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Landscape Irrigation Controllers

Staff Workshop

March 16, 2026

Workshop Agenda

Landscape Irrigation Controllers

- Opening Remarks and House-keeping Rules
- Background and Product Description
- Costs and Savings
- Stock and Shipment
- Staff Proposal
- Technical Feasibility
- Environmental Impacts
- Certification of Products

House-Keeping Rules

Landscape Irrigation Controllers Workshop

- All lines should remain muted.
- Comments will be taken at the end of the presentation.
- For general clarifying question type your question in the Q&A section.
- To comment – raise hand to speak
 - Online: Raise your hand, host will call your name, then caller must push unmute.
 - Cell phone: Raise your hand by pushing *9, host will call your name, then caller must push *6 to mute and unmute.
- This workshop will be recorded.
- State your name and affiliation when speaking.

Background

Importance of the Proposed Standards

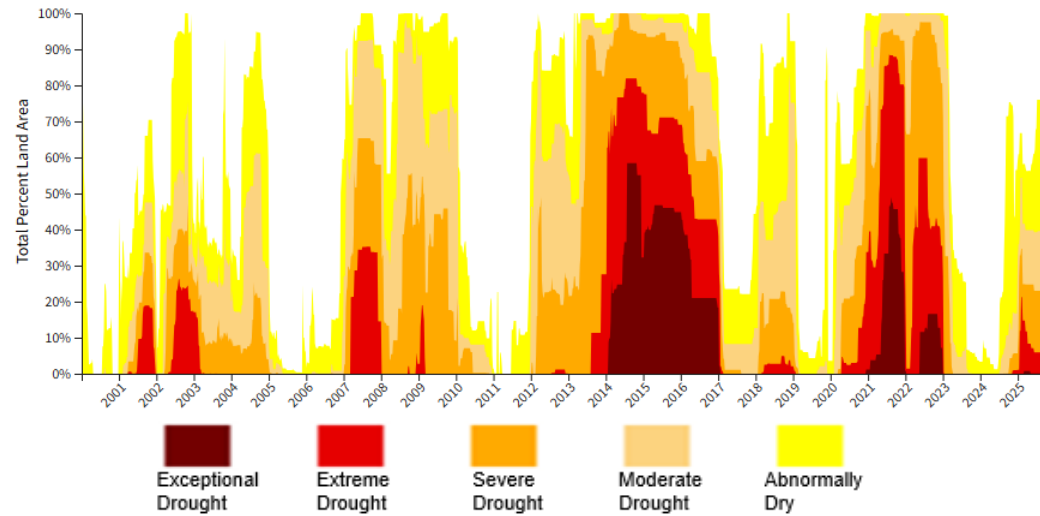
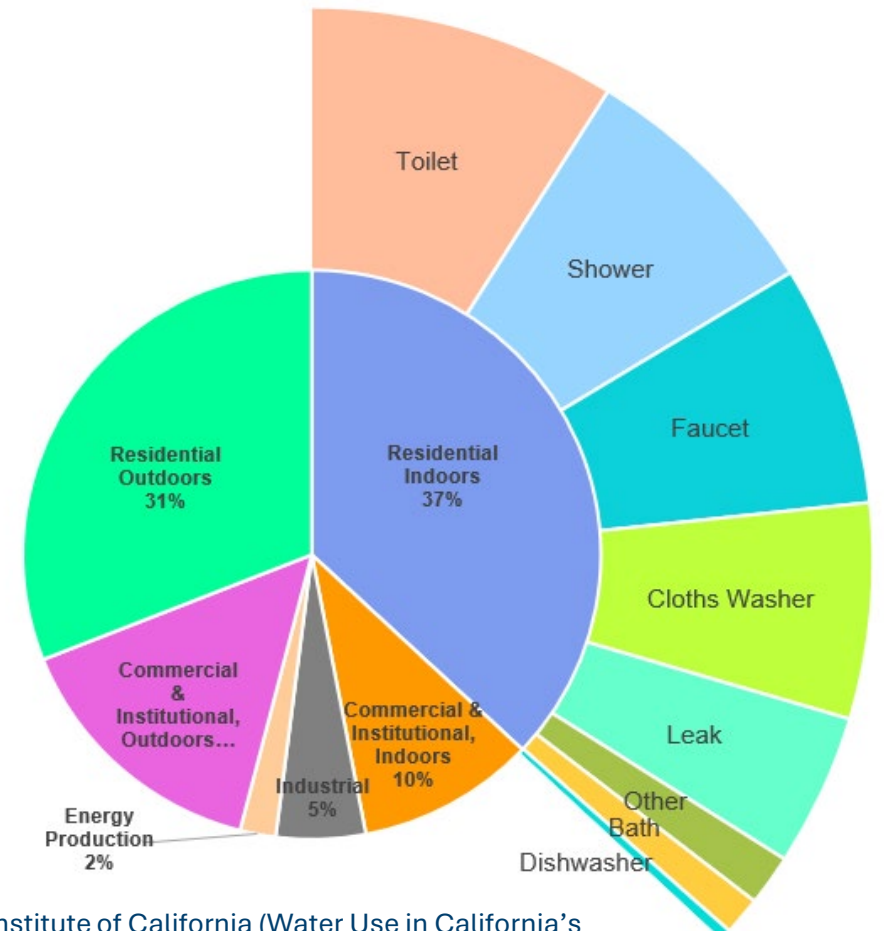


