

## M E M O

TO: Board of Directors

FROM: District Manager

SUBJECT: WATER CONSERVATION REBATE PROGRAM

DATE: August 12, 2009

### **RECOMMENDATION:**

It is recommended that the Board of Directors review this memo and approve the attached resolution, which establishes a new District Water Conservation Rebate Program that supersedes and rescinds the existing program. The resolution also authorizes and directs staff to implement the new program. A summary of water conservation credit rebates authorized by the new program is provided in Attachment 1.

### **BACKGROUND:**

At the March 6, 2003 Board of Director's meeting, your Board approved Resolution No. 27 (02-03) (Attachment 2), which implemented a Water Conservation Rebate Program that included the following:

- A rebate credit, applied to the customer's water bill, of actual purchase not to exceed a maximum of \$100.00 per fixture, for the replacement of an existing conventional high-volume toilet (3.5+ gpf) with an ultra-low flow toilet (ULFT) (1.6 gpf); and
- A rebate credit, applied to the customer's water bill, of actual purchase not to exceed a maximum of \$100.00 per appliance, for the purchase and installation of a high-efficiency clothes washer (HECW).
- Funding for this program was limited and applications for rebates would be processed on a first-come, first-serve basis.
- The intent of the program was for single family dwelling units, but that the District would consider applications from multifamily, commercial, and/or institutional customers on a case by case basis.
- A maximum combined rebate credit of \$400.00 was established for each single family unit customer.

Since its inception, the District's Water Conservation Rebate Program has been popular with customers. Staff has processed 584 credits for 1.6 gpf toilets in the amount of \$57,361, and 654 credits for high-efficiency clothes washers in the amount of \$65,344. The program's popularity is not waning. As reported in the July 16, 2009 memo from the Finance Manager to the Board, the total budget approved for the Water Conservation Rebate Program for Fiscal Year 2008/2009 was \$30,000.00, with a total of \$26,784.38 in rebate credits processed to date.

The program has also been successful in realizing significant water savings to the District of approximately 8,130 gallons per year per 1.6 gpf toilet installed, and 5,100 gallons per year per high efficiency clothes washer installed.

As new information and technologies aimed at increasing water conservation have become available, the District's Environmental Committee has discussed and considered in detail ways to incorporate these new developments into the District's Water Conservation Rebate Program.

At its July 17, 2009 meeting, the Environmental Committee directed staff to prepare recommendations for a new Water Conservation Rebate Program. If adopted, the new program will undoubtedly result in significantly more water savings from this point forward.

The Environmental Committee's recommended new program incorporates two significant improvements over the existing program:

1. Implements new rebate credits for installing landscape water-saving devices.
2. Updates the District's toilet rebate credits to favor newer, proven technologies.

At the same time, the new program retains parts of the existing program that are working well, including the \$100 per appliance rebate credit for high-efficiency clothes washers, and cap of \$400 per single family unit customer for toilet and clothes washer credits combined.

### **1. Implement rebate credits for installing landscape water-saving devices**

Water-saving devices in the landscape have the greatest potential for increasing water conservation. Staff recommends three new rebate credits to take advantage of new technologies that have proven to be significant water-savers in the landscape:

- A. Spray to drip irrigation conversions
- B. Installation of a weather-based irrigation controller
- C. Lawn replacement with synthetic turf or low-water use grass.

#### **A. Spray to drip irrigation system conversions**

Staff recommends a rebate credit for spray to drip irrigation conversions of \$20 per every 100 square feet of area converted to drip, with a maximum of \$500.00 for each single family unit.

##### *Rationale:*

- Far more efficient for irrigating lawns and gardens.
- Delivers moisture directly to the roots of plants, so far less water lost to evaporation.
- Much less risk of accidentally watering roads, driveways and pathways.
- Less tendency to over-water, less water waste, less risk of plants developing diseases.

##### *Water savings:*

Conversion to drip is estimated to save a typical home landscaping about 9 gallons per square foot per year or roughly 4,500 gallons per year for a 500 square foot landscape.

