



Date: June 23, 2015

To: Julie Saare-Edmonds Julie.Saare-Edmonds@water.ca.gov
Senior Environmental Scientist
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California Department of Water Resources

From: California Building Industry Association
California Business Properties Association
Building Owners & Managers Assn. of CA
California Chamber of Commerce
California Apartment Association
NAIOP of California, the Commercial Real Estate Assn
International Council of Shopping Centers
California Retailers Association
American Institute of Architects California Council
California Manufacturers & Technology Association

RE: Industry Comments on Proposed Changes to the Department of Water Resources' Model Water Efficient Landscape Ordinance (as issued on June 12, 2015)

The following comments are submitted on behalf of the organizations cited above, referred to herein as "industry".

****GENERAL COMMENTS****

"Prescriptive Compliance Approach" Option:

At the May 29th Building Standards Commission meeting and again during June 16th DWR webinar, comments were received from the California Building Officials, California Building Industry Association and the United States Green Building Council in strong support for the development and adoption of a "prescriptive compliance approach".

At the present time, the MWELo water budget calculations established by the "MAWA" and "ETWA" formulas effectively create a "performance" approach to compliance, similar to most building standards. However, in the case of building standards, an alternative "prescriptive" approach to compliance almost always accompanies the performance approach. The prescriptive approach does not replace the performance approach. Instead it simply offers the designer or builder with an alternate method of compliance. Examples of these dual approaches to compliance can be found in the Energy Commission's Energy Efficiency Building Standards and the Office of the State Fire Marshal's Wildland-Urban Interface Fire Safety Standards.

As the name implies, the prescriptive approach establishes a set of straight-forward set of minimum requirements and is usually accompanied by a set of clearly defined "scoping provisions" which limit the application of the prescriptive compliance approach. It is our understanding that the California Building Officials and the United States Green Building Council are attempting to develop a prescriptive compliance approach for consideration by DWR as an alternative approach to compliance. **Industry strongly supports this effort and the comments submitted by the California Building Officials (Attachment #1).**

If for some reason a prescriptive compliance approach is not able to be incorporated into DWR's update by the proposed July 15th adoption hearing, **we would encourage DWR to formally indicate their support for such a compliance option and their intent to work with the Building Standards Commission and the Department of Housing & Community Development in the development of such a compliance option** for inclusion in the related building standards that these two agencies will be developing over the next five months.

Fire Safety Issues:

Listening to the testimony provided during the June 16th webinar and having viewed some of the initial written comments being submitted to DWR for consideration, industry has a growing concern related to potential fire safety issues which could arise as the state (DWR) attempts to move away from irrigated turf as the covering for state-mandated defensible-space "buffer zones" around structures located in various state and locally established "fire zones". These are the areas that are frequently referred to as Local Responsibility Areas (LRAs), State Responsibility Areas (SRAs), and the numerous "fire severity" zones. Maps of these areas can be obtained from Cal Fire and each of the counties.

Specifically, commenters were raising serious question regarding the potentially negative impact on fire safety that could occur when irrigated turf is replaced with drought resistant plant species. This concern seemed to center on the collective impact of DWR's increase in the "IE" factor and the simultaneous decrease in the ETAF which may well result in reduced plant options for sloped areas serving as "defensible space". In addition, concerns were also being raised with regards to the "fire resistivity" (or lack thereof) of drought-resistant plants when compared to that of irrigated turf.

We hope that DWR investigates this issue prior to adoption. Looking down the road towards the related adoption by the Building Standards Commission, it should be noted that Health & Safety Code 18930 Criterion #9 requires the Office of the State Fire Marshal to effectively approve any proposed building standard which could impact fire and life safety **prior** to that standard being adopted by the Commission.

Irrigation Efficiency (IE) and Evapotranspiration Adjustment Factor (ETAF):

During the June 12th webinar, an alarming number of representatives from the landscape design and contracting industry provided testimony placing into serious question whether or not DWR's proposed changes to the IE and ETAF numbers could be complied with from not only a design perspective, but a product availability perspective as well. It goes without saying that this presents a serious concern for industry. In addition to having extensive experience with landscape design and installation, many of these same individuals had also been active participants in the last update of the MWELO (completed by DWR in 2009).

While an agency would naturally expect some concern from industry when significant changes are being proposed to a regulation, many of these individuals were providing highly detailed testimony indicating that the DWR proposal goes beyond being "reasonable" and instead places into question whether or not the proposed regulation can actually be complied with in many common circumstances.

