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| <b>Project Title:</b>   | Pool Controls Rulemaking   |
| <b>TN #:</b>            | 250694   |
| <b>Document Title:</b>  | Supplemental Staff Analysis for Pool Controls Flexible Demand Standards  |
| <b>Description:</b>     | This memorandum contains supplemental information that was relied upon to develop the proposed revisions to the flexible demand appliance standards for pool controls. |
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| <b>Organization:</b>    | California Energy Commission   |
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# California Energy Commission Memorandum

**To:** Docket 23-FDAS-01

**From:** California Energy Commission  
Flexible Demand Appliance  
Standards Unit

**Date:** June 21, 2023

**Subject: Supplemental Staff Analysis for Pool Controls Flexible Demand Standards**

This memorandum contains supplemental information that was relied upon to develop the proposed revisions to the flexible demand appliance standards for pool controls.

## I. Introduction.

On February 23, 2023, California Energy Commission (CEC) staff published *Analysis of Flexible Demand Standards for Pool Controls*. The staff report included staff's analysis and conclusions supporting a finding of feasibility and cost-effectiveness for the initial proposed standards. During the 45-day comment period, stakeholders requested clarification regarding connectivity requirements and requested additional time to comply with the proposed standards. Staff evaluated the comments received in the flexible demand appliance standards dockets, conducted additional analysis to further substantiate the comments, and developed proposed revisions to the flexible demand appliance standards for pool controls in response. This memorandum contains supplemental information that was relied upon to develop the proposed revisions to the flexible demand appliance standards for pool controls in the 15-day proposed express terms.

## II. Connectivity Requirements.

Staff has provided clarity for three means of connectivity by defining "connected ready device", "connected device", and "radio broadcast data system receiver" in the proposed revisions to the flexible demand appliance standards for pool controls. The initially published staff report analysis for pool controls assumes use of these connectivity options by compliant devices, though the specific verbiage in the Proposed Regulatory Language provided more room for interpretation of what a minimally compliant device would include than staff intended. Therefore, clarifying the definitions of these connectivity options provides manufacturers with more specific proposed requirements without affecting the analysis or conclusions of the staff report.

## III. Timeline.

Stakeholders have requested clarification regarding connectivity requirements and have requested additional time to comply with the proposed standards. In response to the 45-day proposed regulatory text, a stakeholder commented in Docket number [23-FDAS-01](#) comment [TN#249582](#), "The current proposal that pool controls must meet the flexible demand appliance standards no later than one year after they are adopted is simply not feasible." The stakeholder comment also recommended, "Based on input received from our manufacturers,

three years is needed between effective date and when compliance is required. We strongly urge the Commission to consider this request in order to have adequate product on the market.”

After reviewing this comment and evaluating additional information included in the supplementary staff analysis, CEC staff is proposing a phased effective date for communication features as a part of the revised Proposed Regulatory Language, alongside clarifying requirements for features and connectivity. This proposal specifies the following:

- Pool controls manufactured on or after the effective date, and prior to December 31, 2026, shall be connected ready devices or connected devices, and may contain a radio broadcast data system receiver.
- Pool controls manufactured on or after January 1, 2027, shall be connected devices and shall contain a radio broadcast data system receiver.

Allowing connected ready devices during the initial years of the proposed standard provides clarity and flexibility, allowing manufacturers to meet the proposed standard using a range of options. This approach provides manufacturers time to develop communication components consistent with their submitted comments while ensuring devices manufactured and sold in the first compliance window can become connected, radio-enabled devices in the future.

#### **IV. Connectivity Costs.**

Staff docketed [TN # 239571](#) in pre-rulemaking docket [20-FDAS-01](#) on September 1, 2021 requesting information about the incremental costs of requiring FM broadcast receivers in flexible demand appliances. At the time, staff provided an estimated general incremental cost of \$40.

A stakeholder submitted [TN#240185](#) on November 1, 2021 to pre-rulemaking docket [20-FDAS-01](#) describing receiver costs, stating, “Our calculations indicate that the projected additional cost to add FM to the existing Internet network is roughly \$1 per household per year plus \$1 per receiver in costs at scale.”

That stakeholder also submitted [TN#245749](#) on August 31, 2022 to pre-rulemaking docket [20-FDAS-01](#) describing costs and stating, “Because the needed infrastructure is already in place, such a system could be implemented and function at very low cost. With statewide broadcast costs as low as \$1 per home per year and cable sensing at about 5 cents per home per year, the annual cost to Californians for statewide mass-market demand flexibility would be negligible.”

**Table 1** and **Table 2** show the results of a market survey conducted by staff in Q2 2023, indicating components that are currently in production that add wireless communication and HD radio receiver capabilities to various consumer and commercial products. A device can comply with proposed requirements for being a “connected device” and for including a “radio broadcast data system receiver” using one component from **Table 1** and one component from **Table 2**. As the staff analysis accompanying the original Proposed Regulatory Language assuming a conservative \$70 incremental cost to meet proposed standards, staff finds that these original cost estimates provide sufficient margin to account for requiring an FM broadcast receiver with wireless connectivity as specified in the revised Proposed Regulatory Language.

**Table 1: Retail Cost, Wireless Communication Chips (In \$2023)**

| <b>Integrated Circuit Chip Type</b>  | <b>Manufacturer / Part Number</b> | <b>Price Range (In \$2023)</b> |
|--|-----------------------------------|--------------------------------|
| RF System on a Chip, Bluetooth LE 5.0, multi-antenna AoA/AoD, BLE Mesh, 802.15.4, Zigbee 3.0, RF4CE, HomeKit                                       | Telink / TLSR8258                 | \$2 - \$3                      |
| RF System on a Chip, Multi-protocol Connectivity SoC, Bluetooth LE 5.2, Bluetooth Mesh, 6LoWPAN/Thread, 802.15.4, Zigbee, HomeKit, Find My, Matter | Telink / TLSR9218                 | \$5 - \$7                      |
| RF System on a Chip 2.4GHz   | Telink / TLSR8366                 | \$1 - \$2                      |

Source: California Energy Commission

**Table 2: Retail Cost, Radio Receiver Communication Chips (In \$2023)**

| <b>Integrated Circuit Chip Type</b>      | <b>Manufacturer / Part Number</b> | <b>Price Range (In \$2023)</b> |
|--|-----------------------------------|--------------------------------|
| Broadcast FM Radio Tuner                 | Skyworks Solutions, Inc. / SI4703 | \$2 - \$3                      |
| HD Radio DSP- based radio tuner one-chip | STMicroelectronics / TDA7708      | \$5 - \$9                      |
| HD Radio DSP- based radio tuner one-chip | NXP Semiconductors / TEF6659      | \$5 - \$9                      |

Source: California Energy Commission

**V. Conclusion.**

This supplemental staff analysis provides specific examples of possible technologies needed to meet the updated proposed regulatory requirements and substantiates associated costs with the proposal, and in so doing helps verify comments received during the preceding public comment period. CEC staff has determined, based on the above information, that the estimated savings benefits or incremental costs for the proposed regulations remains consistent with values published in the *Analysis of Flexible Demand Standards for Pool Controls* report published on February 23, 2023. The initial staff analysis assuming a conservative \$70 incremental cost to meet the standard provides more than enough margin to account for clarifying connectivity requirements and for requiring an FM broadcast receiver in the proposed amended regulatory text. Therefore, the economic impact of the revised Proposed Regulatory Language remains the same as the economic impact identified for the original Proposed Regulatory Language.