Making Conservation a California Way of Life

How forthcoming efficiency standards may impact urban trees and parklands

Office of Research, Planning and Performance
<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:00 – 1:10PM</td>
<td>Introduction and background</td>
</tr>
<tr>
<td>1:10 – 1:25PM</td>
<td>Presentation on residential outdoor water use</td>
</tr>
<tr>
<td>1:25 – 2:10PM</td>
<td>Review of methods &amp; presentation of results</td>
</tr>
<tr>
<td>2:10 – 2:30 PM</td>
<td>Comments and questions</td>
</tr>
<tr>
<td>2:30 – 2:40 PM</td>
<td>Break (10 min)</td>
</tr>
<tr>
<td>2:40 – 3:25 PM</td>
<td>Panel discussion on adaptation measures</td>
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<tr>
<td>3:25 – 3:35 PM</td>
<td>Comments and questions</td>
</tr>
<tr>
<td>3:35 – 3:50 PM</td>
<td>Presentation on urban greening funding opportunities</td>
</tr>
<tr>
<td>3:50 – 4:00 PM</td>
<td>Comments, questions, and wrap-up</td>
</tr>
</tbody>
</table>
Logistics

• Ensure your screen name reflects name and affiliation
• Chat is disabled
• To ask a question: use Q&A box
• Participants will be invited to unmute once called upon
• For phone callers: *9 to raise hand, *6 to speak
• Meeting is being recorded
  • Recording will be posted to the Water Efficiency Legislation program page: bit.ly/we_leg
Office of Research
Planning and Performance
Climate & Conservation Team
Implementing AB 1668 and SB 606

- Standards
- Variances (If applicable)
- Bonus Incentive (If applicable)

= Objective

Indoor, Outdoor, Water loss

Residential Landscapes, Commercial, Industrial and Institutional (CII) landscapes with dedicated irrigation meters
Wastewater, parklands, and trees

CWC Section 10609.2(c)

(c) When adopting the standards under this section, the board shall consider the policies of this chapter and the proposed efficiency standards’ effects on local wastewater management, developed and natural parklands, and urban tree health. The standards and potential effects shall be identified by May 30, 2022. The board shall allow for public comment on potential effects identified by the board under this subdivision.
Trends in Residential Outdoor Water Use

How forthcoming efficiency standards may impact urban trees and parklands

Office of Research, Planning and Performance
Significant water savings potential in the outdoor sector

- About 50% of residential water use is used outdoors
  - Majority is lost due to overwatering or evaporation
- Moderate landscape conversions could save 1 million AFY, and more extensive landscape conversions could save 1.5 million AFY (Cooley et al., 2022)

Source: Pacific Institute
Background on Outdoor Standards

The outdoor standards shall incorporate the principles of the model water efficient landscape ordinance (MWELO).

\[ \text{OWU} = (\text{ETo} - \text{Peff}) \times 0.62 \times \text{ETF} \times \text{LAs} \]

- OWU = Outdoor water use (gallons)
- ETo = Reference evapotranspiration (inches)
- Peff = Effective precipitation (inches)
- ETF = Supplier level ET factor (unitless) (the standard)
- LAs = Landscape area for a water supplier (square feet)
- 0.62 = Unit conversion factor
Statewide average ETF is 73%  
*example: moderately well-irrigated warm season turf*
Statewide average ETF is 65% when the 20% INI buffer is included
How potential water use efficiency standards may affect urban trees and parklands
Why trees and parklands are important

- Save energy
- Reduce stormwater runoff
- Improve water quality
- Improve air quality
- Improve public health
- Provide wildlife habitat

Source: Sacramento Tree Foundation
Benefits of efficient outdoor water use

- Protects water quality
- Protects human health
- Lowers household bills
- Creates healthy soils
- Reduces short-lived climate pollutants
- Protects air quality and reduces noise pollution
- Protects biodiversity and supports ecosystems
Key findings

• Turf was the largest component of vegetation water demand for all months in all climate zones.

• Many of the most common urban tree species in California are rated as medium-water use, suggesting these trees may need substantial irrigation during dry summer months.

