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NATURAL RESOURCES DEFENSE COUNCIL

Comments of the Natural Resources Defense Council on the 2009 Irrigation Equipment Performance Standards and Labeling Requirements May 29, 2009 Key Questions

Docket No. 09-AAER-1A
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Submitted By:
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On behalf of the Natural Resources Defense Council, which has over 250,000 members and activists in California, we are writing to submit comments on the Energy Commission's May 29, 2009 Key Questions, as part of the open proceeding on irrigation equipment performance standards and labeling requirements (Docket #09-AAER-1A).

Water conservation generally, and improved landscape irrigation efficiency specifically, are critically important steps to meeting California's existing and future water needs in an environmentally sustainable way. Improved water use efficiency in all sectors is required, and this proceeding is one of many efforts to improve water efficiency statewide. California can make substantial improvements in the efficient use of water and energy (due to the energy used to extract, treat, transport, and deliver water) in a cost-effective manner.

To date, much of the Commission's focus in this proceeding has been on smart controllers. Smart controllers are still a relatively new technology, and the adoption of standards by the Commission can help guide the evolution of smart controllers to ensure they most effectively improve landscape irrigation water and energy use efficiency. However, the Commission's mandate under the law is broader, and includes standards and labeling requirements for "irrigation controllers, moisture sensors, emission devices, and valves." Cal. Pub. Res. Code § 25401.9(a). We encourage the Commission to pay particular attention to advancing standards for emission devices, valves, and add-on devices, potentially including prescriptive standards such as requirements for pressure regulators, anti-drain check valves, rain sensors, and/or emergency shut off devices, pursuant to the Commission's authority under section 25402(c)(1) of the Public Resources Code.

In addition, we recently learned that the Aquacraft/DWR study presented at the June 1, 2009 workshop is being reviewed, and that the results from that study may be significantly revised. Those results could significantly impact this proceeding, and we encourage the Commission's next workshop to re-examine the revised study and its implications for this proceeding.

On the pages that follow, we provide specific responses to several of the key questions identified by staff. Thank you for the opportunity to participate in this proceeding. Please feel free to contact us at your convenience if you have any questions or comments.

Question 1: Definition of Water "Wastes"

While focusing on water "wastes" is important, the Legislative purpose of this proceeding is much broader, both in terms of reducing water and energy consumption. *See* Cal. Pub. Res. Code § 25401.9(a) ("…for the purpose of reducing the wasteful, uneconomic, inefficient, or unnecessary consumption of energy or water."). The term "waste" also can imply certain legal consequences that may not be relevant to this proceeding. *See*, *e.g.*, Cal. Const., art. X § 2; Water Code §§ 100, 1241, 13550, 13552.2. Thus, we encourage the Commission to focus broadly on inefficient, unnecessary, and wasteful use of water and energy in this proceeding.

Some examples of wasteful, inefficient or unnecessary use of water for residential landscaping can include:

- Overspray and runoff, including as a result of: (a) overwatering; (b) equipment failures (such as broken emitters or pipes, leaky valves, low head drainage, etc.); and/or (c) or active irrigation during precipitation events;
- Active irrigation during precipitation events ("watering in the rain");
- Active irrigation during peak daytime hours, which can result in higher evaporative losses and greater drift from wind; and
- Overwatering in excess of plant needs and/or as a result of poor system design.

Question 2: Effectiveness of Smart Controllers to Minimize Water Waste and Improve Landscape Irrigation Efficiency *(also addresses Question 10)*

Smart controllers can be an effective way to address the inefficient and/or wasteful use of water in residential landscape irrigation, provided that the controllers are properly calibrated and that operators are properly trained to use the system effectively. This training component appears to be a significant factor in the effectiveness of smart controllers in improving water use efficiency and reducing overall water use, as seen in the results of the DWR/Aquacraft study presented at the June 1, 2009 workshop.

Many studies have identified substantial water savings from the use of smart controllers, including the following studies or summaries of studies, which are available online:

- Evaluation of Soil Moisture-Based on-demand Irrigation Controllers, available online at http://www.allianceforwaterefficiency.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=1940 (Florida study observing a 69-92% water savings in wet years and 28-83% savings in dry years, for 3 of 4 controllers soil moisture sensor systems tested)
- Residential Landscape Irrigation Study using Aqua ET Controllers (June 2002), available online http://www.cuwcc.org/WorkArea/showcontent.aspx?id=2270 (Denver and California study that observed overall reduction of water use of 21-28% from use of ET based systems)

See also CUWCC, AB 2717 Landscape Task Force Findings, Recommendations, and Actions (December 2005), at 37 (summarizing several studies which are available on the CUWCC webpage); Irrigation Association, "Smart Controller Efficiency Testing," available online at: http://www.irrigation.org/SWAT/Industry/case-studies.asp (summarizing several studies,

including links to more information); Environmental Protection Agency, "Weather- or Sensor-Based Irrigation Control Technologies, Notification of Intent, Stakeholder Meeting, April 19, 2007, available online at http://www.epa.gov/watersense/docs/irr_control_meeting_presentation508.pdf (reporting the results of several studies on the water savings from the use of weather based and soil moisture based controllers).

While the studies identified above suggest that smart controllers can make a significant improvement in the efficient use of water for residential landscape irrigation, we encourage the Commission to review the revised results of the DWR/Aquacraft study on smart controllers to more accurately determine the water and embedded energy savings that are likely to result from the widespread adoption of smart controllers.

