



Urban Water Use Efficiency

Water Conservation
Legislation Update

Director Saunders

2018 Water Conservation Legislation AB 1668(Friedman) and SB 606 (Hertzberg)



Make Water Conservation a California Way of Life (AB 1668 and SB 606)

Urban Water Use Efficiency

- Urban water use objectives (targets) based on efficiency standards
- Commercial, industrial, and institutional (CII) performance measures

Drought Resiliency

- Water shortage contingency planning
- County drought planning for small systems and rural communities

Agricultural Water Use Efficiency

- Enhanced Agricultural Water Management Planning

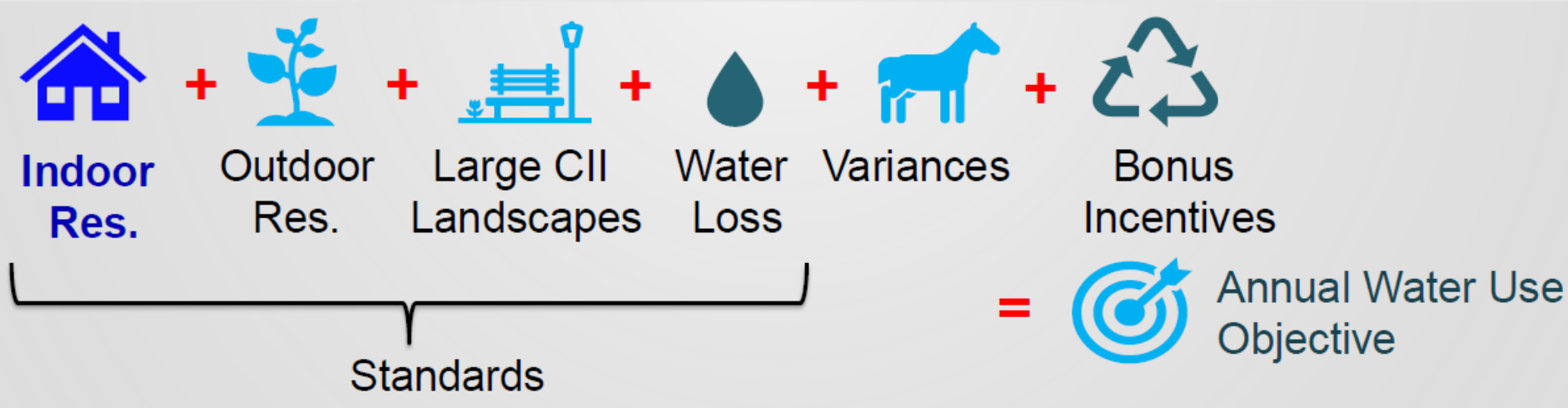
Urban Water Use Objectives



- New urban water use objective is based on efficiency or performance standards, and not a percentage reduction from a baseline
- These efficiency standards are used to calculate a water use objective, or water budget, that is based on estimated efficient water use for each urban retail water supplier
- The water use objective is the sum of aggregate estimated efficient:
 - **Indoor water use**
 - **Outdoor residential irrigation**
 - **CII landscape irrigation with dedicated meters**
 - **Water Loss**
 - **Variances**

- 2018 Water Conservation Legislation (AB 1668/SB 606) – Sets Annual Objectives for Suppliers

- Annual Objectives are set by sum of standards, variances, and bonus incentives:





Residential Indoor Water Use Standard

- DWR, in coordination with the Water Board, conducted Indoor Water Use Study
- Recommendations given to Legislature
- Current Residential Indoor Water Use Standard set in statute (Section 10609.4) was
 - 55 gpcd until 1/1/2025
 - No less than 52.5 gpcd until 1/1/2030
 - No less than 50 gpcd after 1/1/2030

To Make a Recommendation ...