• In all climate zones, the greatest percentage of low water-use trees was in the largest (i.e., oldest) class size, suggesting that planting low water-use trees has not been prioritized.
## Risk levels for urban trees under three scenarios

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>Scenario 1</th>
<th>Scenario 2</th>
<th>Scenario 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Indoor std. = 50 GPCD</td>
<td>Indoor std. = 42 GPCD</td>
<td>Indoor std. = 35 GPCD</td>
</tr>
<tr>
<td></td>
<td>Outdoor std. = 0.70</td>
<td>Outdoor std. = 0.62</td>
<td>Outdoor std. = 0.55</td>
</tr>
<tr>
<td>No risk</td>
<td>247</td>
<td>135</td>
<td>89</td>
</tr>
<tr>
<td>Low risk</td>
<td>88</td>
<td>99</td>
<td>66</td>
</tr>
<tr>
<td>Moderate risk</td>
<td>35</td>
<td>134</td>
<td>198</td>
</tr>
<tr>
<td>High risk</td>
<td>3</td>
<td>5</td>
<td>20</td>
</tr>
</tbody>
</table>
Economic and Environmental Effects of AB 1668-SB 606

Effects on urban trees and parklands
August 12, 2022

Erik Porse, PhD, OWP at Sacramento State | UCLA
Joanna Solins, PhD, UC Davis
Julia Skrovan, UCLA California Center for Sustainable Communities
Robert Cudd, UCLA California Center for Sustainable Communities
Full Project Scope

Key sectors:

• **Urban Retail Water Suppliers**: costs & benefits, low-income communities

• **Wastewater**: conveyance, treatment, and reuse
  • Odor & corrosion, water quality, recycled water production potential

• **Developed and natural parklands** within service areas
  • Effects of irrigation regimes on vegetation

• **Urban trees**
  • Effects of irrigation regimes on health and number of trees
Full Project Team

Expertise in urban water supply, wastewater management, urban ecology, and economics related to AB 1668-SB 606

Erik Porse, PhD
Jonathan Kaplan, PhD
Maureen Kerner, PE
John Johnston, PhD, PE
Harold Leverenz, PhD, PE
Caitlyn Leo
Khalil Lezzaik, PhD
Dakota Keene
David Babchanik
Patrick Maloney
Scott Meyer
Samira Moradi
Ramzi Mahmood, PhD

Stephanie Pincetl, PhD
Lawren Sack, PhD
Felicia Federico, PhD
Robert Cudd
Julia Skrovan
Hannah Gustafson
Marvin Browne
Lauren Strug

Mary Cadenasso, PhD
Joanna Solins, PhD
Bogumila Backiel

Erick Eschker, PhD
Jonathan Sander
Baseline: Future Indoor and Outdoor Demand

- Estimated a “baseline” of what would happen in the absence of regulations through 2030
  - Parcel data
  - Evaluate existing conservation and estimated saturation rates of efficient indoor fixtures
  - Code-based & enhanced replacement of indoor fixtures
  - Turf replacement

- Integrate Spatial Data
  - Link parcels, agencies, and regions

- Estimate Fixture Efficiencies
  - Collect from literature

- Link Fixtures and Buildings
  - Attribute fixture efficiencies to buildings for each retailer based on parcel attributes

- Project Water Use
  - Use parameters to project demand (indoor & outdoor), compare to objectives

- Evaluate Population Change
  - Evaluate projected population changes from available data sources

- Code-based & Enhanced Replacement
  - Track changes in fixture efficiency, code-based & enhanced upgrades

- Track changes in % of buildings falling into bins of fixture efficiency, and use weighted average to evaluate Supplier-wide per capita demand
Evaluating Mitigation and Adaptation Actions

Baseline Conditions
On-going efficiency
Population change
Climate and drought

Objective Parameters
Indoor standard
Outdoor standard
Other volumes
(variances, recycled bonus, etc)

Baseline Future Demand ($D_{future}$)

Effects of Regulations:
Suppliers Needing Reductions for Compliance and Effects on Downstream Systems, where $D_{future} > Objective$