For example, is there an adequate supply of compliant product available on a statewide basis? This question can apply to either compliant irrigation devices or drought-resistant plant species. For this reason, **industry strongly supports the comments submitted to DWR by the American Society of Irrigation Consultants on this subject (Attachment #2).**

****SPECIFIC COMMENTS****

Page 2

§ 490 (b):

- Regarding the term “*whole system watershed approach*”: Is there a definition for this term?
- The reference to “*landscapes of any size and scale*” seems to be in conflict with the thresholds established by DWR in §490.1(a)(1) of **500 sf** for new construction and **2,500 sf** for rehabilitated landscape areas.

§ 490(c)(2)

The term “long lived” is used. Is this a typo?

Page 3

§ 490(c)(3)

“reusing rainwater and graywater”

While industry strongly supports these emerging technologies, we are moderately concerned that the lack of reference to “recycled water (via on-site or off-site sources)” will create confusion among users and inadvertently lead to the impression that “graywater” is allowed while “recycled water” is not....at least not in those instances where the term “recycled water” is not used in conjunction with “graywater”.

Put differently, unless DWR formally recognizes that “graywater” and “recycled water” are synonymous, which we do not believe is the case, DWR should consistently list “recycled water” along with “graywater and rainwater capture” to insure the user understands that all three of these forms of “water reuse” are acceptable for landscape irrigation purposes.

§ 490 (c)(5):

Are there definitions for “local native plants”, “climate appropriate non-native plants” and “invasive plants”?

While we understand that this subsection and these terms are part of the “Intent” section, we hope that DWR is aware of the regulatory difficulty that will be placed on HCD and BSC as they try to define these terms and (more importantly) cite those plants which are (and are not) acceptable in specific jurisdictions of the state. BSC’s nine-point criteria prohibit “vague and ambiguous” building standards. The code user must have a clear understanding of what is allowed and what is prohibited in any jurisdiction of the state.

§ 490.1 Applicability

Comment #1: We would request DWR to work with HCD and the BSC in effort to have the updated MWELO and the related building standards take effect on the same date. The BSC and HCD are required to complete a permanent rulemaking within 180 days of the adoption of their May 29th emergency building standards (which among other things included the adoption of a modified MWELO. However, DWR is now considering several updates which in turn will require a similar response by HCD and BSC. It **may** be possible for HCD and BSC to get all of this done in time for adoption at the October 20th BSC Business Meeting. Part of the building standards could include an effective date consistent with that desired by DWR. However, industry is just suggesting that the three agencies simply need to work together on this in order to avoid inconsistent effective dates which will only serve to confuse the end users.

(cont)

Comment #2: At the present time, DWR is proposing an effective date of November 1, 2015. However, there is no clarifying language regarding “how” this effective date is to be applied on a project-by project basis. With regards to building standards, this issue was resolved in 1985 when legislation was signed into law {Health & Safety Code 18938.5} which specifies that a building must comply with the building standards that are in effect **on the date the initial permit application is submitted to the local building department**. Industry would strongly urge DWR to consider providing application language which is consistent with H&S 18938.5 in order to avoid confusion between DWR’s updated MWELo and the pending update of HCD and BSC’s building standards.

§ 490.1(a)(1):

Reference is made to “*a landscape area greater than 500 square feet.*”. Industry would encourage DWR to consider further clarification that this “trigger” for compliance is intended to apply on a “lot-by-lot” basis or “within the property line boundaries”. High-density production-style housing development is now being done with very narrow (or no) side yards and extremely small back yards. It should be clarified that DWR does not intend for the MWELo to apply to these very small landscape projects.

Page 4

§ 491 (q) “ET Adjustment Factor”

Industry would suggest DWR consider replacing the reference to “*new and existing*” with “*new and rehabilitated*” landscape areas to avoid confusion. Left unchanged, this could easily leave the end user with the impression that DWR intends for these regulations to apply **retroactively** to all existing landscaping areas.

§ 491 (u) “Graywater”

Industry supports DWR’s proposal to use the same definition for “Graywater” at that used by HCD and BSC in the California Green Building Standards.