- What is current statewide average indoor residential water use (Ri-gpcd)?
- What is the supplier distribution of Ri-gpcd?
- What will supplier Ri-gpcd be in 2025 and 2030?
- Who / How many suppliers would be affected by a changed Ri-gpcd standard?
- What are the potential benefits and impacts?

Study Participants

City of Folsom*

City of Sacramento*

City of Santa Cruz

Redwood City*

Coachella Valley MWD

Eastern MWD*

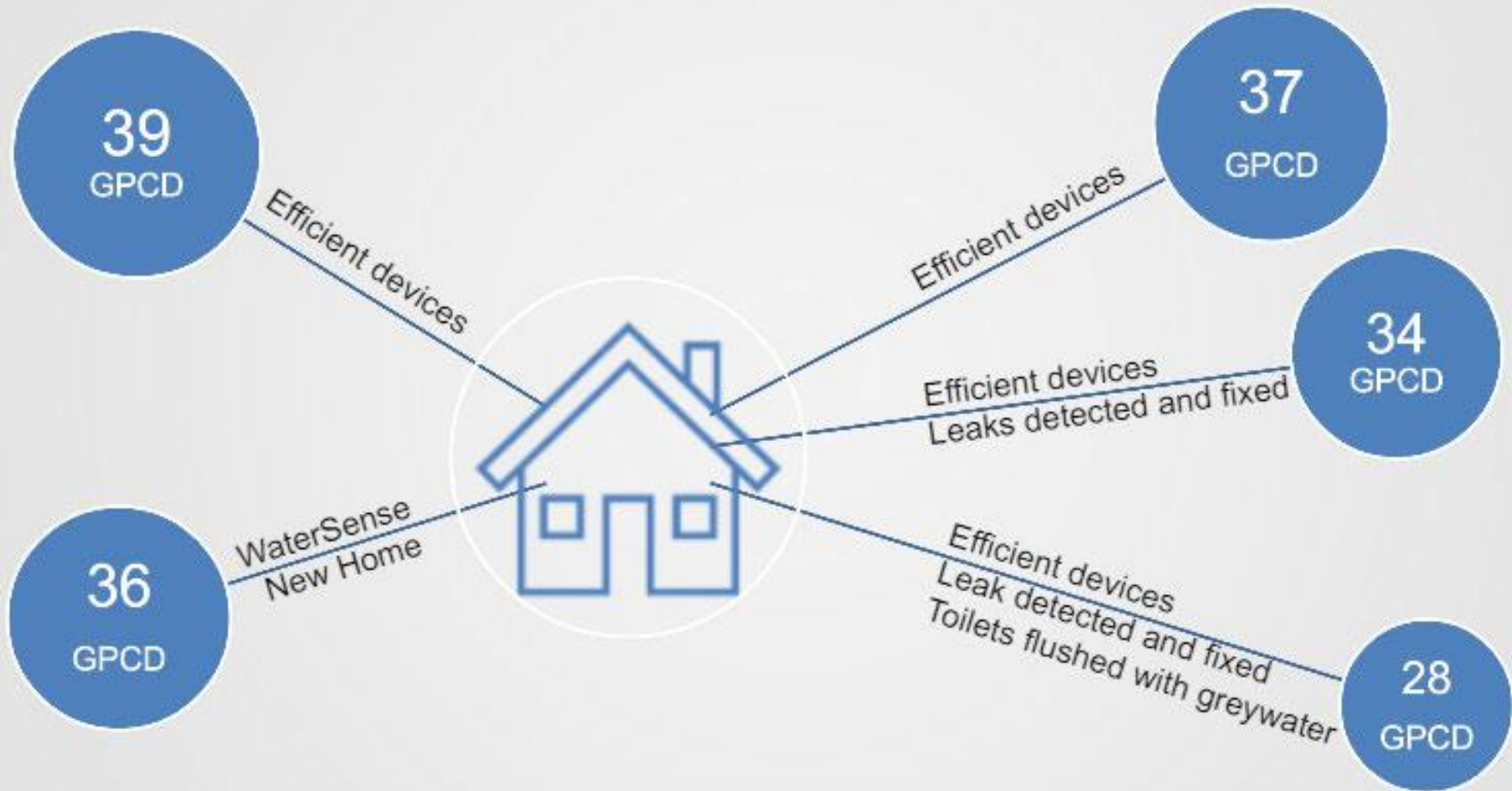
Irvine Ranch WD

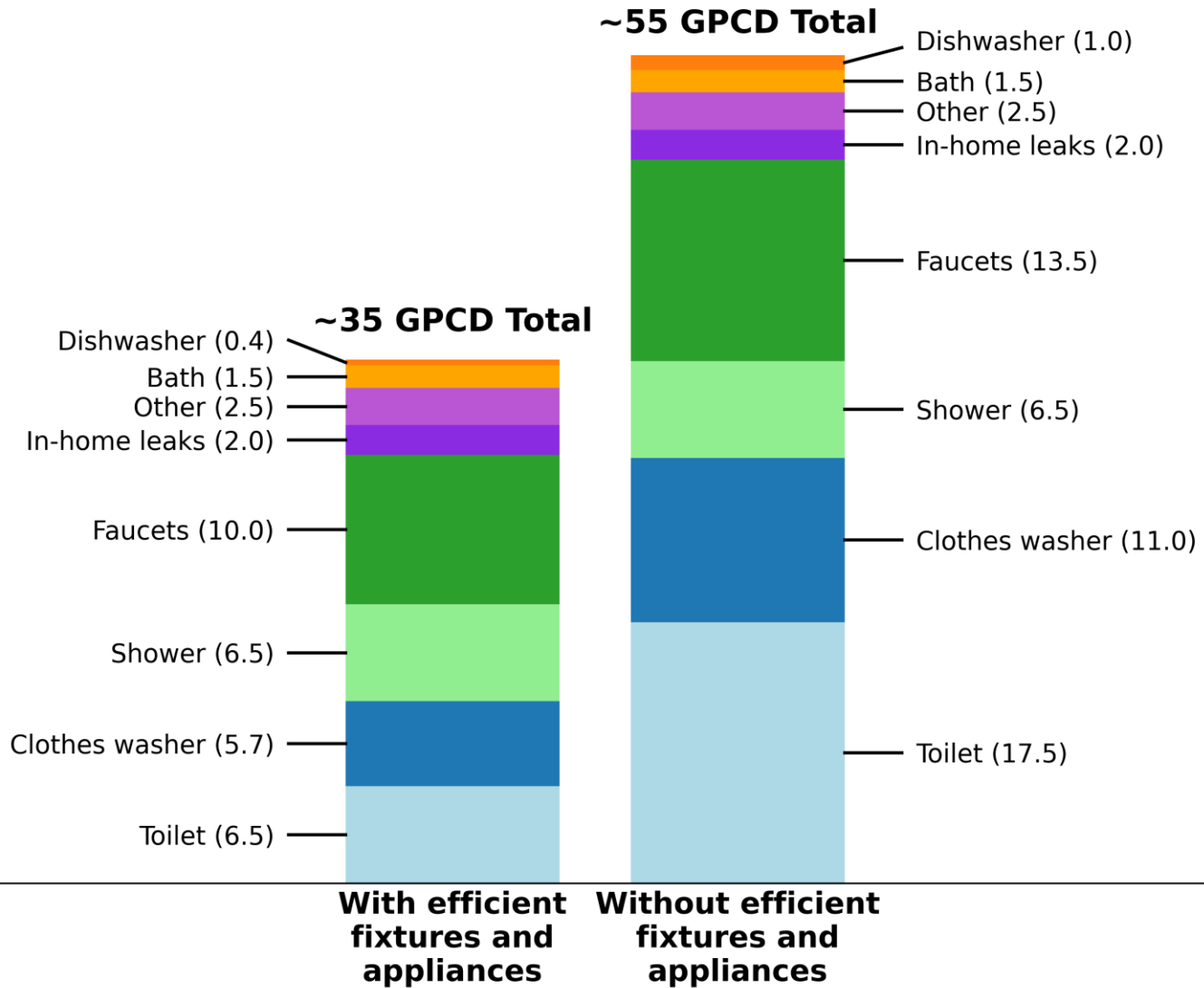
Moulton Niguel WD

California Water Service



Measured per Capita Use Rates (other studies)