Mitigation & Adaptation
Rebates & incentives
Codes & restrictions
Education & outreach
Water rates

Saturation rates of efficient fixtures in residential buildings
Community constraints (income, size, etc)

Scenarios of Objectives (water use targets)

Outreach with suppliers, wastewater managers, landscape managers

Demand Management Costs & Benefits

Costs & Benefits
Community constraints (income, size, etc)
Evaluating effects on residential urban trees

Approach:

1) Characterize California’s urban forests

2) Assess effects of different irrigation practices on tree water stress

3) Evaluate risks to trees for Suppliers
   i. Estimate water demand of urban vegetation in residential areas
   ii. Compare vegetation water demand to baseline outdoor water use and predicted changes under objectives
Characterizing urban forests with tree inventories

• Data sources:
  • Cal Poly SLO – urban tree companies
  • USFS – curated municipal inventories
  • Municipal inventories from Internet sources

• More than 3.5 million residential trees

*Includes non-residential trees

Map source: McPherson et al. 2016, Urban Forestry & Urban Greening
Tree inventories suggest that:

• California’s urban forests are diverse
  • Over 1,000 species total
  • Over 450 species with $\geq$ 100 individuals

• Most trees are medium-water-use species
  • Fewer small trees were low-water-use species
  • Substantial water inputs required to maintain future urban forests
  • Greater risk of negative impacts from reduced irrigation

Source: Bruce Dupree/Alabama Extension
Assessing effects of changing irrigation practices on tree water stress

Lawn

Drip Irrigation

Unirrigated

Source: UC Davis Arboretum and Public Garden

Source: San Gabriel Valley Tribune
Effect of yard irrigation on mature street trees

London planetree
(Platanus acerifolia)

Water potential measurements
• Instantaneous water stress
• 24 trees in Davis

Visual canopy health scores
• Longer term water stress
• 414 trees, Davis & Sacramento
Water stress and canopy health were similar for trees in front of drip irrigated yards and lawns.
Evaluating risks to trees for Suppliers statewide

• Calculate residential vegetation water demand
  • Bottom-up method: Plant transpiration
  • Considerable data requirements
  • Acceptable available data

• Compare to outdoor water use
  • Baseline outdoor water use
  • Predicted reductions due to AB1668-SB606
Calculating Residential Vegetation Water Demand

- Models of urban tree and turf water demand developed from field studies
- Water demand = transpiration under fully irrigated conditions

Litvak et al. 2017, Water Resources Research
Calculating Residential Vegetation Water Demand

**Step 1. Calculate area of residential vegetation**

1. Define residential areas
2. Calculate total vegetated area (NDVI)
3. Calculate tree canopy area (US Tree Map, point estimates)
Calculating Residential Vegetation Water Demand

**Step 2. Calculate water demand of turf**

Water demand = \( k_{mc} \times E_{T_0} \)

- Unshaded turf area
- Shaded turf area

Litvak *et al.* 2017, *Water Resources Research*
Calculating Residential Vegetation Water Demand

**Step 3. Calculate water demand of trees**

Water demand = $E_{\text{broadleaf}} + E_{\text{conifer}} + E_{\text{palm}}$

$E = \text{transpiration}$

Data needs for each Supplier:

- Total # residential trees
- Relative abundance of each species
- Size (DBH) distribution of each species
- Type and deciduous/evergreen
- Mean sapwood area of broadleaf trees and conifers
- VPD and solar radiation

Litvak et al. 2017, *Water Resources Research*
Tree water demand modeling process

Tree inventories
- Species relative abundance
- Size (DBH)

Tree traits (SelecTree database)
- Conifer, broadleaf, palm
- Deciduous/evergreen

Total tree canopy area
Total # Trees
Crown area
Species density
Sapwood area
Spatial CIMIS (2014-2019)
- Vapor pressure deficit
- Solar radiation

Tree transpiration equations
Approach for Suppliers without tree inventory data

- Tree species composition tends to separate by climate zone.
- Model unknown urban forests by climate zone, using joint species distribution modeling.
Annual per capita vegetation water demand
Median vegetation water demand by climate zone

- Inland Empire
- Inland Valleys
- Interior West
- N. California Coast
- S. California Coast
- Southwest Desert

Water demand (GPCD)

- Conifer
- Broadleaf
- Turf

California Water Boards
Risk assessment for residential trees: Vegetation water demand vs. outdoor water use
Risk assessment for residential trees

Water use reduction needed?