Page 5

Sec 491(ff) “landscape area”

At the present time, DWR does not plan to amend its longstanding definition for “landscape area”. While this may be appropriate for application of the formulas (MAWA and ETWU), industry would like to raise the following concern with regards to what is NOT considered “landscape area”. By excluding “sidewalks, driveways, decks, patios, gravel or stone walks, etc.” in the MAWA calculation, isn’t DWR inadvertently “penalizing” the installation of permanent fixtures which will require no irrigation whatsoever?

For example, as residential side yards grow smaller and smaller, there should be some manner of incentive to install (for example) permanent sidewalks, gravel or stone walks instead of actual landscape area requiring irrigation. In addition, with regards to the backyard, DWR should provide incentive to the installation of (larger) patios, deck and other amenities which do not require any irrigation.

Page 6

§ 491(pp) “master valve”

Industry would respectfully request DWR to reword this newly proposed definition.

- Given the manner in which this term is used in the body of the regulations, it doesn't seem that an “electric” (or “automated”) valve is what DWR intends to be used. Instead, it would seem that DWR intends for a “master shut-off valve” to be used.
- DWR proposes in the definition that the master valve be installed at the “supply point” which controls water flow into the “main” piping system. We think DWR intends for this shutoff valve to be installed at a supply point which controls all water to the *landscape irrigation* piping system as opposed to being installed at the “main” piping system to the entire project (including the building).

Page 7

§ 491 (jjj) “recycled water”

Once again, is “recycled water” synonymous with “graywater” and vice versa? For example, in the definition for “special landscape area” (SLA), is an area irrigated by graywater and/or rainwater capture treated the same as an area irrigated with recycled water? The definition for SLA only makes reference to “recycled water” and does not reference “graywater” or “rainwater capture”. It's also unclear as to whether “recycled water” includes that which is recycled on-site and/or that which is provided by a municipal plant. Industry suspects DWR intends for all of these water-reuse measures to be acceptable. Suggest using the definitions already adopted by BSC and HCD for “recycled water” and “reclaimed water”.

§ 491 (lll) “rehabilitated landscape”

- Is it DWR's intent for all of these individual criteria to be met in order for application to be triggered?
- Since this is also “scoping language”, it should also appear in the body of the regulations, presumably in § 490.1 **Applicability**.

§ 491 (ppp) “Special Landscape Area”

- See comments on definition for “recycled water”. Industry feels that DWR should, in its definition for SLA, cite for clarity all acceptable water reuses including graywater, rainwater capture and recycled water (onsite and offsite).
- Towards the end of the definition, the word “and” has been inserted preceding the phrase “water features using recycled water”. Since this is a listing of acceptable options, shouldn't “and” be replaced with “or”?

Pages 9-13

§ 492.4 Water Efficient Worksheet

- We would urge DWR to consider providing three examples for residential construction (one large custom home, one production-style home in a high density development and one using only recycled water or gray water for landscaping purposes) and two examples for commercial building projects. We realize this will increase the overall size of the regulatory package, but considering the shortness of time related to the adoption and roll out of these regulations, having a clear picture of the intended field-application of these regulations would be very helpful to the end user.

§ 492.6 Landscape Design Plan

The dialog in this part of the proposal, including the new language referencing “local native plants” and “local climate suitability” will be difficult, if not impossible to specify in terms of a precise building standard. As such, HCD and BSC may well be limited to a discussion that is located in their CalGreen Guidebooks as opposed to attempting to specify this as part of a mandatory building standard due to the inherent difficulty of providing a **clear and precise** building standard that has application on a **jurisdiction-by-jurisdiction** basis.

§ 492.6(a)(3) Soil Preparation

Industry would respectfully request DWR to provide its cost-impact analysis for the proposed regulations (in general), including but not limited to the cost-impact related to the provisions below:

(3) Soil Preparation, Mulch and Amendments

(A) Prior to the planting of any materials, compacted soils shall be transformed to a friable condition.

(B) Soil amendments shall be incorporated according to recommendations of the soil report and what is appropriate for the plants selected (see Section 492.5).

(C) For landscape installations, compost at a rate of a minimum of four cubic yards per 1,000 square feet of permeable area (unless contra-indicated by soil test) shall be incorporated to a depth of six inches into the soil. Soils with greater than 25% organic matter in the top 6 inches of soil are exempt from adding compost.

(D) (A) A minimum ~~two~~ three inch (23") layer of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting groundcovers, or direct seeding applications where mulch is contraindicated.