Statewide
Average by
Supplier -
Distribution and
Baseline
Averages

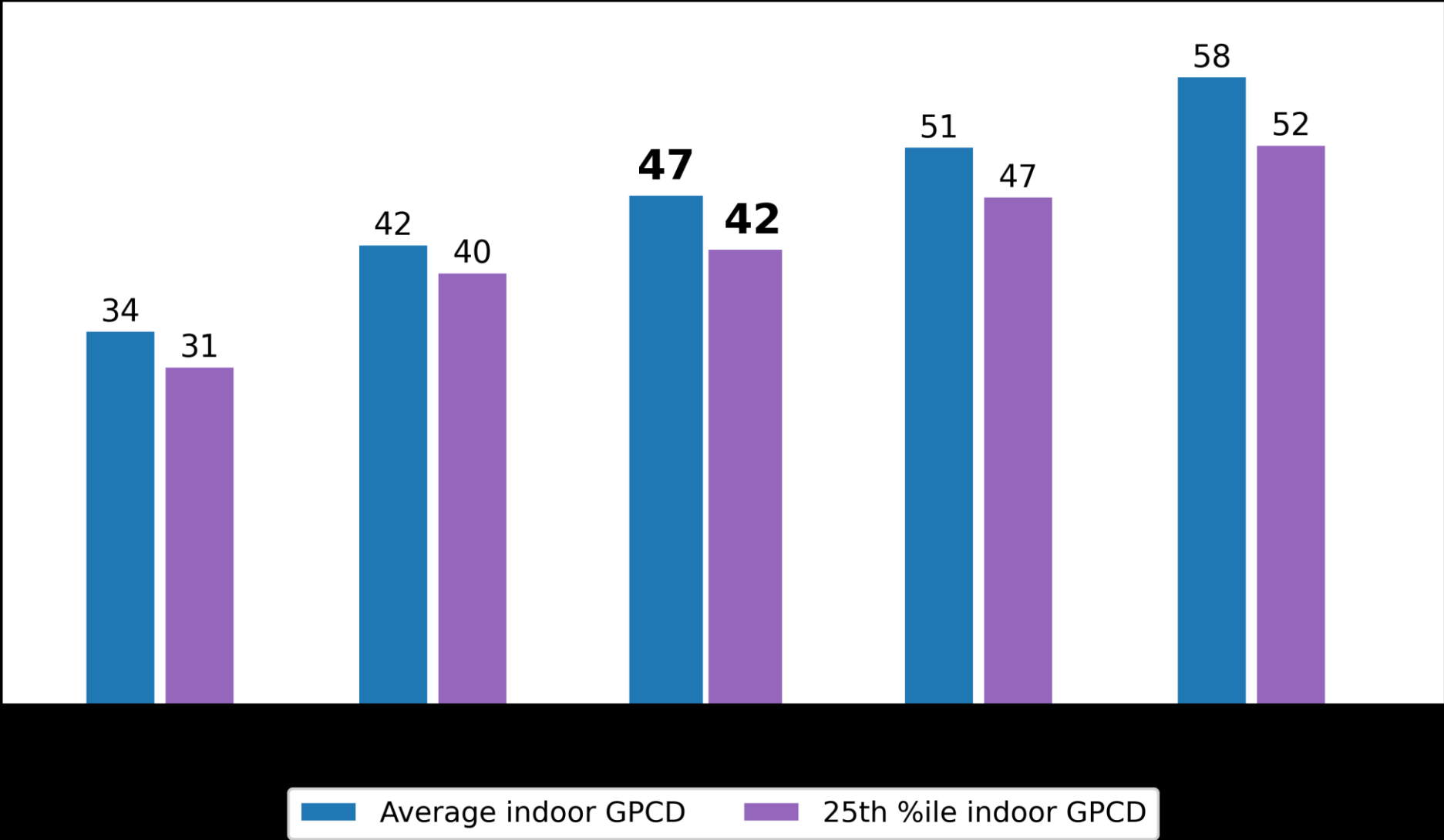
| Statistic | Supplier-Level Data (eAR) |
|-------------|------------------------------|
| | <i>SAM (Ri-gpcd)</i> |
| # Suppliers | 157 |
| Average | 51.1 |
| Minimum | 27.8 |
| Maximum | 128.7 |
| Median | 48.3 |

