

• **Water Planning, Quality and Resources Committee**

August 18, 2003 Committee Meeting

---

7d

**Subject**

---

Report on Dedicated Landscape Meters

**Description**

---

In May, staff provided the Board with a review of Senate Bill 312 (Machado) – the Urban Landscape Water Conservation Act of 2003, which would require installation of dedicated water meters to measure landscape irrigation, and form a task force to develop recommendations for improving the existing model landscape water conservation ordinance. The Board conditionally supported SB 312 if the bill was amended to include the following:

1. deferral of dedicated irrigation water meter installation requirements,
2. evaluation of dedicated meter effectiveness by the task force, and
3. consideration of cost-effectiveness in revising the existing model ordinance.

In response to a request by the Communications, Outreach and Legislation Committee, this letter provides additional technical information regarding the installation of dedicated landscape water meters to the Water Planning, Quality and Resources Committee. The urban water Best Management Practices recognize the use of dedicated landscape meters as a method of reducing water use. Many water agencies, however, foresee limited applications because the water savings benefits in most cases do not justify the cost of meter installation and reading. There may be alternative methods based on emerging technology that are preferable.

[Attachment 1](#) provides more specific information regarding dedicated landscape meters, or dual meters.

**Policy**

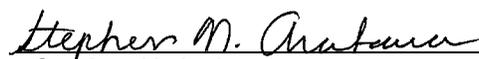
---

None

**Fiscal Impact**

---

None

  
Stephen N. Arakawa  
Manager, Water Resource Management

---

6/13/2003

Date

  
Ronald R. Gastelum  
Chief Executive Officer

---

6/17/2003

Date

**Attachment 1 – Report on Dedicated Landscape Meters**

## **Report on Dedicated Landscape Meters**

With about 3.2 million single-family occupied housing units, 2.2 million multi-family units and a wide-ranging variety of commercial, institutional and industrial facilities, urban irrigation creates a significant portion of the region's water demand. Seasonal demands are largely attributable to changing landscape irrigation requirements associated with Southern California's warm dry summers. The vast majority of water deliveries are provided through mixed-use meters. The term mixed-use meter refers to the use of one meter to measure both indoor and outdoor water use. The term dual meters refers to sites that have both an interior water use meter and a dedicated outdoor irrigation meter.

### **Existing Dual Meters**

Based on a small, non-scientific sample survey, the prevalence of dedicated landscape meters appears to be in the range of approximately two percent of existing accounts. Dedicated landscape meters are mostly found in non-residential settings.

These meters are typically in place because:

- (1) the agency is preparing to deliver recycled water to the customer;
- (2) the customer requests the meter to avoid being billed sewer charges for the irrigation water they use; or
- (3) an agency is implementing a dual metering program replete with water budgets and escalating block water rates for the irrigation water use, separate from the interior water use.

### **Best Management Practices for Urban Water Conservation**

Best Management Practice No. 5 (Large Landscape Programs and Incentives), as defined in the California Urban Water Conservation Council's Memorandum of Understanding, requires that where dedicated landscape water meters exist, a reference evapotranspiration-based water budget should be established and that this information be provided to the customer each billing cycle. A 100 percent reference evapotranspiration water budget is the amount of water needed to keep a field of well-watered, cool-season grass healthy. This amount is normally expressed in inches per month and varies throughout the year based on solar strength, wind, humidity and other factors. It can vary from one inch in December to six inches in July. Providing regular information about the appropriate amount of water needed by an individual's landscape, and charging the customer according to how well they stay within the allotted budget, are two basic elements of reference evapotranspiration-based water budgeting and conservation rate structures.

### **Single Family Outdoor Water Use**

The amount of water used for landscape irrigation varies widely, with residential use ranging from 30 to 70 percent, and non-residential uses averaging about 25 percent of total use. Actual outdoor use varies substantially depending on location, activity, type of plant material and size of landscaped area.