§ 492.7(1)(A):

DWR has added new language which will require the installation of “dedicated landscape water meters” for both residential and commercial landscaping, using different “triggers” for each of these building types.

- In the DWR summary for the MWELo update, it is indicated that this requirement would bring DWR’s MWELo in alignment with CALGreen requirements. With regards to residential green building standards, this is not the case. **HCD has no mandatory standard requiring the installation of landscaping water meters or submeters.**
- For residential application, DWR is suggesting a trigger of landscapes exceeding 5,000 square feet in area. During the June 16th DWR webinar, industry asked the question if this 5,000 square foot area for residential was to be measured on a lot-by-lot basis as opposed to an “aggregate” sum of all landscaping in the residential development. Put differently, did DWR intend for a single-family home having a landscape area less than 5,000 square feet to have to install a water submeter for landscape irrigation? The answer from DWR staff was “no”. As such, it would be very helpful for DWR to clarify that the requirement for residential landscape irrigation water meters **does not apply to homes having a landscape area that is less than 5,000 square feet.**

(cont)

Lastly, there seems to be some confusion with regards to the device when it is required for the large residential landscaped area:

- What are the minimum product standards required of these devices and their installation?
- Is there an adequate supply of product on a statewide basis?
- What is the cost of these devices and what is the labor cost associated with installation?

§ 492.7(1)(B):

We understand what is meant by the term “non-volatile memory”, however, the term is not defined in § 491. DWR may want to include such a definition to avoid confusion in the field.

§ 492.7(1)(C):

For residential purposes, the water pressure is already heavily regulated by the local authority. Is DWR suggesting that an individual pressure regulator for landscape irrigation systems be installed on a per-house basis? If so; why? Has this been a problem in new residential construction over the past 3-4 years?

What is the cost (product and labor) of these devices?

Page 16

§ 492.7(1)(H):

With regards to the new requirement for a “master valve”; industry comments on § 491 (pp) are reprinted here:

Industry would respectfully request DWR to reword this newly proposed definition.

- Given the manner in which this term is used in the body of the regulations, it doesn't seem that an “electric” (or “automated”) valve is what DWR intends to be used. Instead, it would seem that DWR intends for a “master shut-off valve” to be used.
- DWR proposes in the definition that the master valve be installed at the “supply point” which controls water flow into the “main” piping system. We think DWR intends for this shutoff valve to be installed at a supply point which controls all water to the *landscape irrigation* piping system as opposed to being installed at the “main” piping system to the entire project (including the building).

§ 492.7(1)(M):

With regards to the proposed req that the irrigation system be designed/installed to prohibit a precipitation rate greater than 1.0 inches per hour in any portion of the landscape;

- Having participated in the June 16th webinar, it was clear that this proposed requirement is raising substantial concern among the landscape designing community with regards to its enforceability and its overall efficacy as a landscape water conservation measure. For example, how can this be accomplished for those portions of the landscape where different elevations converge?

§ 492.7(1)(R): Swing-joints or other riser protection components

Is this a **residential requirement** now that “hardscapes” has been added? (ie: swing joints or other riser-protection components)? Put differently, DWR does not intend for this to apply to single family dwellings, right?



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Date: June 23, 2015

To: Julie Saare-Edmonds
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California Department of Water Resources

CALBO is submitting these comments in conjunction with our industry partners. We will also be submitting language for a prescriptive approach to DWR no later than June 26, 2015. We strongly believe that a prescriptive approach is necessary in order to achieve the landscape water use reduction DWR is trying to achieve. Due to the substantial change in scope of the MWELO, some of these comments pertain to text DWR is currently not proposing as a revision.

Page 3

§ 490.1(a):

We are concerned that the November 1, 2015 effective date may differ from the certifying rulemaking the BSC and HCD must complete within 180 days. Has this date been coordinated with BSC and HCD? Typically, building standards trigger by building permit application date. If that is the intent, please include appropriate text.

§ 490.1(a)(1):

We suggest the following edits:

(1) new construction projects with including a landscape area greater than 500 square feet requiring a building or landscape permit, plan check or design review;

We also believe 500 square feet is a very low threshold at which to require performance calculations. This will add significant cost to housing. Not every home is located in a production subdivision with a landscape designer on staff. We urge DWR to consider the prescriptive path we will be providing.

It is also unclear if a new swimming pool over 500 square feet in surface area triggers the MWELO. The definition of landscape area includes a "water feature" and the definition of a "water feature" includes a swimming pool. Please clarify the intent.