An aerial photograph of Atlanta, Georgia, showing a complex highway interchange in the foreground and the city skyline in the background. The skyline is dominated by the Bank of America Tower, a tall skyscraper with a distinctive pointed top. Other buildings include the Melia hotel and the Emory University building. The sky is blue with scattered white clouds. Overlaid on the image is white text with a drop shadow.

Current Statewide Avg: 48 gpcd

Quarter of State: 42 gpcd

Lowest Water-Using Quartile: Hourly Account-Level Data



EXAMPLE: Distribution Analysis Estimate, how Suppliers are Affected by Various Standards

| Standard | New Average* Ri-GPCD | Water Savings**, acre-feet/ year | Suppliers Above Standard, % | Suppliers > 5 GPCD Above Standard, % | Population Above the Standard, % |
|-------------|-------------------------|-------------------------------------|--------------------------------|--|--|
| 2020 None | 50.8 | -- | -- | -- | -- |
| 55 | 48.6 | 89,883 | 27 | 17 | 23 |
| 48 | 45.9 | 201,108 | 50 | 30 | 52 |
| 2025 None | 48.2 | -- | -- | -- | -- |
| 52.5 | 46.0 | 89,522 | 27 | 17 | 23 |
| 47 | 44.2 | 165,277 | 46 | 27 | 48 |
| 2030 None | 46.6 | -- | -- | -- | -- |
| 50 | 44.3 | 163,056 | 28 | 18 | 23 |
| 42 | 40.7 | 312,431 | 61 | 36 | 71 |

*Population weighted average, **Compared to no-standard



Benefits of Efficient Indoor Use

- Water savings
- Energy savings
- Reduced water bill
- Protects water quality
- Reduced need for infrastructure investments
- Mitigated rate increases

SB 1157 –

Jan 1, 2020: 55gpcd

Jan 1, 2025: 47gpcd

Jan 1, 2030: 42 gpcd

The bill would prohibit enforcement of specified provisions against an urban retail water supplier solely for failing to meet the indoor residential use standard.

Standards under review to see the impacts of going to the lower gpcd usages

What the Indoor Standard Means

All standards, including the Indoor Standard are measured as an annual average across a water supplier's service area
–**NOT** a customer-level, or daily standard.

Standards are **NOT** independently enforced
-Enforcement will be on the Supplier's

Total Annual Water Use Objective.



Indoor
Res.

+



Outdoor
Res.

+



Large CII
Landscapes

+



Water
Loss

+

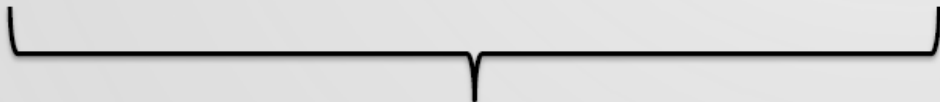


Variances

+



Bonus
Incentives



=



Annual Water Use
Objective

What is Efficient Indoor Residential Water Use in practice (examples) ?

