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Rachio Comments on CEC Staff Analysis of Proposed Efficiency Standards for Landscape Irrigation Controllers

Additional submitted attachment is included below.



February 7th, 2024

Mr. Michael J. Sokol
California Energy Commission
Docket Unit, MS-4
1516 Ninth Street
Sacramento, CA 95814-5512

Re: Docket # 17-AAER-10 (Irrigation Controllers) – Staff Analysis of Proposed Efficiency Standards for Landscape Irrigation Controllers

To whom it may concern,

Thank you for the opportunity to submit feedback on the Proposed Efficiency Standards for Landscape Irrigation Controllers. As the creator of the smart irrigation controller category in 2013 and the only certified B Corp to manufacture smart irrigation controllers, Rachio is strongly committed to harnessing the power of technology to conserve water. Our customers have saved nearly 200 billion gallons of water through Rachio controllers. Rachio's mission to advance the smart home outside through conservation and connection is closely aligned with the California Energy Commission's efforts to conserve water and energy. We appreciate the recognition of Rachio's efforts with the inclusion of photos of our controllers in the Staff Analysis.

As part of our commitment to water conservation and excellence in the category, Rachio continuously collaborates with experts in the irrigation and water efficiency fields, particularly at Stanford and within the University of California system. We recommend that the Energy Commission consult with some of these experts to leverage their expertise as the Proposed Efficiency Standards are reviewed. We welcome the opportunity to facilitate an introduction and share the research being done with the University of California and their Water UCI Center, led by Dr. David Feldman, a well-recognized expert in water conservation. In addition, we would also like to make an introduction to Wesley Hartmann at Stanford University, who has completed extensive research in this field.

In the spirit of collaboration, Rachio welcomes and encourages a discussion on how the industry can work together to alter or adjust algorithms to more efficiently conserve water according to seasonal weather shifts. The biggest opportunities for water savings with weather-based irrigation controllers are watering according to accurate local weather forecasts, accurately measuring observed rainfall, and shifting schedules during the regional transitions between seasons. The best systems modify irrigation schedules according to changing irrigation demand at a fine geographic scale; these changes reflect variations in weather and climate across diverse geographies. With advancements in real-time weather data, manufacturers of

weather-based irrigation controllers can significantly impact water efficiency during dynamic seasons and transitions between seasons with the use of granular cloud-based weather data and IoT-connected weather stations instead of physical sensors.

While we support the California Energy Commission's endeavor to stringently interpret and enforce the EPA WaterSense criteria for Weather-Based Irrigation Controllers, we believe there is an opportunity here to enhance the criteria so that rather than rely solely on older technology solutions, they include cutting-edge technologies and software solutions that industry leaders, such as Rachio, employ to meet the conservation goals of these regulations and the CEC. In this spirit, we recommend the commission review the following proposed criteria.

CHAPTER 2: Background, Hose-Bib Controllers

"Hose-bib controllers possess the same utility and capability as other landscape irrigation controllers and are within the scope of the proposed standard."

Comment: While hose-bib controllers *can* be used in the same way as a weather-based smart controller, most residents do not use them as a replacement for a controller. Instead, hose-bib controllers are most commonly used as a replacement for manual hand watering, which is vastly different from the way residents use irrigation controllers for permanent irrigation systems. Furthermore, the mechanisms for hose-bib controllers to conserve water vary from those of weather-based smart controllers. As such, most hose-bib controllers, including Rachio's Smart Hose Timer, do not include the same scheduling features as weather-based smart controllers.

We strongly recommend that the California Energy Commission either exclude hose-bib controllers from these Proposed Efficiency Standards or create a separate section within the current standards to more accurately address the many different ways in which residents use hose-bib controllers as a replacement for hand watering and the ways in which hose-bib controllers could be utilized to conserve water.

CHAPTER 4: Proposed Standards for Landscape Irrigation Controllers

"Be capable of reverting to either a proxy of historical weather data or a percentage adjustment (water budget) feature if the primary source of weather information is lost."

Comment: If weather data is unavailable, a weather-based irrigation system must have a reliable data source and a failsafe fall-back system. We invest heavily in consuming reliable weather data at a fine geographic scale for all of our controller locations. Therefore, storing additional historical weather data that is also geographically accurate as a fall-back source is cost-prohibitive and unnecessary. To avoid water waste and adverse schedule effects that could result from a data source failure, we use a weather source that has not had significant downtime in over two years and can fix outages within hours. If our system were to experience a primary weather source outage, schedules would water conservatively until the downtime is over.

Instead of a mandate for a full proxy data source or percentage adjustment, we recommend a cloud weather data source with a service level agreement (SLA) of 99.9% or higher, understanding that modern irrigation controller manufacturers that rely on cloud weather data are committed to using sources that are extremely reliable.

CHAPTER 4: Proposed Standards for Landscape Irrigation Controllers

“Be capable of interfacing with a rainfall device or soil moisture sensor.”

Comment: While there are controllers on the market today, like Rachio controllers, that do interface with local rain and moisture sensors, technological advancements have allowed for alternative tools that provide many more controller customers with more accurate rainfall-triggered interruption of irrigation schedules. Cloud-based weather services can now achieve geographic accuracy at the property level, similar to a sensor, while being more accurate and less prone to technical problems that sensors may encounter. Furthermore, the accuracy and calibration requirements of soil moisture sensors can vary widely, and the number of soil sensors needed to achieve desired accuracy across a large, distributed system is cost-prohibitive; modern cloud-based weather solutions significantly reduce cost and improve accuracy.

We strongly recommend that the Proposed Standards be updated to allow a controller to be capable of interfacing with a rainfall device or soil moisture sensor OR have the ability to continuously receive data from a reliable cloud-based weather source or on-site weather station that can notify the irrigation controller of sufficient rainfall and cancel or interrupt irrigation in the event of sufficient rainfall.

CHAPTER 6: Technical Feasibility

“Proposed standards provide flexibility for California consumers to choose from a growing list of more than 960 compliant models altogether.”

Comment: While the WaterSense-compliant product list does include over 960 models, this list is not a unique set of available models. Varying models of the same controller are counted as different controllers; thus, there are significantly fewer than 960 unique models available to consumers.

Based on the number of WaterSense certified controllers and the exacting language of the WaterSense criteria 4.1-4.8, it appears that the EPA has certified controllers that meet the spirit of their regulations through a variety of technical solutions. Rachio is unaware of any weather-based smart controller that would meet a stringent interpretation of the commission’s Proposed Efficiency Standards. While Rachio would be able to make the necessary changes to be fully compliant within the proposed effective time frame, it is important to note that the total number of models available for residents to choose from would likely be drastically smaller than the 960 models the Proposed Efficiency Standards currently identify.

APPENDIX A: Staff Assumptions, Calculations, Tables, and Equations

“Staff calculated the average per unit incremental cost of \$24.83 to upgrade an uncompliant baseline irrigation controller to a compliant unit with similar functionalities and number of irrigation stations.”

Comment: We encourage the Energy Commission to review the \$24.83 incremental cost to upgrade an existing controller to a compliant unit. While the price point of smart controllers varies, multiple variables such as power, WiFi range, and zone count, may limit the number of compliant units that a resident may choose from. Hence, residents may end up being forced into a model that is significantly above a \$24.83 increase.

We hope our comments are valuable to the Commission's efforts to create a proposal that saves water and energy while simultaneously providing California residents with equitable irrigation controller options. We appreciate the opportunity to provide comments and welcome additional collaboration opportunities.

Sincerely,

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