Illustration Credit: National Integrated Drought Information System (Drought.gov)

- Prominent drought becoming more prevalent.
- About 1/3rd of all water use is for residential outdoors.
 - Water efficiency standards for landscape equipment have large water savings potentials.



data from Public Policy Institute of California (Water Use in California's Communities) and Water Research Foundation (Residential End Uses of Water)

Landscape Irrigation Controllers

Device Description

- Controllers are timing devices that send signals to open or close irrigation valves.
- Controllers schedule irrigation by:

- Time clock



- Weather data



- Soil moisture



Module

Probe

Irrigation Controller



Sensor Bypass Device



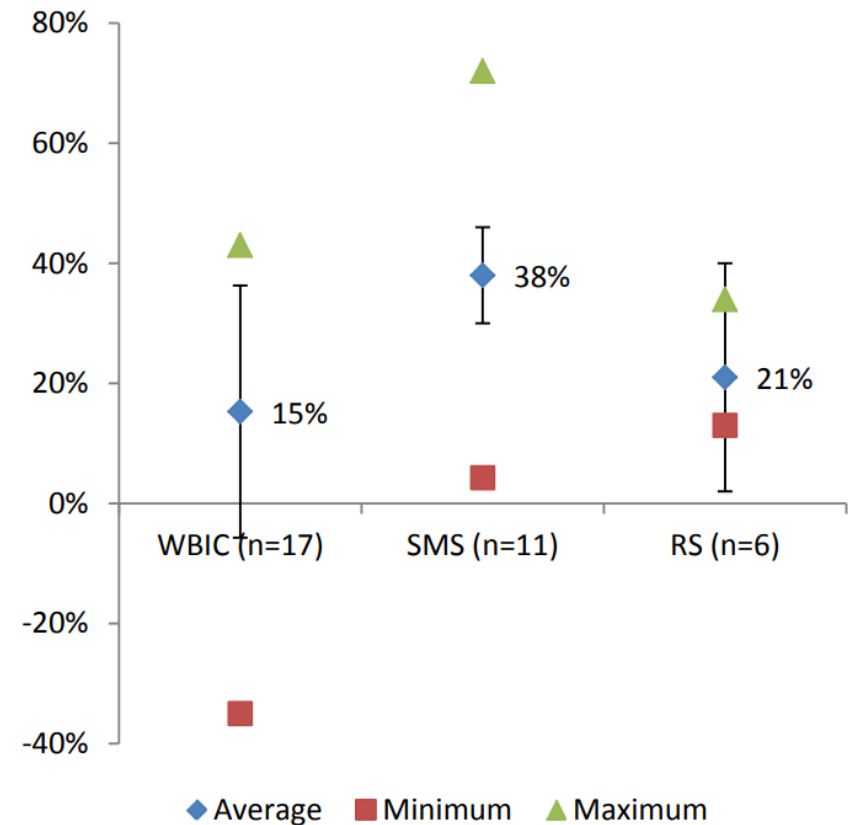
Irrigation Valve



Irrigation Controllers Savings Comparison

Smart Technology Irrigations

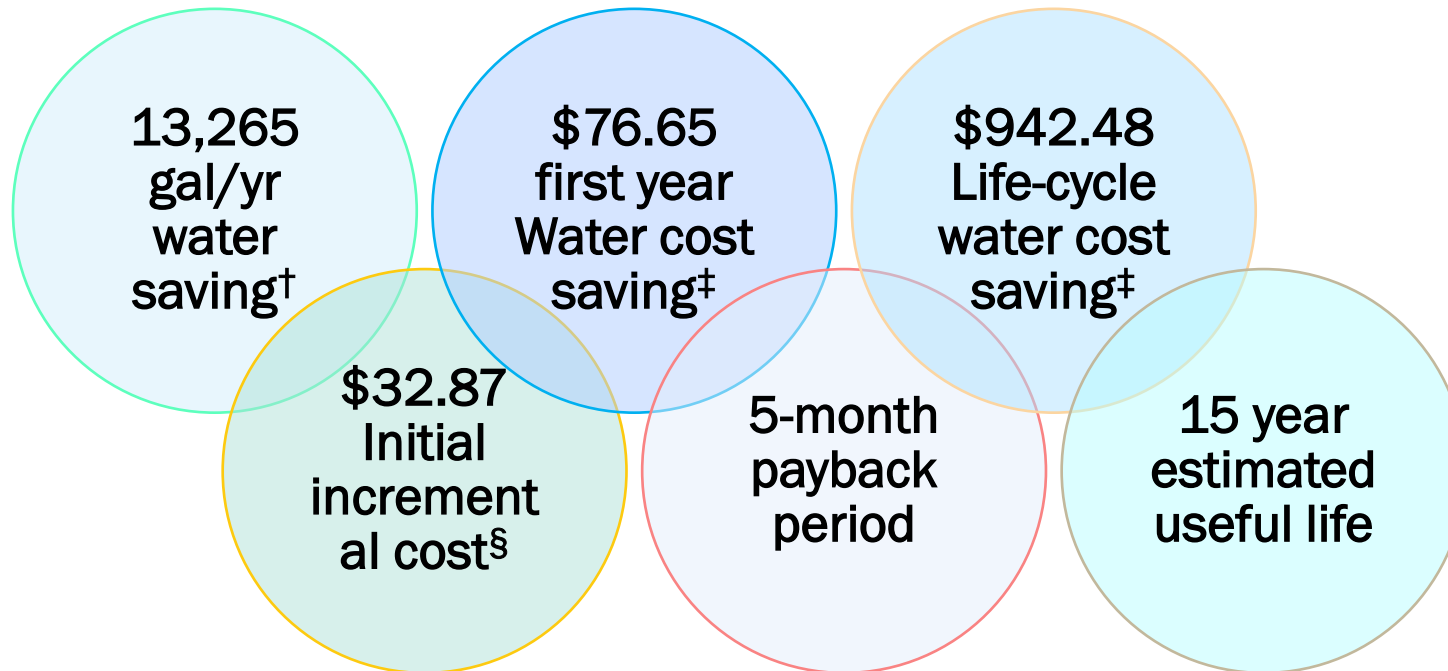
- Average Water savings:
 - Weather-Based Irrigation Controllers (WBIC): 15%
 - Soil Moisture-Based (SMS): 38%
 - Rain Sensor (RS): 21%
- WBIC is the most common type.
- Staff used WBIC for staff analysis of costs and savings.



Illustrated Credit: Lawrence Berkeley National Laboratory

Costs and Savings

Per Unit



[†] Assuming WBIC device used with water saving features enabled.

[‡] Based on average water rate cost of \$6.13 per 1000 gallon.

[§] Assuming an upgrade from baseline irrigation controller timer to an integrated WBIC.