- yes
  - Projected outdoor water use above vegetation water demand estimate?
    - yes
      - Total reduction < 5%?
        - yes
          - Low risk
        - no
          - Current outdoor water use <10% vegetation water demand estimate?
            - yes
              - Moderate risk
            - no
              - High risk
      - no
    - no
      - No risk

- no
  - Trees getting water from other sources?
## Risk levels for urban trees under three scenarios

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<tr>
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<td>20</td>
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</table>
Risk levels for urban trees under three scenarios*

*Results from Jan 2022 report
Summary

• Low-water-use tree species have not been prioritized in California’s urban forests
  • Planting climate appropriate trees now could reduce water needs of future urban forests

• Mature trees can be negatively affected by a lack of irrigation
  • Efficient irrigation could save water without harming existing trees

• Most areas will have enough water for existing trees under the new standards, but not necessarily for turf
  • Transitions to non-turf landscaping choices should consider trees’ water needs
  • Shading turf reduces its water use
  • Expected changes from baseline may vary with climatic and behavioral uncertainty
Evaluating Effects on Urban Parklands

• Evaluate parklands within urban retail water supplier boundaries
• Identify case study agencies
• Outreach & semi-structured interviews with park managers
• Analyze interview findings
California Protected Areas Database

All CPAD acres
~50M

CPAD acres in retailer boundaries
~1.4M
## Park Outreach & Case Studies

<table>
<thead>
<tr>
<th>Climate Zone (CZ)</th>
<th>URWS</th>
<th>Parks in CZ</th>
<th>Acres in CZ</th>
<th>% Parks in CZ</th>
<th>% Acres in CZ</th>
<th>% Acres in City/County</th>
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<tbody>
<tr>
<td>Inland Empire</td>
<td>40</td>
<td>52</td>
<td>3,361</td>
<td>3%</td>
<td>5%</td>
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<td></td>
<td>3</td>
<td>41</td>
<td>623</td>
<td>2%</td>
<td>1%</td>
<td>2%</td>
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<tr>
<td>Inland Valleys</td>
<td>2</td>
<td>55</td>
<td>1,650</td>
<td>2%</td>
<td>4%</td>
<td>2%</td>
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<tr>
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<td>2</td>
<td>88</td>
<td>1,287</td>
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<td></td>
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<td>8%</td>
<td>6%</td>
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<td></td>
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<td>7,095</td>
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<td>15%</td>
<td>1%</td>
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<tr>
<td>Interior West</td>
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<td>9</td>
<td>203</td>
<td>20%</td>
<td>36%</td>
<td>2%</td>
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<tr>
<td></td>
<td>1</td>
<td>5</td>
<td>118</td>
<td>11%</td>
<td>21%</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>7</td>
<td>29</td>
<td>13%</td>
<td>4%</td>
<td>0%</td>
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<tr>
<td></td>
<td>1</td>
<td>9</td>
<td>88</td>
<td>17%</td>
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<tr>
<td>N CA Coast</td>
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<td>196</td>
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<td>9%</td>
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<td>28</td>
<td>104</td>
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<td>0%</td>
<td>0%</td>
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<tr>
<td>S CA Coast</td>
<td>7</td>
<td>32</td>
<td>4,804</td>
<td>1%</td>
<td>4%</td>
<td>0%</td>
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<td></td>
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<td>20,732</td>
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<td>16%</td>
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<td>1,917</td>
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<td>6%</td>
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<td></td>
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<td>821</td>
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<td>7%</td>
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<tr>
<td>SW Desert</td>
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<td>93</td>
<td>6%</td>
<td>4%</td>
<td>1%</td>
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<tr>
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<tr>
<td></td>
<td>1</td>
<td>21</td>
<td>67</td>
<td>9%</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>15</td>
<td>129</td>
<td>6%</td>
<td>4%</td>
<td>3%</td>
</tr>
</tbody>
</table>