The majority of water used for irrigation is delivered to consumers through mixed-use meters. These meters do not differentiate between indoor and outdoor water use. Thus, making recommendations for how to increase site-specific landscape water use efficiency requires collecting additional data necessary to establish an appropriate water budget.

### **Mixed-use Water Meters**

Most parts of the state presently measure water demand using mixed-use meters and charge for service accordingly. Some retailers use an escalating block rate structure to provide a price signal to the customer that is associated with their water use, and implemented through the mixed-use meter.

### **Cost of Dual Meters**

The cost of a dedicated landscape water meter can vary substantially depending on the size of the meter, with a standard residential meter alone costing from more than \$70 to several hundred dollars. Installation costs can range from \$500 to more than \$6,000. Installation costs vary based on whether or not there already exists a service line large enough to accommodate both meters (if not, a new line is necessary), length of run between the public system main and the meter location, the size of the meter, the need to re-pipe the irrigation system to accommodate a separate meter, and need for backflow prevention devices. The cost of a straightforward moderately sized meter installation will cover the expense of a crew working for two hours or more. More complicated installations involving multiple factors mentioned above will cost in the upper range of the installation estimate. Expansion of existing billing systems, revised cost allocation processes, new meter O&M costs, and increased meter reading expenses are not captured in this estimate of costs.

### **Technological Alternatives to Dual Metering**

New, state-of-the-art “weather sensitive” controllers use real-time and/or historical data to automatically adjust irrigation schedules to match weather and actual plant evapotranspiration (ET) requirements. While not readily available on the commercial market yet, these controllers have been installed in several areas of California including Los Angeles and Orange County. Preliminary results from Orange County suggest that these types of controllers can reduce outdoor water use by 15 to 20 percent. Early data from other studies indicate that the savings may be even higher. An added benefit of this technology is the reduction of surface runoff, helping cities improve the quality of the surface flows into local streams and coastal waters.

Metropolitan, in cooperation with its member agencies, the California Urban Water Conservation Council, and other water suppliers in Northern California, has been awarded Proposition 13 grants under which about 10,000 weather sensitive controllers will be installed throughout California and studied over the next three years to determine their impact on water use. This effort will provide information on the effectiveness of these types of controllers. Initial results from this work should be available in two years. Metropolitan is also testing several different controller technologies at its La Verne laboratory to determine their comparative effectiveness.

### **Need for Additional Studies**

The position adopted by Metropolitan’s Board regarding SB 312 included supporting an amendment that the proposed task force evaluate the merits and cost-effectiveness of dual meters and other alternatives to improve landscape irrigation efficiency. Presently, there is insufficient data to adequately determine the effectiveness of dedicated landscape water meters in reducing the amount of applied water. Some studies have indicated that dual meters, when used in conjunction with water budgeting and an appropriate water rate structure, do encourage more efficient water use. There is little existing data about the effectiveness of installing dedicated meters without also adopting a water audit/budget program and water conservation rate structure.

**Existing Metropolitan Landscape Irrigation Water-use Efficiency Programs**

Metropolitan is currently supporting studies or otherwise participating in a variety of programs intended to improve landscape irrigation water use efficiency within its service area. These efforts include:

- Recycled Water – expansion of recycled water for irrigation
- Protector del Agua (PDA) – Training in water use efficiency for the landscape maintenance industry and homeowners
- Grants of \$2.5 million from CALFED to participate in a pilot study of ET controller technology
- ET Controllers – A \$65 rebate is provided under Metropolitan's Conservation Credits Program for installation of these new controllers
- Testing of ET controller technology at the La Verne lab
- Large Landscapes – Financial incentives to install centralized controllers with funding based on saved water
- Support for additional CIMIS stations in urban areas (CIMIS – CA Irrigation Management Information System)
- Promotion of native landscapes – City Makeover Program, information distribution and outreach
- Improved information – Watering Index and Watering Calculator available on Metropolitan's website
- Co-funding of a pilot study with the Municipal Water District of Orange County to certify the irrigation efficiency performance of landscape maintenance firms
- Support for various landscape efficiency pilot studies through the Innovative Conservation Program