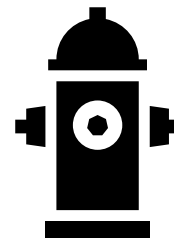
Customer level

Simple steps people can take around the home
Products that perform as well or better than inefficient counterparts
Leaks (Watersmart)



District level

Automated Meters
Delivery efficiency
Leaks/mitigate water loss
Customer education



Commercial, Industrial, and Institutional Performance Measures

New CII performance measures will be set to ensure efficient water use in these sectors

- CII water use classification system
- Setting minimum size thresholds for converting mixed CII meters to dedicated irrigation meters or in lieu technologies
- CII best management practices

Variations for unique water uses

DWR to develop and recommend variations, and thresholds of significance, for each of the following unique water uses:

| | | |
|--|----------------------------------|-------------------------------------|
| Evaporative coolers | Horses and other livestock | Seasonal populations |
| Landscaped areas irrigated with recycled water | Soil compaction and dust control | Ponds and lakes to sustain wildlife |
| Irrigation of vegetation for fire protection | Agricultural use | Others TBD |



OUTDOOR STANDARD




Principles of Model Water Efficient Landscape Ordinance (MWELO)

- $MAWA = (ET_o - P_{eff}) * (0.62) * ETAF * LA$
- Where MAWA = Maximum Applied Water Allowance (gallons)
- LA = Landscape area (sq.ft)
- ET_o = reference evapotranspiration (in)
- P_{eff} = Effective precipitation (in)
- ETAF = Evapotranspiration Adjustment Factor (unitless)
- MAWA is applied at the parcel level



- $ORWU = (ET_o - P_{eff}) * (0.62) * (ETF) * (LAs)$
- Where ORWU = Outdoor Residential Water Use (gallons)
- ET_o = Reference evapotranspiration (inches)
- P_{eff} = Effective precipitation (inches)
- ETF = Supplier level ET factor (unitless)
- LAs = Landscape area for a water supplier (sq. ft)
- 0.62 = unit conversion factor



DWR proposed the following provisional standards at the June 30, 2021 stakeholder workshop

- Outdoor residential water use standard for existing homes = 0.7
- Outdoor residential water use standard for new developments = 0.55, or the current MWELo ETAF value for residential homes
- Outdoor residential water use standard for special landscape areas (SLA) = 1.0, per MWELo guidelines

Class 1 –Irrigable-Irrigated (II):Area of healthy vegetation where the vegetation appears to be in growth, not senesced, and is foliated. The area is presumed to be maintained and managed through active irrigation, comprising an irrigated hydro-zone. Other non-vegetative features may be included in the irrigated hydro-zone.

Class 2 –Irrigable-Not-Irrigated (INI):Area of planted and previously maintained vegetation that appears water stressed (brown or leafless plants). These are areas that are not currently being irrigated, but were irrigated in the past, or intended to be managed with irrigation in the future.

Class 3 –Not-Irrigable (NI):Native or undeveloped areas within, or adjacent to, a developed lot that show no signs of active or previous irrigation, are not adjacent to irrigated vegetation, and generally not located adjacent to structures. Impervious, solid or compacted materials are ‘not irrigable’ because they cannot directly support growing vegetation or hold water.

Class 1 = Irrigated

Irrigated lawns, turf and grass that is planted, actively managed and growing. More than 60% must be visibly healthy and green overall.

Irrigated trees and shrubs including entire areas of healthy, foliated canopy:

Considerations:

- Proximity to irrigated areas around the house,
- Canopy and trunks adjacent to, and watered by, other irrigated features,
- Planted in borders along property boundaries, fence lines, walkways and driveways where irrigation source is evident,
- Planted in a geometric pattern like lines, grids or other patterns (including the bare earth within the patterned landscape feature).

Pasture that is green, showing signs of active management for growth and with associated irrigation infrastructure.