Outreach with city and county agencies to target urban parklands.
<table>
<thead>
<tr>
<th>Climate change &amp; water scarcity</th>
<th>Economics, population demands &amp; changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Climate change adaptation is taken very seriously by some parks departments, less so by others, but not yet a budgetary priority for most.</td>
<td>- Anxiety exists over water rate increases in park departments that rely heavily on urban water retailers.</td>
</tr>
<tr>
<td></td>
<td>- The public takes drought mitigation seriously, yet also wants verdant, healthy vegetation in parks.</td>
</tr>
<tr>
<td></td>
<td>- Water consumption is thought of in dollars; not in terms of what as “sufficient” for specific vegetation.</td>
</tr>
<tr>
<td>Drought-tolerant landscaping</td>
<td>Water measurement &amp; rationalization</td>
</tr>
<tr>
<td>- Standard measures to reduce parklands water consumption are neither simple nor cheap:</td>
<td>- The presence of dedicated outdoor meters depends on administrative organization, water source, &amp; age of the park infrastructure</td>
</tr>
<tr>
<td>- converting parks to “drought tolerant landscaping”</td>
<td>- Automatic irrigation systems help save water &amp; labor, but must be supervised &amp; maintained.</td>
</tr>
<tr>
<td>- installing drip/bubbler irrigation</td>
<td>- In some locations, water delivery infrastructure needs repair.</td>
</tr>
<tr>
<td>- switching to recycled water</td>
<td></td>
</tr>
</tbody>
</table>
Parks – Final Thoughts

• Mitigating drought & transitioning to climate-appropriate landscapes are expensive & complicated tasks

• A purely technological approach is often prohibitively expensive and unlikely to yield desired reductions in park water consumption

• Integrated landscape management plans that make use of local climate projections are necessary. So is new thinking about how to create aesthetically pleasing landscapes that eliminate the thirstiest forms of land cover.
Economic Impacts

• Assumed economic impacts for municipal trees for Suppliers in “Moderate” risk (135) and “High” (5) risk categories

• Costs and benefits for residential trees were captured elsewhere as direct impacts to Suppliers (landscape conversion)

Economic Impacts for Scenario 2 (“Preferred” Option):

<table>
<thead>
<tr>
<th>Action</th>
<th>Unit Cost *</th>
<th>Total Cost **</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education and outreach focused on urban tree irrigation and planting</td>
<td>$20,000/year/Supplier</td>
<td>$2.8 million/year</td>
</tr>
<tr>
<td>Update urban tree inventories</td>
<td>$600,000/inventory</td>
<td>$83 million (through 2030)</td>
</tr>
<tr>
<td>Update urban forestry management plans</td>
<td>$50,000/plan</td>
<td>$7 million (through 2030)</td>
</tr>
</tbody>
</table>

* Unit costs derived from literature and municipal tree inventories in California (2011-2020)

** Nominal costs, which do not consider inflation
Fiscal Considerations

- Variances and municipal tree planting programs

  - If water use variances are provided for urban trees, must consider:
    - Benefits and costs of planting and maintenance
    - Fiscal impacts for municipalities
  - Need more rigorous data collection and validation

<table>
<thead>
<tr>
<th>Benefit/Cost Description</th>
<th>Unit Cost * (low)</th>
<th>Unit Cost * (high)</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree planting cost</td>
<td>$200/tree</td>
<td>$400/tree</td>
<td>Municipal urban forestry management plans (UFMPs) in California (2011-2020)</td>
</tr>
<tr>
<td>Tree annual maintenance cost</td>
<td>$20/tree</td>
<td>$60/tree</td>
<td></td>
</tr>
<tr>
<td>Tree removal cost</td>
<td>$1,000/tree</td>
<td>$2,000/tree</td>
<td></td>
</tr>
<tr>
<td>Irrigation of newly-planted trees</td>
<td>$300/tree for each of first three years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated annual “ecoservices” benefit</td>
<td>$14/tree</td>
<td>$64/tree</td>
<td>UFORE model inputs, as reported in UFMPs</td>
</tr>
</tbody>
</table>