##### *Requirements:*

- Must properly convert existing spray irrigation to drip irrigation. Micro-spray devices may be used where appropriate.
- Spray irrigation must be in working condition, prior to conversion.
- Pre- and post-site inspection by a District water conservation representative
- Must convert at least 100 square feet of landscape from spray to drip.

- Maximum rebate credit for single family unit customer: \$500.00.

### **B. Installation of a weather based irrigation controller**

Staff recommends a rebate credit of \$75 or \$125, depending on the type, for the purchase and installation of a weather-based irrigation controller (WBIC). A WBIC is an irrigation clock that uses current weather information to automatically apply the appropriate amount of water. The \$75 rebate credit is for controllers that are sensor-based. Sensor-based units directly detect moisture and precipitation from the environment, and adjust watering accordingly. They do not have an associated signal fee. The \$125 rebate credit is for controllers that rely on daily weather updates received from satellite signals or through an internet connection. These WBICs have an associated signal fee.

#### *Rationale:*

- Saves time from having to adjust a manual irrigation clock.
- Saves water by watering only when required.
- Prevents plant damage from over-watering.

*Water savings:* Estimated at 20% average reduction in landscape water.

#### *Requirements:*

- May be installed new or replace an existing controller.

### **C. Lawn replacement with synthetic turf or low-water use grass.**

Staff recommends a rebate credit of \$1.50/sq. ft. for replacing a lawn with synthetic turf or low-water use grass, with a maximum of \$750.00 for each single family unit.

#### *Water savings:*

Replacing a lawn with synthetic turf saves approximately 17 gallons per square foot per year.

#### *Requirements:*

- Must replace existing turf with low-water use grass or artificial turf. (Replacement grasses must be pre-approved by District staff.)
- Pre- and post-site inspection.
- Hardscape items (i.e. gravel, flagstone, etc.) will not be rebated.

## **2. Update the District's toilet credits to favor newer, proven technologies**

Staff recommends that the Board discontinue the existing \$100 rebate credit for the 1.6 gpf toilet, and instead, implement a \$150 rebate credit for each high-efficiency toilet (HET) that replaces a pre-1992 toilet (3.5 +gpf). An HET is one that flushes with 1.28 gallons or less.

#### *Rationale:*

Independent studies show that HETs perform very well, and they have been used in Australia and Europe for many years. HETs are readily available in stores. Prices start at about \$300 and average about \$400. However, under the District's current program, there is no incentive for customers to buy the more expensive HETs.

*Water savings:* HETs use about 70% less water than the old 3.5 gpf toilets. Soquel Creek Water District, which has offers credits for HETs, estimates that each HET installed to replace an older 3.5 gpf toilet saves 6 gallons per day more than a 1.6 gpf toilet.

*Requirements:* Same as the current program.

The Environmental Committee favored adding a new rebate credit for adjustable flush volume toilet retrofit kits, also known as dual-flush conversion devices for tank type toilets. After considering new information about these devices (Attachment 3) staff recommends not adding such a rebate credit at this time. While these devices may hold some promise for water savings, there is no independent evidence that the savings claimed by vendors actually results. Water professionals have questioned the wisdom of subsidizing these devices for several reasons. First, existing toilets are designed to flush with a specified volume of water. Reducing that volume can reduce flush performance, and result in the user flushing multiple times to move the waste. Second, the retrofit kits allow the user to increase the flush volume to a level that exceeds that of the original toilet manufacturer, thus, possibly negating the expected water savings.

It is recommended that the Board of Directors review this memo and approve the attached resolution, which establishes a new District Water Conservation Rebate Program that supersedes and rescinds the existing program. The resolution also authorizes and directs staff to implement the new program.