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Page 4

§ 491(e):

Do "certified irrigation designers" currently exist in a number that is sufficient to meet the demand if all projects must include one? How is certification verified at the building department level?

Page 5

§ 491(aa):

Do "certified landscape irrigation auditors" currently exist in a number that is sufficient to meet the demand if all projects must include one? How is certification verified at the building department level?

Page 6

§ 491(pp):

The required purpose and location of this valve is not clear. Are there enough residential irrigation controllers in the market to allow for this additional valve? The last sentence does not add to the definition and we suggest it be removed.

Page 8

§ 491(yyy):

Does this only apply to constructed bodies of water supplied by potable water? How does this definition apply to a pond or small lake which is fed by natural drainage and used as a source of water for fire suppression? These bodies of water typically have a required minimum level that is maintained by potable water delivered from a well. Please provide some clarity.

Page 8

§ 491(e):

We suggest the following edits:

§ 492.1 Compliance with Landscape Documentation Package.

(a) Prior to construction, the local agency shall:

(1) Provide the project applicant with the ordinance, and/or a submittal checklist including ~~and~~ procedures for permits, plan checks, or design reviews;



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Page 9

§ 492.3(a), Items (4), (5) and (6):

These terms do not have a definition. Either include a definition or include a reference to the section which describes them (i.e. (4) landscape design plan, as described in § 492.6).

Pages 10, 11 and 12:

§ 492.4 Examples

Examples in the body of the ordinance cause confusion and should be located in an appendix or better; a guidance document.

Page 12

§ 492.5:

There should be an exemption for small residential landscape areas. In production subdivisions with one builder, the same report may be used for several lots. However, in custom subdivisions and one off housing, this adds additional expense to the cost of each housing unit. It does not appear the benefit is appropriate to the cost for smaller landscapes?

Page 13

§ 492.5(a)(3):

Small residential landscapes do not usually have a team of design professionals. A prescriptive approach or larger trigger point for residential landscapes would help.

Page 13

§ 492.6(a):

Remove the word "carefully" in the first sentence as it does not add clarity.

Page 13

§ 492.6(a)(1)(F):

These areas are difficult to water with over head spray. Is sub-surface irrigation feasible? If there are other technologies that are available which can accomplish the desired goal, can they be included?



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Page 14

§ 492.6(a)(3)(G):

This section has numerous enforcement issues. How is organic vs. inorganic determined? How is the fire hazard level determined? Post-consumer is not a defined term.

Page 15

§ 492.6(b)(14)

Please provide some clarity on "any other person authorized to design landscaping." Who is this, what are their qualifications and what are the limitations of their services?

Page 15

§ 492.7(a)(1)(A)

In rural counties there can be several different water purveyors. Is this a separate meter provided by the purveyor? Where is it located? Who reads the water usage on this meter and what is that information used for? This section needs some clarity.

Page 15

§ 492.7(a)(1)(B)

The term non-volatile memory is not well understood. Is it a controller with a battery back-up or is it some other type of controller.

Page 18

§ 492.8

This is an expensive plan. If required to be prepared by a civil engineer it may cost several thousand dollars. Is the intent to require this on all residential landscapes over 500 square feet?

Please do not hesitate to contact me if you have any additional questions or I can provide any clarification.

Thank you

Doug Hensel
Chair, CALBO State Code Committee



June 22, 2015

Julie Saare-Edmonds
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ITP Project Manager
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CA Department of Water Resources

RE: Responses to the proposed revision to the Model Water Efficient Landscape Ordinance (MWELO)

The latest Public Draft of the Model Efficient Landscape Ordinance was released Friday, June 12, 2015. The responses below represent the position of the American Society of Irrigation Consultants. American Society of Irrigation Consultants was incorporated in 1971 in the State of California and represents irrigation design professionals across the United States, Canada, England, France and Australia.