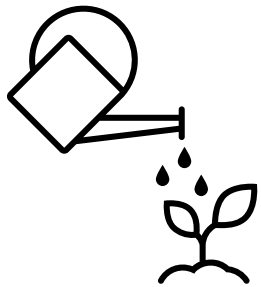
Costs and Savings

Statewide

53
billion gal/yr
Water
saving

\$251
million/yr
Water cost
saving

188.8
GWh/yr
Embedded
electricity
saving

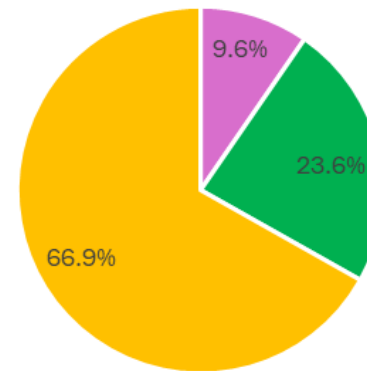


➤ Excluded from savings analysis:

- Compliant devices that exist without regulations.
- Non-integrated compliant landscape irrigation controllers.

Projected Market Share of Products (2027)

■ Compliant: Non-Integrated ■ Compliant: Integrated ■ Non-Compliant



Stock and Shipment

Staff Estimates

- Staff used single family and multifamily residential data to estimate existing stock and rate of growth
- Staff then applied an estimated useful life to calculate annual shipments

Year	Stock (million)	Shipment (thousand)	Average Growth Rate (%)	Non-Integrated Compliant Products and Products Compliant without Regulations
2027	5.78	402	0.63%	33.15%

Staff Proposal

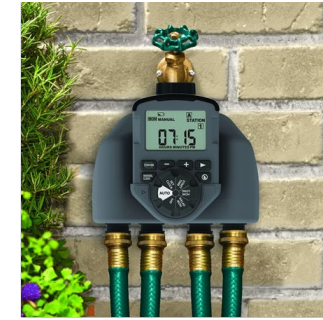
Scope

➤ In-Scope:

- All landscape irrigation controllers
- Battery operated landscape irrigation controllers including hose-bib controllers



Single Outlet Controllers
With Hose Bibb Splitter



Multiple Outlet Controller

➤ Out-of-Scope:

- manual-watering timers
- Agricultural irrigation controllers
- Golf-course irrigation controllers



Staff Proposal

Test Procedures

Staff's proposal aligns with the U.S. EPA WaterSense Program:

- Weather-based landscape irrigation controllers:
 - ANSI/ASABE S627 (October 2022) with some modifications
- Soil-Moisture-based landscape irrigation controllers:
 - ANSI/ASABE S633 (May 2020) with some modifications

Staff Proposal

Standards (high level)

Design Standards	Performance Standards: WBIC	Performance Standards: Bypass SMS
<ul style="list-style-type: none"> • Preserve programmed settings when power is lost without relying on an external battery • Have zone-specific programming or store at least 3 programs • Indicate when not receiving weather / local sensor input (Does not apply to battery-operated LIC) • Accommodate specific watering restrictions • Accommodate percent watering change • Revert to historical data or percentage adjust feature if signal is lost (Does not apply to battery-operated LIC) • Allow manual operation for troubleshooting, with automatic return to WB, SMS or previous set mode afterward • Be capable of interfacing with a rainfall device 	<ul style="list-style-type: none"> • Be capable of interfacing with a rainfall device or soil moisture sensor • Ensure irrigation adequacy by supplying no less than 80 percent of water needed to maintain landscape • Limit over-irrigation to 10 percent or less for each individual zone, and 5 percent or less on average across all zones 	<ul style="list-style-type: none"> • Allow enabling and disabling irrigation at 20, 40, and 60 percent depletion levels • Meet precision and responsiveness targets: <ul style="list-style-type: none"> – Relative average deviation (RAD) of the enable and disable readings across 3 depletion levels shall be 10 percent or less. – The absolute value of the slope of the least-square-regression line for three points represented by the average readings (R(E/D-DL)) on Y-axis and depletion levels (DL) on X-axis shall be greater or equal to 0.01, for both enable irrigation and disable irrigation. • Shall enable and disable irrigation after the soil moisture sensor mechanism is placed in a freezer for three days and thawed to pre-freeze medium temperature

- Design Standard mandates specific technologies, materials, or methods to be used (does not require testing).
- Performance standard establishes a required measurable outcome (requires testing).