Mulched areas between irrigated trees, shrubs and landscape plantings.

Vegetation maintained in planters, or surrounded by hardscape, such as trees in circular driveways.

Pools, spas, ponds and other large constructed water features (> 64 sq ft), maintained by potable water.

Irrigated area under solid moveable objects such as vehicles, trampolines, and lawn furniture.

Class 2 = Irrigable but not currently irrigated

Brown lawns, turf and grass with less than 60% visible green, healthy growth overall.

Trees planted for landscape, surrounded by brown lawn, turf or grass (as defined above),

Agricultural areas, such as cultivated rows or small orchards, where previous signs of irrigation or irrigation infrastructure is clearly visible

Mulched areas without plants or visible irrigation infrastructure.

Bare soil that has been graded or prepared for landscape planting within an area clearly defined by a fence, ornamental edging or other landscape improvements.

Irrigable, not currently irrigated area under solid moveable objects such as vehicles, trampolines, lawn furniture, etc.

Class 3 = Not Irrigable

Undeveloped lands:

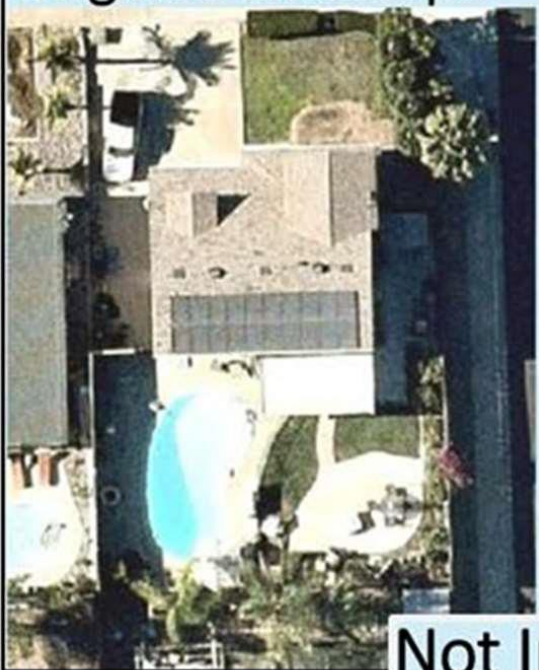
- Natural, open landscape with native vegetation or bare soil
- Ungraded or un-improved land
- Cleared areas between undeveloped land and developed parcels.

Impervious or compacted land surface not capable of supporting plants:

- Rooftops, buildings or structural footprints (houses, garages, shed, gazeboes)
- Sidewalks and paths, walls, fences, and other barriers composed of concrete, stone or gravel
- Roads and driveways, including asphalt, concrete, gravel and dirt
- Decks and patios of all types
- Artificial turf

Not irrigated area under solid moveable objects such as vehicles, trampolines, lawn furniture.

Irrigated landscape



Not Irrigable-hardscape and undeveloped land



Determination of Supplier's Landscape Area



Outdoor Residential Water Use Standard Draft Recommendation

2023 – 2029 = 0.80

- Good indicator of current statewide outdoor water use efficiency
- Consistent with the age distribution of housing stock analysis based on MWELo's
- ETAF numbers and its aggregation

2030 and thereafter = 0.65

- This is consistent with the average ETF for efficient water suppliers
- About 30% of the 249 sample suppliers are already at or below ETF of 0.65

New Developments = 0.55 (or current MWELo ETAF value)

Special Landscape Areas (SLA) = 1.0

Irrigable landscape area = $II + 0.2 * INI$

Efficient Outdoor Residential Water Use Calculation (EORWU)

2023 - 2029

$$\text{EORWU} = (\text{ETo} - \text{Peff}) * (0.62) * (0.80) * (\text{II} + 0.20 * \text{INI})$$

2030 and beyond

$$\text{EORWU} = (\text{ETo} - \text{Peff}) * (0.62) * (0.65) * (\text{II} + 0.20 * \text{INI})$$