* Nominal unit costs as reported, derived from municipal tree inventories in California (2011-2020)
Takeaways

• Evaluated effects of water use objectives on urban landscapes and trees, which incorporated a baseline of forecasted changes

• Mature shade trees may be affected by water use reductions, but risk to existing tree canopies in many of California’s urban areas is low/moderate
  • Can often be mitigated through efficient irrigation practices

• Climate-appropriate landscapes and low-water-use tree species have not been prioritized in California’s urban areas

• Effects on urban parklands depend on their designation under the AB 1668-SB 606 framework, but urban parkland managers face multiple challenges
  • Fiscal constraints, public perceptions, and drought
  • Need for better integrated landscape planning with climate change
Special Thanks

CalWEP, Alliance for Water Efficiency

Urban retail water supply community

Wastewater management community, including CASA, SCAP, BACWA, CVCWA, CWEA

Urban parkland management community

Dongyue Li, Ruth Engel, Dennis Lettenmaier, Tom Gillespie (UCLA)

Matthew Ritter, G. Andrew Fricker (Cal Poly SLO)

Diane Pataki (Arizona State), Liza Litvak (University of Utah)
Questions?

To ask a question: use Q&A box or raise your hand
For phone callers: *9 to raise hand, *6 to speak
10 minute Break
Panel discussion on adaptation measures
PARDON OUR WEEDS

WE ARE PRESERVING POLLINATOR HABITATS

IN OUR EFFORTS TO SUPPORT WILDLIFE HABITAT, WE ARE PRESERVING POLLINATOR LARVAL FOOD PLANTS (MANY ARE CONSIDERED WEEDS). WE WELCOME YOUR PARTICIPATION!

TO VOLUNTEER AND OBTAIN MORE INFORMATION PLEASE CONTACT:
gardensatlakemerritt.org/ or pollinatorposse.org
Lindsey Stuvick, Water Efficiency Manager
August 12, 2022
SEASONAL PLANT WATER REQUIREMENTS

- CA Natives
- Drought Tolerant
- Grass (Warm Season)

INCHES

JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP  OCT  NOV  DEC
SEASONAL PLANT WATER REQUIREMENTS + PRECIPITATION

- **CA Natives**
- **Drought Tolerant**
- **Grass (Warm Season)**
- **Precipitation**

INCHES

JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---
0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5

61
Comparison of Supplemental Water Needs

- Bermuda
- St. Augustine
- Buffalo grass

- Cosmos
- Euryops
- Hibiscus

- Cleveland sage
- California fuchsia
- Wooly blue curls
SEASONAL PRECIPITATION COMPARISON OF MEDITERRANEAN CLIMATES

- Tustin/Irvine, CA
- Athens, Greece
- Perth, Australia
- Cape Town, South Africa
- Valparaiso, Chile

INCHES

Winter Spring Summer Fall
Brook Sarson
CEO, CatchingH2O
Technical Advisor, Accelerate Resilience L.A.
'The social network' of trees and fungi

- Sunlight
- Shadow
- Nutrients
  - Water
- Carbon
  - Nutrients
  - Water
- Fungi
- Sugar + Carbon
  - *phosphorous, nitrogen
- Sugar + Carbon

Graphic by EcoWatch
Questions?

To ask a question: use Q&A box or raise your hand
For phone callers: *9 to raise hand, *6 to speak
Urban greening funding opportunities
California’s Water Supply Strategy, Adapting to a Hotter, Drier Future

Funding available
CAL FIRE Urban & Community Forestry Program

The mission of the California Department of Forestry and Fire Protection’s Urban Forestry Program is to lead the effort to advance the development of sustainable urban and community forests in California. Trees provide energy conservation, reduction of storm-water runoff, extend the life of surface streets, improve local air, soil and water quality, reduce atmospheric carbon dioxide, improve public health, provide wildlife habitat and increase property values. In short, they improve the quality of life in our urban environments which, increasingly, are where Californians live, work, and play. The program also administers State and Federal grants throughout California communities to advance urban forestry efforts.