The following comments are of upmost interest to the membership. The preservation of water resources is an important commonality within the ASIC. We stand with Governor Brown, his administration and the California Department of Water Resources in preserving California's water resources for the importance of our State's long term growth. The ASIC places its value in the implementation of proper and practical solutions that yield water savings during the design, installation, and long term management stages of a landscape. The following are items of discussion and recommendation to not only reduce water resources required in California's landscapes, but also achieve this goal with practical and attainable methodology:

1. Irrigation Efficiency

Current Public Draft Language:

*(bb) "irrigation efficiency" (IE) means the measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates of irrigation system characteristics and management practices. The minimum average irrigation efficiency for purposes of this ordinance is **0.85 for residential areas and 0.92 for non-residential areas, averaged on a site-wide basis.** Greater irrigation efficiency can be expected from well designed and maintained systems.*

Discussion

- A. A slight modification was made to the irrigation efficiency definition to clarify it is averaged on a site-wide basis. **We understand this as it is clearly stated in the 2009 publication "White Paper Evapotranspiration Adjustment Factor."** However, the proposed numbers are unattainable.
- B. According to the [Evapotranspiration Adjustment Factor \(ETAF\) White Paper](#) prepared by DWR staff in January 2009 in support of the 2010 updated MWELO, the equation for Irrigation Efficiency is:

$$IE = (DU) (IME)$$

Where DU = DU_{lh} (Distribution Uniformity Lower Half) and IME (Irrigation Management Efficiency) is fixed by DWR at 90%.

- C. Irrigation Efficiency is set in the current MWEL0 at 0.71. The 2009 DWR White Paper carefully considered Irrigation Efficiency and supported its analysis with science. The 2009 DWR ETAF White Paper calculates Irrigation Efficiency as follows:

$$IE = (DUlh) (IME) \text{ or } 0.71 = (0.79) (0.90)$$

- D. DWR is now proposing an increase in IE from 0.71 to 0.85 for residential and 0.92 for commercial irrigation designs. Assuming DWR intends to continue to use its 2009 ETAF White Paper method for calculating IE and IME remains at 0.90, the proposed DUlh requirement increases to 94% for residential and 102% for commercial.

$$IE \text{ of } 0.92 = (1.02) (0.90) \text{ Commercial}$$

$$IE \text{ of } 0.85 = (0.94) (0.90) \text{ Residential}$$

- E. There is also no combination of irrigation products on the market today, including drip irrigation, that will achieve 94% DUlh and a DUlh of greater than 100% is unattainable.
- F. Based on current available technology, expected DUlq is for high efficiency spray heads and rotator nozzles is 73%. This results in a DUlh of 83%. Conversion was made using the formula $DUlh = .386 + (0.614 \times DUlq)$ in conformance to the above referenced White Paper.
- G. Drip irrigation and microspray utilize Emission Uniformity (EU) in determination of efficiency and based on current available technology, EU is expected to be 90%. The White Paper averages spray, microspray and drip irrigation to arrive at a minimum efficiency $(.83 + .90 + .90) / 3 = 0.88$. This minimum efficiency eliminates the ability to use high efficiency spray for specialized landscapes.
- H. Drip irrigation is an effective and efficient application method, but it is not the best application for providing water to landscapes on both manufactured slopes and fuel modification zones. Manufactured slopes are required to have a planted crop cover to eliminate soil erosion and comply with current grading Code. Portions of fuel modification areas are required to be irrigated with specialized crop cover. While these areas can certainly be planted or seeded with low water use planting, they are most effective when irrigated with high efficiency overhead rotary irrigation to provide full crop coverage with uniform soil moisture.
- I. It is imperative to maintain the effectiveness of both erosion control and fuel modification to maintain the public safety and welfare in our State. Many new housing communities are being built to sustain growth in this State - many are located in sloped areas requiring both erosion control planting on slopes and fuel modification.
- J. Therefore the minimum $IE = (DUlh)(IME) = (.83)(.90) = 0.75$

Recommendation:

Revise the minimum Irrigation Efficiency (IE) to 0.75.

This is an improvement from the original value of 0.71 and provides the ability to utilize high efficiency spray nozzles, where they are most applicable on manufactured slopes and fuel modification areas.

2. Evapotranspiration Adjustment Factor (ETAF)

Current Public Draft Language:

(p) "ET adjustment factor" (ETAF) means a factor of 0.5 for residential areas and 0.4 for non-residential areas, that, when applied to reference evapotranspiration, adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape. A combined plant mix with a site-wide average of 0.425 for residential areas and 0.37 for other areas is the basis of the plant factor portion of this calculation. For purposes of the ETAF, the average irrigation efficiency is 0.85 for residential and 0.92 for non-residential areas. Therefore, the ET Adjustment Factor for residential and non-residential is $(0.5) = (0.425/0.85)$ and $(0.4) = (0.37/0.92)$, respectively. The ETAF for a new and existing Special Landscape Areas shall not exceed 1.0. The ETAF for existing non-rehabilitated landscapes is 0.8.