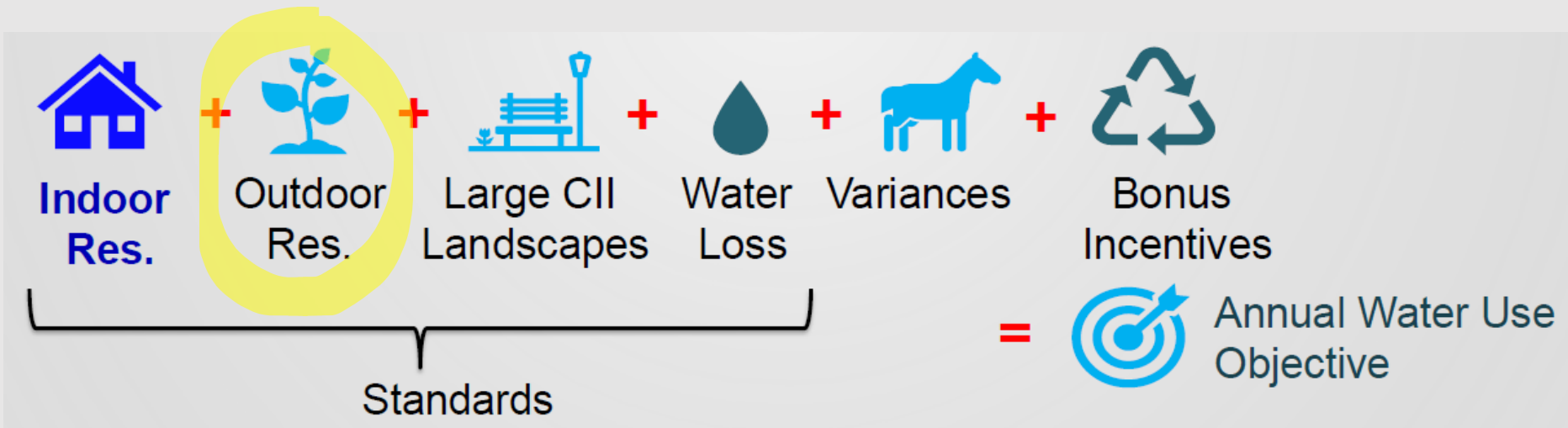
Suppliers can use ETo, Peff, II, and INI data provided by DWR, or alternative data sources, if they can demonstrate to DWR that their data is as accurate as, or more accurate than, the data provided by the department

DWR LAM Data Results

The 4,438 single-family and multi-family residential parcels in Georgetown Divide Public Utility District are composed of

- **99.0** percent not irrigable,
- **0.6** percent irrigated, and
- **0.5** percent irrigable not-irrigated landscapes.





Suppliers can use ETo, Peff, II, and INI data provided by DWR, or **alternative** data sources, if they can demonstrate to DWR that their data is as accurate as, or more accurate than, the data provided by the department

Calculating Urban Water Use Objective

Urban Retail Water Supplier's Urban Water Use Objective (CWC §10609.20(c))

Aggregate estimated efficient indoor residential water use



Aggregate estimated efficient outdoor residential water use



Aggregate estimated efficient outdoor irrigation of landscape areas with dedicated irrigation meters or equivalent technology in connection with CII water use



Aggregate estimated efficient water losses



Aggregate estimated water use for variances approved by the State Water Board



Allowable Bonus Incentive Adjustments (CWC §10609.20(d))

Volume of potable reuse water from existing facility, with completed environmental review by January 1, 2019, that becomes operational by January 1, 2022, not to exceed

15% of urban water use objective



Volume of potable reuse water from new facility, not to exceed

10% of urban water use objective



Urban Retail Water Supplier's "adjusted" urban water use objective for annual reporting purposes and comparison to the actual water use in the previous year

Questions?

