Control Board* (2014) 226 Cal. App. 4th 1463, 1487-88. A substantial body of case law further confirms the Water Board's authority to establish rules regarding water use and reporting requirements in conjunction with its role to ensure efficient use of water supplies.

The recent case of *Light v. State Water Resources Control Board* reaffirmed that the Water Board is empowered to enact regulations governing the reasonable use of water. 226 Cal. App. 4th 1463, 1482-87 ("As currently constituted, the Board 'has been granted broad authority to control and condition water use, insuring utilization consistent with public interest.'" *Id*. at 1481 (*citing Environmental Defense Fund, Inc. v. East Bay Mun. Utility Dist*. (1977) 20 Cal.3d 327, 342)). While various statutes, including, SB7x7, have directed state agencies to take certain actions and set various water conservation targets, nothing prohibits the Water Board from exercising its legal authority to require additional, more specific, or strengthened water use targets, efficiency standards, or water loss targets in the interest of carrying out its mission to ensure that water is used efficiently, and is not wasted, in California. The Water Board has expressly reserved such authority as mandatory permit terms conditioning appropriative water rights issued by the Board. Indeed, Water Code §10610.4(b) expressly recognizes that "the management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions."

With regard to contingency planning, Water Code §10632 already requires urban water suppliers to do contingency planning. Nothing in that section limits the State's authority to include additional information, analysis, or reporting that it deems in the public interest. Water Code §10631(f) also requires a narrative description of water demand management measures, including "(vii) *Other demand management measures* that have a significant impact on water use as measured in gallons per capita per day, including innovative measures, if implemented" (emphasis added). Similarly, Water Code §10620(f) provides that: "an urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions." The new analyses proposed in the Public Review Draft framework appear to fall well within this broad category.

In sum, there appears to be little—if any—legal basis for statements in the Public Review Draft suggesting that the Water Board is without legal authority to set targets or establish planning requirements related to the efficient use of water in California. We recommend revising the Public Review Draft to clarify that the State does not lack current legal authority to take these and other actions identified therein, irrespective of the fact that there is not express legislative authority with regard to each individual component.

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Thank you again for the opportunity to provide comments on the Public Review Draft. We look forward to continuing to work with the EO Agencies to implement the California Water Action Plan and achieve the Executive Order's vision of "making water conservation a California way of life."

Sincerely,

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/s/
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Attachment 1: Summary of NGO Recommendations on the Public Review Draft

A. Water Use Standards and Targets

1. Apply water-use standards and targets to recycled water.
2. Adopt a practice-based approach for commercial, industrial, and institutional water users.
3. Require installation of dedicated irrigation meters on commercial, industrial, and institutional landscapes of 1,000 square feet or more by 2020 and 500 square feet or more by 2024.
4. Adopt "good enough" approach for landscape area measurements and refine as technology improves;
5. Develop indoor residential and outdoor standards by 2018, with formal adoption in 2020.
6. Require reporting on all elements of the water use standards and targets.
7. Update and extend water-use standards on a regular basis.
8. Develop a clear and transparent framework for enforcement.

B. Water Waste, Leaks, and Losses

1. Clarify and strengthen the list of permanently prohibited practices that waste water.
2. Maintain the schedule for setting water loss performance standards laid out in SB 555.
3. Require annual testing of production and import meters to improve the validity of water audits.
4. Begin preparation for component analysis, which is the critical transition from performing water audits to making cost-effective investments and practices that actually reduce water losses.
5. Prioritize water loss funding from the Drinking Water State Revolving Fund (DWSRF) to local agencies reporting high levels of water loss and to small systems.
6. Expand and accelerate meter installation and improve meter accuracy to reward customers who conserve and to better record flows indicative of customer-side leakage.
7. Make customer leak notification a statewide practice.

C. Water Shortage Contingency Plans

1. Develop a methodology to demonstrate financial preparedness and include reporting on revenue impacts during water shortages.
2. Develop standardized water shortage and demand reduction phases.
3. Develop communications plans for the standardized water shortage and demand reduction phases.
4. Encourage collaboration for plans that include shared regional water supplies.
5. Identify methods to encourage water suppliers to submit a complete Water Shortage Contingency Plan.

D. Drought Planning for Small Water Suppliers and Rural Communities

1. Develop tools that build reporting and data collection capacity for small systems and rural communities.
2. Develop clear communications protocols.
3. Ensure consistent drought planning requirements for all counties.
4. Clarify the roles and responsibilities of local, regional, and state agencies.
5. Facilitate regional collaboration and coordination between small systems.

E. Financial and Technical Assistance

1. Develop a "one stop shot" for loans and grants available for EO implementation.
2. Provide a menu of technical assistance programs that will be available to water suppliers.

Attachment 2: Complementary Policies to Help Suppliers Meet New Water Use Standards and Targets

Some water suppliers have expressed concerns about their ability to meet new water use standards and targets. We recommend that the Final Report include a set of complimentary policies that will help water suppliers meet the new water use standards and targets. Below, we provide several recommendations, most of which are drawn from the Independent Technical Panel on Demand Management Measures, Recommendations Report to the Legislature on Landscape Water Use Efficiency (ITP Report), released in May 2016:

1. Develop tax incentives for landscape replacement;
2. Require irrigation system evaluations on single-family homes as part of home inspection;
3. Require reporting for large landscapes;
4. Establish requirements for rainwater capture;
5. Develop product standards for irrigation controllers;
6. Require labeling for all plants sold in California;
7. Update Water Use Classification of Landscape Species (WUCOLS) IV Enhancement; and
8. Develop better enforcement mechanisms for SB 407.