James A. Mueller  
District Manager

## SAN LORENZO VALLEY WATER DISTRICT

**RESOLUTION NO. (09-10)****SUBJECT: APPROVAL OF DISTRICT WATER CONSERVATION REBATE PROGRAM**

WHEREAS, on March 6, 2003 the San Lorenzo Valley Water Board of Directors adopted Resolution No. 27 (02-03), which implemented the District's Water Conservation Rebate Program; and

WHEREAS, the San Lorenzo Valley Water District is a retail water provider to approximately 7,400 customers in the San Lorenzo Valley; and

WHEREAS, the Board of Directors of the San Lorenzo Valley Water District wants to promote water conservation and the efficient use of water by District customers; and

WHEREAS, new information and proven technologies demonstrating additional water-savings have become available since the inception of the District's original Water Conservation Rebate Program in 2003; and

WHEREAS, the Board of Directors of the San Lorenzo Valley Water District wants to implement a new Water Conservation Rebate Program to reflect new information and proven technologies in order to promote further water conservation by the customers of the District;

NOW, THEREFORE BE IT RESOLVED, by the Board of Directors of the San Lorenzo Valley Water District as follows:

- 1) The San Lorenzo Valley Water District hereby establishes a new Water Conservation Rebate Program that supersedes and rescinds Resolution No. 27 (02-03), which established the existing Water Conservation Program.
- 2) The San Lorenzo Valley Water District hereby establishes that all rebates shall be applied as a credit to the customer's water bill.
- 3) The San Lorenzo Valley Water District hereby establishes that a rebated credit of actual purchase price, not to exceed \$20.00 per 100 square feet, and not to exceed \$500.00 per customer, shall apply to the replacement of an existing outdoor spray irrigation system with an appropriately installed drip irrigation system of at least 100 square feet in area.
- 4) The San Lorenzo Valley Water District hereby establishes that a rebated credit of actual purchase price, not to exceed \$75 per customer for a sensor-based unit without an associated signal fee, and not to exceed \$125 per customer for a unit with an associated signal fee, shall apply to the installation of a Weather-Based Irrigation Controller.
- 5) The San Lorenzo Valley Water District hereby establishes that a rebated credit of actual purchase price, not to exceed \$1.50 per square foot and not to exceed \$750.00 per customer, shall apply to the replacement of an existing outdoor lawn with synthetic turf, or an appropriate low-water use natural grass.
- 6) The San Lorenzo Valley Water District hereby establishes that a rebated credit of actual purchase price, not to exceed \$150 per fixture, shall apply to the replacement of existing Conventional High Volume Toilets (3.5+ gpf) with High-Efficiency Toilets (1.28 gpf or less).

- 7) The San Lorenzo Valley Water District hereby establishes that a rebated credit of actual purchase price, not to exceed \$100 per fixture, shall apply to purchase and installation of High-Efficiency Clothes Washers.
- 8) The San Lorenzo Valley Water District hereby establishes a maximum combined credit of \$400.00, applying to High-Efficiency Toilets and High-Efficiency Clothes Washers, for each single family unit customer.
- 9) The San Lorenzo Valley Water District hereby establishes that funding for this program is limited and application for rebates will be processed on a first-come, first-serve basis.
- 10) The San Lorenzo Valley Water District hereby establishes that the intent of the Water Conservation Credit Program is for single family dwelling units. However, the District will consider applications from multifamily, commercial, and and/or institutional customers on a case by case basis.
- 11) The San Lorenzo Valley Water District hereby establishes that the new Water Conservation Rebate Program shall be effective for all rebated items purchased and installed after September 1, 2009.

FURTHER, BE IT RESOLVED, that the Board of Directors of the San Lorenzo Valley Water District authorizes and directs the District Manger to implement the new Water Conservation Rebate Program.

\* \* \* \* \*

PASSED AND ADOPTED by the Board of Directors of the San Lorenzo Valley Water District, County of Santa Cruz, State of California, on the 20<sup>th</sup> day of August, 2009, by the following vote of the members thereof:

AYES:  
 NOES:  
 ABSTAIN:  
 ABSENT:

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B. Barchi, District Secretary  
 San Lorenzo Valley Water District