Staff Proposal

Standards

Landscape Irrigation Controller Type		Design Standards	Performance Standards	Testing
Weather-Based		✓	✓	✓
Soil Moisture-Based	On-Demand	✓	-	-
	ByPass	✓	✓	✓
Battery-Operated		✓	-	-

Weather-Based and Soil Moisture-Based LIC

Integrated and non-integrated

- Integrated: the timer and all hardware (except sensors) needed to perform WB or SMS functions is built into a single housing.
- Non-integrated: the timer and the add-on or plug-in devices providing an interface between timer and sensor(s) or providing Wi-Fi connectivity, is in separate housing from the timer.
 - The timer and add-on or plug-in devices could be sold together or separately.



Staff Proposal

Marking and Certification Requirements

- Manufacturers would be required to mark each controller with:
 - Manufacturer name, brand name or trademark
 - Model number
 - Date of manufacture

- Non-integrated LIC must also be marked on its packaging with the manufacturer and model number of compatible add-on or plug-in devices that, when connected, make the base landscape irrigation controller WB or SMS.

- Manufacturers would be required to certify each model of landscape irrigation controller to the CEC's appliance efficiency database.

- Non-integrated LIC must only be tested with the add-on or plug-in devices included in its marking and necessary for WB or SMS.

Staff Proposal

Effective Date

- The proposed standards would apply to all residential, commercial, and industrial landscape irrigation controllers sold or offered for sale in California, except the products that are explicitly out of the scope, that are manufactured on or after one year from the date that the proposed standards are adopted by the CEC.
- Products manufactured before the effective date can still be sold in California after the proposed standards become effective.

Technical Feasibility

Landscape Irrigation Controllers

- Proposed standards align with U.S. EPA WaterSense program for weather-based and (bypass) soil moisture-based irrigation controllers.
- U.S. EPA WaterSense product website shows more than 400 weather-based and (bypass) soil moisture-based irrigation controllers.
 - U.S. EPA WaterSense certified products are from multiple different manufacturers.
- There are no technology barriers for battery-operated irrigation controllers and on-demand soil moisture-based irrigation controllers to comply with proposed design standards.
- Proposed standards are technically feasible, with no intellectual property barriers.

Environmental Impacts

No adverse Impacts

- Proposed standards:
 - Improve air quality by reducing greenhouse gases emitted in the production of energy used to transport and treat water
 - Have no adverse environmental impacts
 - Do not result in early disposal of existing products
- The proposed standards do not require the use of any specific material to improve the efficiency of the product
 - Compliant product are not reliant on any hazardous materials.
- Proposed marking requirement can be accomplished with existing marking techniques and do not cause a significant environmental impact

Certification of Products

How to become an Approved Lab

- Manufacturers, manufacturer trade associations, or other approved third-parties can provide data and certify devices to the CEC.
 - Manufacturers can submit their appliance data themselves or delegate a third-party company to submit data on their behalf.
 - Testing can be performed at any test lab (in-house or third-party) that can conduct the required test method.
 - Before data can be submitted for certification, the test lab submits a short application to be identified as an approved lab in our database. There is no cost for approval. Lab approvals expire at the end of each calendar year and must be renewed.

- Instructions are provided in the CEC's database (MEADbs) general instructions: https://www.energy.ca.gov/sites/default/file/AE/MAEDBS_General_Instructions_ADA.pdf.

Comments

How to Submit Your Comments

- Comments are accepted after this presentation today.
- Written comments may be submitted electronically through e-commenting page:
<https://efiling.energy.ca.gov/EComment/EComment.aspx?docketnumber=17-AAER-10>.
- Written comments may also be submitted electronically via email to docket@energy.ca.gov.
- A paper copy may be mailed to:
California Energy Commission
Docket Unit, MS-4
Docket No. 17-AAER-10
715 P Street
Sacramento, California 95814
- All comments are due by **5:00 p.m. on April 17, 2026**.

Thank You!

