Dear Ms. Saare-Edmonds,

As a landscape professional, I am writing to express my concern regarding the proposed MWELO revisions. Specifically -

1. The new site wide irrigation efficiencies required for commercial and residential irrigation are not attainable.
    a. The State is using DULH for calculating efficiency in spray systems.
    b. The State also used Irrigation Management Efficiency of 0.90 in determination of their Irrigation Efficiency (IE) (IE = DUlh x IME)
    c. The calculation to determine DUlh was provided by Cal Poly in a white paper. DUlh = 38.6 + (0.614) (DUlq)
    d. If we figure that high efficiency spray devices can now achieve .75 DUlq, then the adjustment to DUlh would be .84
    e. Drip uses Emission Uniformity EU and I've seen values of .85 to .90 at best
    f. In a white paper the State released on determination of ETAF, they took the average of spray, micro spray and drip to find a site wide efficiency requirement.
    g. That would be (.84 + .9 + .9) / 3 = 0.88
    h. Multiply that by an IME of .90 yields a .79 maximum efficiency attainable.
    i. The values in the proposed MWELO of .92 for commercial and .85 for residential DO NOT WORK, at best we can achieve 0.79 across the board.
2. The new ETAF factors do not factor the attainable irrigation efficiencies
    a. The original MWELO has an ETAF of .7
    b. This was calculated using an average of high, medium and low plant factors (.3 + .5 + .8) = roughly .5
    c. The ETAF is calculated by taking the average PF divided by the irrigation efficiency ETAF = (PF) / (IE)
    d. The irrigation efficiency was determined to be .71 at that time
    e. This was presented in a white paper by DWR
    f. ETAF = .5 / .71 = .7
    g. They are proposing a commercial average plant factor of .37 and a residential of .425
    h. If ETAF = PF / IE, then the numbers need to be .47 for commercial and .54 for residential.
3. The MWELO proposes a maximum precipitation rate of 1.0 inches per hour
    a. The current limit is .75 on slope areas only
    b. This new maximum precipitation rate of 1.0 for the entire site will eliminate many high efficiency spray head solutions
    c. Studies have shown that lower precipitation rates can lead to wind drift and evaporative losses, reducing efficiency
    d. There is a study by U of Arizona and IEUA to support this
    e. Current requirement of smart controllers mitigates the precipitation rate issue by factoring soil type infiltration, slope and precip rate into a cycle and soak protocol
    f. Current application rates for drip in sandier soils requires higher flow and spacing resulting in rates above 1 inch per hour
    g. Large turf rotors have precipitation rates above 1 inch per hour in part circle configurations. I.e. if a full rotor is .6 inches per hour, a half is 1.2 and a quarter is 2.4 inches per hour.
    h. It is recommended to leave the precipitation rate prescription to .75 inches on slopes, no limit on flat areas.
4. All turf parkways to be irrigated with drip irrigation.
    a. Drip irrigation in turf tends to be problematic due to long term maintenance needs.
    b. Tubing becomes affected by tree roots
    c. Breaks in the tubing go undetected and are not usually high enough flow for flow sensor to detect
    d. Aerifying the soil is prohibitive.
    e. Water loss / waste is below the soil surface and unseen.

f. The quantity of tubing and emitters at tighter spacing for turf increase the likelihood of failure
g. High efficiency spray nozzles and micro spray technologies allow overhead irrigation with more practical and attainable maintenance
h. Broken pipe and sprinklers are easily identifiable and detected by flow sensing
i. Cycle and soak features on smart controllers allows precise application of the correct amount of water based on precipitation rate and soil type.
j. It is recommended to allow high efficiency spray or micro spray technology to irrigate turf in parkways with a no overspray provision.

5. Flow sensing and master valves are required on all irrigation applicable to the Ordinance.
    a. This includes permitted residential landscapes 500 sf or larger.
6. There was a general consensus within the commenters at the DWR hearing to move to a water budget based allotment in order to NOT stifle innovation and design ingenuity.
    a. New planting and irrigation design is highly efficient, further restrictions and prescription is muted by the lack of capturing water wasted by older sites.
7. More language is needed with regard to frequency of audits to capture water waste relative to poor maintenance rather than prescribe and restrict design efforts.
8. There were comments to reduce the Special Landscape Area to .80 ETo rather than leave it 1.0 ETo
    a. This reduces the ability to leach soils irrigated with recycled water
    b. This limits parks and play areas on the amount of turf needed for new developments that will have little to no turf within their own yards.
9. The State assumes efficiencies for certain application devices in determining their site wide efficiency, however local jurisdictions have plan reviewers that may not use the same values, therefore estimated water use calculations may not work city to city. There needs to be a table of efficiencies to apply consistent values to reduce confusion.
10. Provide better example of water use calculations with emphasis on the Special Landscape Area consideration – this is not explained well in the document.
11. Allow special urban forest landscapes to take advantage of the SLA allotment to protect heritage trees throughout the State.
    a. Redwoods cannot be irrigated with recycled water due to high salinity.

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