## Attachment 1

## SAN LORENZO VALLEY WATER DISTRICT

## Proposed Water Conservation Rebate Program

8/20/09

**Summary of rebate credits**

- **High-Efficiency Toilet** (1.28 gallons per flush or less): Up to \$150 per toilet replacing conventional 3.5+ gpf toilet
- **High-Efficiency Clothes Washer**: Up to \$100 for purchase and installation
- **Combined cap for high-efficiency toilets and clothes washers**: \$400.00
- **Spray to drip irrigation conversion**: Up to \$20.00 per 100 sq. ft.; \$500.00 cap
- **Purchase and installation of weather-based irrigation controller**: Up to \$75 for sensor-based unit; up to \$125 for unit with associated signal fee
- **Lawn replacement**: Up to \$1.50 per sq. ft of lawn replaced with synthetic turf or approved low-water use grass; \$750.00 cap

**SAN LORENZO VALLEY WATER DISTRICT**

**RESOLUTION NO. 27 (02-03)**

**SUBJECT: APPROVAL OF WATER CONSERVATION REBATE PROGRAM**

WHEREAS, the San Lorenzo Valley Water District is a retail water provider to approximately 5,700 customers in the San Lorenzo Valley; and

WHEREAS, the Board of Directors of the San Lorenzo Valley Water District wants to promote water conservation and the efficient use of water by District customers; and

WHEREAS, Ultra-Low Flow Toilets and High Efficiency Clothes Washers have demonstrated water savings; and

WHEREAS, the Board of Directors of the San Lorenzo Valley Water District wants to establish a Water Conservation Rebate Program for customers of the District;

NOW, THEREFORE BE IT RESOLVED, by the Board of Directors of the San Lorenzo Valley Water District as follows:

- 1) The San Lorenzo Valley Water District hereby establishes a Water Conservation Rebate Program for single family dwelling unit water service customers of the San Lorenzo Valley Water District.
- 2) The San Lorenzo Valley Water District hereby establishes that all rebates shall be applied to the customer's water bill.
- 3) The San Lorenzo Valley Water District hereby establishes that a rebate credit of actual purchase price, not to exceed \$100.00 per fixture, shall apply to the replacement of existing Conventional High Volume Toilets (3.5+gpf) with Ultra-Low Flow Toilets (1.6 gpf).
- 4) The San Lorenzo Valley Water District hereby establishes that a rebate credit of actual purchase price, not to exceed \$100.00 per appliance, shall apply to purchase and installation of High-Efficiency Clothes Washers.
- 5) The San Lorenzo Valley Water District hereby establishes that funding for this program is limited and applications for rebates will be processed on a first-come, first-serve basis.
- 6) The San Lorenzo Valley Water District hereby establishes that the subject Water Conservation Rebate Program shall be effective for Ultra-Low Flow

Toilets and High-Efficiency Clothes Washes purchased and installed after March 31, 2003.

- 7) The San Lorenzo Valley Water District hereby establishes that funding for the subject Water Conservation Rebate Program for the period April 1, 2003-June 30, 2003 shall not exceed \$6,500.00.
- 8) The San Lorenzo Valley Water District hereby establishes that the intent of the Water Conservation Rebate Program is for single family dwelling units. However, the District will consider applications from multifamily, commercial, and/or institutional customers on a case by case basis.
- 9) The San Lorenzo Valley Water District hereby establishes a maximum combined rebate of \$400.00 for each single family unit customer.

FURTHER, BE IT RESOLVED, that the Board of Directors of the San Lorenzo Valley Water District authorizes and directs the District Manager to establish and implement said Water Conservation Rebate Program.

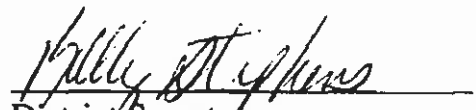
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PASSED AND ADOPTED by the Board of Directors of the San Lorenzo Valley Water District, County of Santa Cruz, State of California, on the 6<sup>th</sup> day of March 2003, by the following vote of the members thereof:

AYES: Prather, Nelson, Ross, Vierra, Rapoza

NOES: None

ABSENT: None

  
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District Secretary  
San Lorenzo Valley Water District



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## A CAUTION ON DUAL-FLUSH CONVERSION DEVICES FOR TANK-TYPE, GRAVITY-FED TOILETS

During the past year, numerous water efficiency professionals, water provider organizations, and consumers have been approached by various vendors, entrepreneurs, and inventors about dual-flush conversion devices for tank type toilets. Recommending or subsidizing such untested products is being questioned.

