Reduced Water Budgets and Implications for Landscape Irrigation

International Water Technology Conference

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California Legislature is Considering Reducing the ET Adjustment Factor

- The ET adjustment factor was established as a way to establish water budgets in the California Landscape Irrigation Model Ordinance

The ET adjustment factor is determined as:

Kc/IE = ET adjustment factor (currently 0.8)

Where:

Kc (Crop Factor) and represents an average crop factor of 0.5 in a mix of 1/3 high, 1/3 medium, and 1/3 low water use plants

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Where:

IE (Irrigation Efficiency)=is equal to the product of multiplying distribution uniformity (DU) by the irrigation management efficiency (Note-must 69% or higher)

Why We Should Consider Maintaining Our Current Crop Coefficients

Turfgrass and other landscape plants offer a wide range of environmental benefits

The Benefits of Irrigated Landscape include:

- Irrigated landscapes can provide significant benefits to urban areas, including:
  - 2.5 acres of turf sequesters about one ton of carbon per year
  - US lawns remove 5% of carbon dioxide in the atmosphere
  - Grass traps 12 million tons of dust and dirt annually
  - 2,500 sq of lawn produces enough oxygen for a family of four
  - Trees and turfgrass provide substantial local cooling

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What is the Impact on Irrigation Efficiency by Reducing ET adj to 0.7

- Available water is reduced 14%
- Average Irrigation DU must be raised to 79%
  - Assumes (79% x 90%) = 71%
    - Note: Irrigation mgt efficiency is 90% or 9 inches of water required and 10 inches applied
    - Plant or crop coefficient remains 0.5

Table 1. Minimum Operational Uniformity

** Taken from the Irrigation Association's Practice Guidelines*

Type of zone	Type of uniformity	Minimum uniformity
Spray	Lower Quarter DU	55%
Rotor	Lower Quarter DU	70%
Drip/micro	Emission Uniformity	80%

What is the Impact on Irrigation Uniformity by Reducing ET adj to 0.7

- Sprayheads or sprinklers with low DU cannot be used (55% to 70% DU)
- May require more drip in the landscape due to high DU (80%+)
- May set the lower threshold for SMART controllers (i.e. scheduling efficiency~95%)
  - *Note: This would lower average DU to 75%*

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Putting it all together!

(it won't be easy)

- Studies of High, Overhead Irrigation Uniformity on Small or Irregular areas Indicate an Average DU of 70%
  - Suggests the need to raise the minimum irrigation scheduling efficiency to 95%
  - Suggests a mix of drip and overhead irrigation approximating 50-50 for standard landscapes
    - 70% overhead + 80% drip = 75% average DU

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- Reaching this goal requires using only high efficient irrigation products.
- Requires proper design and installation.
- Requires proper maintenance and operation.
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Conclusions

- Action items to accelerate the move to higher water use efficiency:
  - **Product testing to determine those products that meet minimum distribution uniformity.**
  - Labeling and promotion of products that meet performance requirements at point-pf purchase.
  - Training and certification of irrigation professionals to effectively use these products.
  - Periodic field audits to demonstrate that high distribution uniformity can be maintained by drip and overhead irrigation methods.

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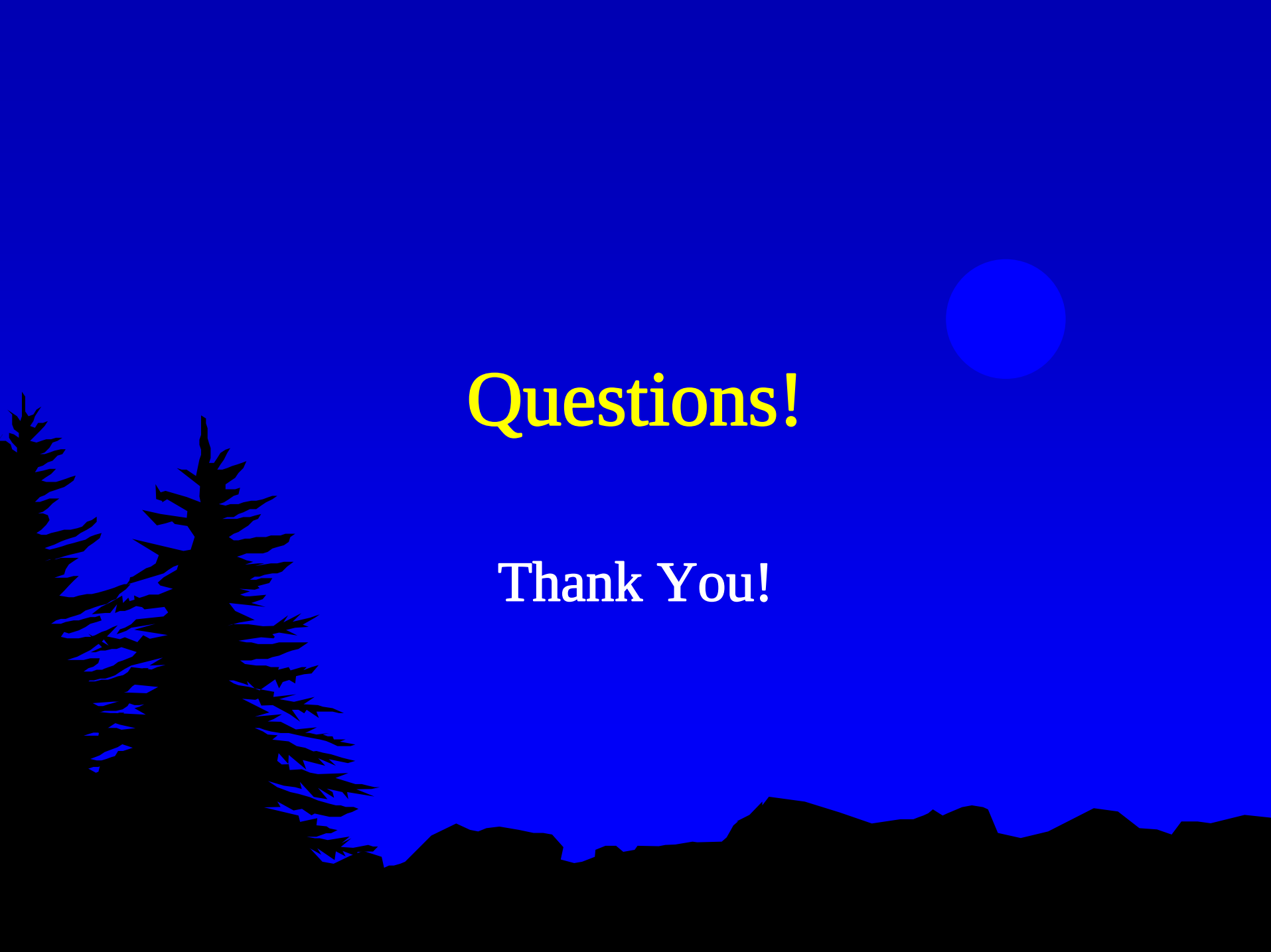
To Be successful
It Will Require Us to Transform the Industry!


Questions!
Thank You!