Implementing these measures would require little to no resources from the water supplier but has the potential to help make water conservation and efficiency a California way of life. Additional detail on each of these is provided below.

1. Develop tax incentives for landscape replacement.

The amount of turf in California is vast – over two million acres.[14] No incentive program or programs can provide financial incentives to convert this large area, and replacement of all turf is not necessary to greatly improve the efficiency of landscape water use. Since 2005, there has been active Federal Income Tax Credits for Energy Efficiency. The State is offering nearly $3 billion in incentives for consumers and businesses to invest in solar power. In light of the success and scale of these sustainable energy efforts, the Independent Technical Panel (ITP) recommends that a similar tax credit be established for landscape water efficiency in recognition of the similarly broad statewide benefits to be achieved. Specifically, the ITP recommended that legislation be enacted to establish a five-year statewide landscape replacement incentive program in the form of a non-refundable income tax credit to encourage upgrades of existing high water use landscapes at residential and commercial properties to more sustainable landscapes.

2. Require irrigation system evaluations on single-family homes as part of home inspection.

Each year, roughly 400,000 existing homes are put up for sale in California. Before a sale is completed, most prospective purchasers contract for a home inspection to get a professional assessment of the condition of the home and its major systems to identify any material defects. Home inspections offer an excellent opportunity to inform homeowners and home buyers of material defects in landscape irrigation systems. The ITP recommends that home inspections for dwelling units on a parcel containing an in-ground landscape irrigation system, the operation of which is under the exclusive control of the owner or occupant of the dwelling, include an inspection of the irrigation system. This imposes no new requirements on home sellers, homebuyers, realtors, lenders, or

[14] Total turf in California is estimated at 2.75 million acres plus or minus 25%. C. Milesi, et al, "Mapping and Modeling the Biogeochemical Cycling of Turf Grasses in the United States," Environmental Management, Vol. 36, No. 3, July 2005, p. 433.

water suppliers. The ITP report includes suggested legislative language which can be found in Section 5-1 of the ITP Report.

3. Require reporting for large landscapes.

It is currently difficult for many water providers to adequately account for and manage specific information about existing irrigation systems throughout their service area due to staff limitations and processes to gather and disseminate information, including delineation of irrigated landscape areas. Reporting on the state and status of existing landscape irrigation systems is crucial to managing landscape water use appropriately. The ITP recommended that DWR, in consultation industry stakeholders, create a template for an irrigation inspection report form, an internet portal for electronic submission of such report forms, a database accessible to only local agencies and water suppliers and a method to notify the local agency that a report has been submitted. For an irrigation system report, it would be the responsibility of the local agency or its representative (MWELO section 493.0) to notify the property owner that a report is required. The onus will then be upon the property owner to verify the size of their landscape and see that a report is submitted to a California Department of Water Resources website created for this purpose.

4. Establish requirements for rainwater capture.

We recommend that the state provide a statewide minimum standard for the retention of rainwater from rooftops in new development, giving a boost to the "watershed approach" to sustainable landscaping and providing a consistent floor for any additional stormwater control measures that may be instituted through other means at the local, regional, or State level.

5. Develop product standards for irrigation controllers.

Several studies, many of which are summarized in a 2014 Lawrence Berkeley National Laboratory report, have shown the potential for significant water savings from landscape irrigation controllers that adjust irrigation schedules based on weather data and/or ability to shut off during rain events.[15] There are, however, regulatory gaps that reduce the widespread adoption of efficient irrigation controllers. For example, there are no performance requirements for units installed in new landscapes. To address these gaps, the California Energy Commission should adopt Title 20 water and energy efficiency standards for landscape irrigation controllers. The Title 20 standards would address the regulatory gap that exists for replacement units and for units serving new landscapes not covered by MWELO. The Title 20 standards, which apply to all product sales in California, would also address the current lack of performance requirements for units installed in new landscapes.

6. Require labeling for all plants sold in California.

An estimated 41% of the household in the United States (47 million) consider themselves gardeners (National Gardening Association, What Gardener's Think, 2009). Of these, only 9% are Master Gardeners and garden enthusiasts with adequate plant knowledge, highlighting the need for and the importance of providing horticultural information, such as the botanical and common name and cultural information, at the point of sales for all consumers. We recommend:

- Water Use Labeling: Require that all plant taxa sold in California be identified at the point of sale by water use classification (e.g., low, medium, high) by an approved process, such as through the Water Use

[15] 3 Lawrence Berkeley National Laboratory. 2014. Williams, A., Fuchs, H., and Dunham Whitehead, C. 2014. "Estimates of Savings Achievable from Irrigation Controllers", Lawrence Berkeley National Laboratory. https://ees.lbl.gov/sites/all/files/lbnl- 6604e.pdf

Classification of Ornamental Species ([WUCOLS], science-based research, or DWR-approved process) and organization.

- Point of Installation Identification: Require that representative plants (at a minimum of two plants per taxa per plan) delivered to a landscape job site remain labeled until the project is inspected and approved.
- Programmatic: Revise State regulations to make labeling for plant identification and water use mandatory, rather than voluntary.

7. Update Water Use Classification of Landscape Species (WUCOLS) IV Enhancement.

To enhance the consumer utility of this database and ensure that an outdated list does not inadvertently prevent the introduction and installation of new water-efficient plants, legislation should authorize and direct DWR to review, update, and improve the WUCOLS IV online database to:

- Expand the entries in the database to include a photograph, narrative description, and key cultural information (i.e., full sun, partial shade, etc.) for each entry; and
- Establish and implement a regular process to add new plant taxa to the listing and make corrections to existing listings where necessary.