There are many of these products being promoted throughout North America, most of which provide the ability to convert a 1.6-gallon (6.0-litre), 3.5-gallon (13-litre), 5-gallon (19-litre) or more fixture from a single-flush, tank-type gravity toilet to a dual-flush toilet. All promise water savings by giving the consumer a "choice" between a full flush for solids and a reduced flush (usually one-half the volume of a full flush) for liquids only. In some cases, astronomical water savings are quoted by the vendors, hoping to convince the unwary of their benefits.

While the goal of reducing water use in the home is admirable, there is no independent evidence that such savings do or will occur as a result of retrofitting the toilet with these devices. No independent field studies of actual "real world" installations have been conducted (although one such study is about to commence) and the significant concerns over the efficacy of the devices remains. Three primary reasons for this are...

(1) The removal and replacement of an original equipment manufacturer's (OEM) flush valve with an after-market product changes the full flush characteristics of the toilet fixture. The delivery of the right amount of water to the bowl at a certain rate is critical to the full removal of all solid and liquid waste from the fixture. This is especially true of 1.6-gallon and 1.28-gallon toilets where the hydraulic characteristics (profile) are finely tuned to achieve the maximum "force" of the water delivered through the flush valve. Changing that profile can adversely affect flush performance, leading to double flushing by the user, thereby increasing water use. In a perfect scenario, a dual-flush retrofit flush valve should be flush performance tested with each of the gravity-fed toilets into which it is to be installed to assure the purchaser or end-user that performance will not be sacrificed. That has not occurred.

(2) Similarly, the reduced flush is particularly vulnerable to unsatisfactory performance from a retrofit product, because a complete exchange of water in the bowl is expected by the user. There is no assurance that the after-market product will, in fact, remove all of the waste. That is, if it visually appears to the user that the reduced flush has not removed all of the liquid waste, the toilet will be flushed a second or third time.

(3) Most of the flush valves are adjustable and allow the user to increase the flush volume well above the originally rated volume of the fixture, thereby negating much of the expected "savings".

Currently, there are two primary U.S. national standards that apply to after-market dual-flush devices:

For retrofit into 3.5-gallon (13-litre) and greater toilets: ASME A112.19.10

For retrofit into 1.6-gallon (6-litre) toilets: IAPMO PS 50-2008

Compliance with ASME A112.19.2 – Vitreous China Plumbing Fixtures and ASME A112.19.5 – Trim for Water Closet Bowl, Tanks, and Urinals, is incorporated by reference and cover additional requirements beyond those in the two primary standards.



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Other factors to be considered by those installing, recommending, or subsidizing these retrofit products are:

- (1) Replacement of the OEM flush valve with an after-market product will likely void any remaining manufacturer warranty on the toilet fixture.
- (2) In most cases (but not all), installation requires that the homeowner/user turn off the water supply to the toilet, empty the toilet tank and disassemble it from the bowl, remove the OEM flush valve and replace it with the after-market product, reassemble the fixture and adjust the new valve to manufacturer's instructions. Some homeowners may require a plumber or handyman for this installation.

In conclusion, the purchase, endorsement, or subsidy of these after-market devices should be approached with much caution. We do not recommend the devices for 1.6-gallon (6.0-litre) toilet fixtures where hydraulic performance is critical. If an individual or agency wishes to proceed, however, they should: (1) insist upon full certification to the two primary standards listed above; (2) require that the product be non-adjustable to water consumption levels above that originally certified for the toilet into which the device is to be installed; and (3) insist that the manufacturer provide independently developed third-party evidence that the products as used in a "real world" setting actually demonstrate real water saving. Such studies should provide statistically reliable results and, thus, should be conducted on multiple installations.

Finally, it is our opinion that the water savings potential and cost-effectiveness of these retrofit devices is doubtful, even with meeting the requirements noted above. At such time as a conversion device meets the standard, is independently tested and demonstrates that it will not adversely affect the flush performance of the toilet, we will report that information.

Bill Gauley and John Koeller

July 2009