WELO Key Terms

1. **ETo** – **Reference ET** is the amount of water applied to keep a cool season turf grass thriving at a specific location by replacing the water lost through evapotranspiration. **Evapotranspiration** is the water transpired by plants and evaporated from the soil. ETo is expressed in inches of water applied per day or month or year. ETo can be found by county in Appendix A of the Model Water Efficient Landscape Ordinance. CIMIS, the California Irrigation Management System, has weather stations throughout California and determines ETo for irrigation use for landscapes plants and crops.

2. **PF** – **Plant Factor** (also called plant water use factor) is a factor that when multiplied by ETo, estimates the amount of water needed by plants at a specific location on a scale of 0 to 1.0. (It is possible for a plant to be low water using in San Francisco but moderate water using in Livermore, where the climate is warmer.)

   WELO defines the PF categories as follows:

   - 0 to 0.1   = Very low water use plants
   - 0.1 to 0.3   = Low water use plants
   - 0.4 to 0.6   = Moderate water use plants
   - 0.7 to 1.0   = High water use plants

3. **WUCOLS** – **Water Use Classification of Landscape Species** is a website with a searchable database that defines plant factors for individual species of plants depending on the location of the site. The website is hosted by UC Agriculture and Natural Resources at: https://ucanr.edu/sites/WUCOLS

4. **SLA** – **Special Landscape Area** is an area of the landscape dedicated to edible plants, recreation*, or planting areas, or water features using recycled water. Special landscape areas get a higher water budget based on a plant factor of 1.0 (high water use plant).
   single family landscapes do not have recreational areas.

5. **Hydrozones** are portions of the landscaped area where plants with similar water use needs are grouped together into irrigation zones. Hydrozones may be irrigated or non-irrigated. Plants with plant factors of high and low water use are not allowed in the same hydrozone.

6. **IE** – **Irrigation Efficiency** is the percent of irrigation water applied that gets beneficially used by the plant. Irrigation water that is not beneficially used by the plant is lost through runoff, evaporation, draining below the plant roots and through other means. In WELO, IE is fixed as:

   - .75 for overhead spray irrigation
   - .81 for drip irrigation

7. **ETAF** – **Evapo-Transpiration Adjustment Factor** is a component of the WELO water budget formula. ETAF = PF/IE. Like plant factors (PF), ETAF is on a scale of 0 to 1.0.

   In the MAWA formula, ETAF is a fixed budget:

   - 0.45 Non-residential
   - 0.55 Residential

   In the ETWU formula, ETAF is based on actual design:

   ETAF = PF/IE (for each hydrozone)

8. **MAWA** – **Maximum Applied Water Allowance** is a formula in WELO used to determine the maximum gallons of water per year allocated to the landscape. The formula is based on weather at the site (ETo) and size of landscape area (LA). The formula is:

   $$MAWA = (ETo) \times (0.62) \times [(ETAF \times LA) + ((1 - ETAF) \times SLA)]$$

   The formula calculates the reference ET for the site times conversion of inches to gallons times the ET adjustment factor times the landscape area plus giving back the adjustment factor for any special landscape areas.

9. **ETWU** – **Estimated Total Water Use** is a formula in WELO that estimates the actual gallons of water used in the landscape per year. The formula is based on weather at the location (ETo), the landscape area (LA), the plant factors (PF) and the efficiency of the irrigation (IE). The formula is:

   $$ETWU = (ETo) \times (0.62) \times [(PF/IE) \times LA]$$

   The ETWU is calculated for each hydrozone and then added together.

   The formula calculates the reference ET for the site times conversion of inches to gallons times the plant factor of the hydrozone divided by the irrigation efficiency for the hydrozone times the landscape area of the hydrozone. Add together the ETWU for each hydrozone to get the ETWU for the total landscape area. The ETWU must always use fewer gallons per year than the MAWA.

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