Discussion

- A. Currently in the DWR white paper, the statewide average plant factor of 0.5 from the existing model ordinance is 1/3 high, 1/3 medium, and 1/3 low plant mix. Accordingly, ETAF calculations for a landscape with a 1/3 plant mix each of high, medium, and low water use plants should be adjusted using the IE (with managed efficiency) of 75% as follows:
- B. $ETAF = \text{Plant Factor} / IE = (0.5/.75) = .67$

Recommendation:

Change the value of the ETAF to 0.67 to allow for attainable irrigation efficiencies while utilizing the Irrigation Management Efficiency factor.

3. Precipitation Rate

Current Public Draft Language:

(M) The irrigation system must be designed and installed in such a manner that a precipitation rate of 1.0 inches per hour is not exceeded in any portion of the landscape.

Discussion

- A. In the design of sprinkler devices, there are trade-offs between precipitation rate, losses due to wind drift and evaporation, distribution uniformity and soil moisture uniformity. This has been shown through research conducted by the University of Arizona, University of Florida, California State Polytechnic University – Pomona, Irrigation Association, and Rain Bird.
- B. In a University of Arizona study, lower Precipitation Rate devices (1.0 in./hr.) had wind drift and evaporation losses 15-20% worse than higher Precipitation Rate devices (1.6 in./hr.) in 5 mph wind speeds (average wind speed in California.)
- C. Low precipitation rate nozzles work well in certain conditions such as slopes with clay soils, but data suggests that in general, the more precipitation rate is reduced, the more irrigation efficiency tends to decline due to losses from wind drift and evaporation. The temptation may be to further reduce precipitation rates, but to do so will further reduce efficiency in real world conditions.
- D. Lowering precipitation rate to 0.75 will eliminate the use of nearly all large area turf rotors.
- E. Drip and microspray are becoming more prevalent as an irrigation method under the existing MWELo, but application rates frequently exceed 1.0 in/hr. and for good reason. There are many examples of subsurface drip under turf that have failed due to a low application rate and wider than needed spacing. Changing to a higher application rate emission with tighter spacing solves this issue but would not be permitted under the new MWELo.

Recommendation:

Do not introduce a new limit on precipitation rates in addition to the existing limit of 0.75 inches per hour on slopes greater than 3:1. Require Smart Controllers that use precipitation rate, soil type, root zone depth, and plant factor to eliminate run-off and apply the desired amount of water utilizing the well-established practice of 'cycle and soak'.

4. Budget Based Allocation

Discussion

- A. Creating a landscape with a limitation on outdoor water use is the most simple and effective method to promote water resource conservation during the design, installation, and long term maintenance phase of a project.
- B. A budget allocation brings water use into the forefront of the landscape process providing dialogue at the conceptual design level where it is most effective. Ideas and innovation for water resource development, storage, demand, planting concept and irrigation systems reside tandem to the form and function of the project.
- C. Water agencies that implement a budget allocation tied to tiered rates have been extremely effective in providing incentive for the owner and maintenance contractors to be mindful of water use. In the opinion of the ASIC, this is the largest potential for long term water savings in the State. In Irvine Ranch Water District, it is well known that maintenance contractors read water meters on a weekly basis to compare actual and allocated use. This self-imposed practice saves water negates the need to require and monitor the five-year audit process. Furthermore, water usage in that region is extremely reduced well after project completion.
- D. The budget based allocation is the simplest solution to reducing water use in new construction, easy to enforce through tiered rate budget based allocations with water purveyors, provides maximum flexibility with regard to design and promotes future innovation and design creativity. It extends the liability beyond design and installation to long term maintenance.

Recommendation:

Revise the MWELo to incorporate water based budget allocations directly linked to the ETAF.

Conclusion:

The existing MWELo has changed the face of landscape and irrigation in California and in many ways has contributed to greatly improved efficiency in irrigation design, but reductions in water use have not uniformly been achieved. Concluding that regulations on new irrigation design should be tightened however, may be false; requirements for reporting of water use post-installation should be reviewed since this is where the most significant savings can be made as highlighted by the Irvine Ranch Water District (IRWD) where water budgets are strictly enforced.

Respectfully submitted,



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