In addition, smart controllers cannot address all of the various types of waste or inefficient use of water in residential landscape irrigation; for instance, smart controllers cannot address landscape irrigation design problems that result in overspray or overwatering, nor can they address waste from broken emitters or low head drainage problems. Therefore, we strongly encourage the Commission to ensure that the proceeding also addresses standards for other appliances and devices in the irrigation system, consistent with the language of the statute and the Commission's other statutory authority.

Question 4: Performance Metrics

While question 4 focuses on metrics for water conservation, NRDC strongly encourages the Commission to include standards for energy use by controllers, particularly energy use in standby mode. The results presented by Lawrence Berkeley National Laboratory at the June 1 workshop suggest the need for an energy efficiency standard for controllers, particularly smart controllers, in order to prevent increased energy use from the widespread adoption of smart controllers. Data presented at the April 1 workshop suggests that smart controllers can feasibly achieve lower standby power standards than those observed in the results presented on June 1. While water conservation will result in reduced energy demand due to the embedded energy in water, improving the energy efficiency of controllers is also important.

With respect to metrics for smart controllers, we encourage the Commission to consider adopting scheduling efficiency, irrigation scheduling excess and irrigation adequacy standards. We also encourage the Commission to develop standards relating to design of the user interface for smart controllers.

Questions 8 & 15: Required Elements of Irrigation Systems to Improve Efficiency and Partnerships

One of the key elements of ensuring that smart controllers and other efficiency improvements yield significant results is to ensure that the systems are properly calibrated and that the owner/operator is sufficiently trained. Operator training appears to be a significant factor in determining whether smart controllers yield significant improvements in water efficiency. Therefore, we encourage the Commission to consider partnerships with the California Urban Water Conservation Council, local water districts, and the Department of Water Resources, to expand water audits and training courses on how to effectively use smart controllers, and to

ensure that users are informed of the availability of existing audits and training courses, in order to improve the efficiency gains resulting from the use of smart controllers.

Question 11: Labeling

While much of the information must be included in the product documentation due to its complexity and length, NRDC encourages the Commission to include some labeling requirements on the device packaging, as this is one of the best ways to provide advice to consumers regarding the energy and water saving potential of the device.

Question 13: Use of Marginal Cost Pricing in the Cost-Benefit Analysis

NRDC strongly encourages the Commission to utilize a marginal cost approach to pricing water and energy in this proceeding, to the extent that marginal cost pricing data is available to the Commission. In addition to the Commission's significant expertise on the water/energy nexus (including embedded energy costs), other data sources that could provide relevant marginal cost pricing data for water include data from water districts, the Department of Water Resources' 2009 California water plan (in preparation), and the ongoing studies and pilot projects being overseen by the California Public Utilities Commission (R0606010; A0701024).

In addition to increased water demand as a result of population growth, the state and federal governments have predicted that water exports for the State Water Project and Central Valley Project will decrease as compared to the recent historically high levels in the early part of this decade as a result of new environmental protections. As a result of these factors, using current average costs, instead of marginal costs, will likely underestimate the costs of supplying water and energy, thereby resulting in systematic bias in the cost-benefit analysis.

There is wide variability in the costs of new potential water supplies, although the development of new supplies generally incurs additional costs. NRDC advocates for significant investments in improved water use efficiency, groundwater storage, and water recycling to meet California's water needs, which are some of the cheapest, quickest, and most environmentally sustainable new water supply sources. However, other sources, like surface storage, new conveyance, and desalination will result in significantly higher monetary (and energy) costs.[1] Thus, the Commission should estimate the cost of water for this proceeding based on the costs associated with a range of water supply tools that vary in price.

Furthermore, with respect to water rates in particular, average water rates in the recent past are likely to significantly underestimate the rates that will be in effect when these regulations take effect, because many water districts across the State have announced substantial rate increases that take effect this year and/or next year. For example, the Metropolitan Water District of Southern California has announced several substantial rate increases, including an increase of 14.3% earlier in 2009, a 19.7% increase effective September 2009, and a likely 20% increase effective in 2011.[2]

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[1] *See, e.g.,* Delta Vision Strategic Plan, at 98, available online at http://deltavision.ca.gov/StrategicPlanningProcess/StaffDraft/Delta_Vision_Strategic_Plan_standard_resolution.pdf.

[2] *See, e.g.*, Janet Zimmerman, "Metropolitan Water District approves 19.7 percent rate increase, will cut deliveries 10 percent," Riverside Press-Enterprise, April 15, 2009, available online at http://www.pe.com/localnews/inland/stories/PE_News_Local_S_cuts15.45082a4.html.

Of course, there are also additional financial benefits to the public that result from improved residential landscape water use efficiency, including:

- Reduced energy use and attendant greenhouse gas emissions resulting from the transport and treatment of water;
- Reduced water pollution from pesticides and fertilizers as a result of reduced runoff, which can result in reduced costs of complying with State and federal clean water laws; and
- Reduced costs to the State and ratepayers by avoiding the costs of constructing new infrastructure to convey, store, and treat water and wastewater.

We encourage the Commission to assess whether these costs can be included in the cost-benefit calculation, although we recognize they may be difficult to quantify and may not qualify under the statutory cost-benefit provisions.