



# Best Practices – Landscape Enhancement Projects

Revised 8-12-2024

## Design Guidelines and Specifications:

HOAs are required by State law to reduce water usage to State and water district goals. To help with compliance, rebates are offered to assist with making the necessary changes. This document is a summary of the design targets to be used by the SP HOA Landscape Committee and our contractors in designing these landscape changes.

## General Design Principals:

- **Improve the appearance, walkability, shade, and functionality of our landscaped areas.**
- Improve the drought resilience and general health of our landscape.
- Change decreitive turf to lower water use plants according to State and local guidelines.
- Change from sprinklers to drip and other more efficient irrigation systems where possible.
- Improve irrigation efficiencies by improving controller programming and weather tracking systems.
- Reduce water waste and improve irrigation repair response by installing main shutoff valves and flow monitoring sensors.
- Reduce water requirements by improving soil water retention and bioactivity.
- Improve rainwater capture in new landscape projects.
- Creatively utilize available rebate programs to fund most of these changes whenever possible.

These changes take good planning, patience, and unwavering dedication to long-term goals to succeed. But failure to make these changes will result in severely declining landscape, greatly increased community costs, and ultimately in large assessments to correct when rebate funds are depleted.

## Specific Design Specifications:

IRWD allotments are per Dedicated Water Meter (DIM) and based only upon potable or reclaimed water type. These allotments are calculated using land area in acres (LA) serviced by that meter and standardized plant factors (PF) and irrigation efficiency factors (IEF), making no allowances for special use type. (No exceptions are made for erosion, recreational, or event areas.) **These IRWD restricted allotments are always lower than the State restrictions** and vary with drought levels. We have current data for these but do not have the future, lower forecasted numbers mandated by the state. **Therefore, the Landscape Committee will design the landscape and irrigation within each Dedicated Irrigation Meter's (DIM) Land Area (LA) to exceed the State's Landscape Efficiency Factor (LEF) forecasted while guided by the general design principals.** If the current IRWD LEF is less that the forecasted state LEF, (such as with the forecasted state reclaimed LEF) the current IRWD LEF will be used.

## LEF Design Targets:

- Current Average LEF per DIM, potable water, IRWD (*for reference*): .75
  - Based on a crop coefficient of 0.6 for drought tolerant landscapes is applied for potable irrigation, and a crop coefficient averaging 0.65 for warm-season turf is applied to recycled water irrigation per current IRWD rates.

***Best Practices documents serve as the Serrano Park Community Association reference standards for projects, area management, specifications, and procedural guides. They serve as the interpretation of industry standards as they apply to Serrano Park Community shared property.***

- Based on irrigation efficiency of 80% is applied to potable water and 75% to recycled water per current IRWD rates.
- LEF = crop coefficient / irrigation efficiency.
- Current Average LEF per DIM, reclaimed water, IRWD (*for reference*): .86
- **Target Average LEF per DIM, potable water (2040 California): .45**
  - LEF per DIM, potable water (2028 California): .80
  - LEF per DIM, potable water (2035 California): .65
- **Target Average LEF per DIM, reclaimed water (current IRWD): .86**
  - (Target Average LEF for California for 2040 is 1.00 but is already restricted below that by IRWD)

**Parameters to use in designs:**

- Estimated PF for summer turf areas: .65
- Estimated PF for non-turf areas: .30
- Estimated IEF for current large area turf: .60 (LEF = .65/.60 = 1.08)
- Estimated IEF for current parkway area turf: .45 (LEF = .65/.45 = 1.44)
- Estimated IEF for MP Rotators large area turf: .80 (LEF = .65/.80 = .81)
- Estimated IEF for spray embankments: .60 (LEF = .30/.60 = .5)
- Estimated IEF for drip embankments: .80 (LEF = .30/.80 = .38)
- Estimated IEF for drip areas: .80 (LEF = .30/.80 = .38)

These best estimates are based on:

- PF for the species used in our plant pallets.
- Soil water retention and drainage variations.
- Sprinkler types, variations in an area, and coverage efficiencies.
- Runoff and overspray in area type.
- Evaporation for spray type and angles.

The math used to derive the Average LEF of the original landscape design and for the enhanced landscape design:

$$\text{Average LEF for DIM} = \frac{\sum_{i=1}^n LA_i \times PF_i / IEF_i}{\sum_{i=1}^n LA_i}$$

The math used to derive the water reduction of an enhanced design:

$$\text{Water Reduction} = \left( 1 - \frac{\text{Average LEF}_{\text{enhanced}}}{\text{Average LEF}_{\text{original}}} \right) \times 100\%$$

Actual water allotment in ccf:

$ET_0$ : net reference evapotranspiration in inches

$$\text{conversion factor: } 36.3 \frac{\text{ccf}}{\text{inch acres}}$$

$$\text{Water Allotment in hundred cubic feet} = LEF_{IRWD} \times LA_{DIM} \times ET_0 \times 36.3$$

Cost reduction per ccf using current IRWD rates:

Tier	Rate (per ccf*)	Use (percent of allocation)
Low Volume	\$1.75 potable	0 - 40%
	\$1.39 recycled	0 - 40%
Base Rate	\$2.52 potable	41% - 100%
	\$2.36 recycled	41% - 100%
Inefficient	\$6.25 potable	101% - 160%
	\$5.25 recycled	101% - 160%
Wasteful	\$15.49 potable	161%+
	\$9.20 recycled	161%+

$$\begin{aligned} \text{Average Cost per ccf} = & \textit{portion of } LEF_{Low\ Volume} \times Rate_{Low\ Volume} \\ & + \textit{portion of } LEF_{Base\ Rate} \times Rate_{Base\ Rate} \\ & + \textit{portion of } LEF_{Inefficient} \times Rate_{inefficient} \\ & + \textit{portion of } LEF_{Wasteful} \times Rate_{Wasteful} \end{aligned}$$

$$\text{Cost Reduction} = \left( 1 - \frac{\text{Average Cost}_{completed}}{\text{Average Cost}_{original}} \right) \times 100\%$$

## Specification Development

The above Landscape Efficiency Factor target specifications were taken from the latest allocation specifications from California and IRWD.

The above Plant Factors and IEF estimates were derived using various University of California publications and studies.

The mathematical relationships between Land Areas, Landscape Efficiency Factors, Plant Factors, and Irrigation Efficiency Factors are from California and IRWD.

<https://www.irwd.com/services/landscape-irrigation-rates>

[https://www.waterboards.ca.gov/conservation/regs/water\\_efficiency\\_legislation.html](https://www.waterboards.ca.gov/conservation/regs/water_efficiency_legislation.html)

<https://water.ca.gov/Programs/Water-Use-And-Efficiency/Urban-Water-Use-Efficiency/Model-Water-Efficient-Landscape-Ordinance>