- Technical assistance and advice
- Public and professional education
- Public events
- Local and regional advocacy
- Networking and partnerships
- Technology transfer
- Grants
- Conduit to national programs
Program Highlights

- Staff of 10, six field specialists, one environmental scientist (education and outreach specialist), one program manager, two supervisors
- Websites = www.ufei.org and www.fire.ca.gov
  - SelecTree/CA Big Trees Register/Urban Tree Key/Inventory
- CA ReLeaf Network = 80+ Community Groups
- Grant Programs (FY 2021-22 $30 million to 40 awards, Urban and Community Forestry Grant Programs (ca.gov))
  - Urban Forest Expansion and Improvement (37,159 trees)
  - Management Activities (13 cities)
  - Workforce development (13 groups will train more than 1,000 people)
- Tree City USA awards – 165 cities, 7 Tree Line Utilities, 14 Tree Campus Higher Education
- Applied Research & Demonstration
Urban Forest Benefits

• GHG storage and avoided emissions
• Energy Conservation
• Air Quality
• Conserving Runoff
• Water quality improvement
• Economic (property value +)
• Public Health
• Jobs
• Much more…..

Focus on the benefits gained from implementing a systematic approach of using vegetation to solve problems in urban areas.
Types of Urban Forestry Grant Projects

• **Urban Forest Expansion and Improvement**
  - Urban tree planting projects and associated costs
  - Purchase and improve unused neighborhood parcels

• **Urban Forest Management Activities**
  - Urban forest management plans
  - Tree or urban forest related policies and ordinances
  - Urban tree inventories
  - Urban forest mapping and analysis

• **Urban Forestry Education and Workforce Development**
  - Educate, train, and employ people in urban forestry or a closely related profession.
  - Equip and develop local people to improve their urban forest and associated ecosystems
U&CF Program history and forecast

• Foundational services
  – Grants
  – Technical Assistance
  – Education and outreach

• Focus issues forecast
  – Canopy cover distribution and density
  – Equity
  – Green schoolyards
  – Increasing resilience to extreme heat, climate change, air quality, health impacts, and other issues
LA Urban Area Tree Canopy and Disadvantaged Communities by Census Tract

Data Sources:
- Disadvantaged Community data derived from CalEnviroScreen v.3.0
- Tree Canopy Cover derived from EarthDefine, 2012
- Days over 90° derived from PRISM 2004-13 average
Thank You!

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Where to find more information

- State Water Resources Control Board
  - Water Conservation Portal
  - About SB 606 & AB 1668:
    - [www.waterboards.ca.gov/water_issues/programs/conservation_portal/california_statutes.html](http://www.waterboards.ca.gov/water_issues/programs/conservation_portal/california_statutes.html)
  - About the rulemaking process:

- Department of Water Resources
  - Primer of 2018 Legislation on Water Conservation and Drought Planning
  - About urban water use efficiency, including SB 606 & AB 1668:
    - [https://water.ca.gov/Programs/Water-Use-And-Efficiency/Urban-Water-Use-Efficiency](https://water.ca.gov/Programs/Water-Use-And-Efficiency/Urban-Water-Use-Efficiency)
  - Sharepoint site with materials for DWR workgroup members only:
    - [https://cawater.sharepoint.com/sites/dwr-wusw/SitePages/Home.aspx](https://cawater.sharepoint.com/sites/dwr-wusw/SitePages/Home.aspx)
Previous Workshops

• December 2&3, 2021 (Wastewater, trees, and parklands methods)
• May 11, 2022 (Wastewater results)
• Can be found at: https://www.waterboards.ca.gov/water_issues/programs/conervation_portal/regs/water_efficiency_legislation.html#task5-deliverables
Thank you!

Contact: ORPP-WaterConservation@waterboards.ca.gov with questions