Controlling Excessive Residential Irrigation – A Case Study

ABSTRACT:
Santa Monica, California is a completely built out city, primarily composed of high-value residential properties. Irrigation water use on many of these properties is three to five times ET. The City is trying a combination of high-tech equipment and regulatory methods to reduce this excessive residential irrigation including:
~ A program to subsidize and encourage the use of weather-based controllers
~ A program to subsidize and encourage the use of water-efficient plants
~ Restrictions on the use of spray irrigation next to hardscape
~ Requirements for on-site retention of runoff
~ Administrative fines imposed by patrolling Code Enforcement Officers

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BACKGROUND:
In 1994 the City of Santa Monica, California declared itself a Sustainable City joining Seattle, Austin, Toronto and others in a dedication to meeting its needs without compromising the ability of future generations to do the same. In 2000, as part of its sustainability programs, the City set a goal to reduce water consumption 20% by 2010. And, in 2002, the City commissioned a far-ranging study of water use resulting in a document called the Water Efficiency Strategic Plan. Research for this plan found that previous conservation measures had largely exhausted the potential for water savings inside single and multifamily dwellings and established new goals for water savings in commercial processes and residential landscaping.

Santa Monica is an eight square mile, completely built-out city. We have no golf courses and virtually all large landscapes are City-owned and irrigated via a central control system operated by experienced irrigation managers. The City is primarily composed of high-value residential properties many of which are owned by absentee landlords. Irrigation control on these properties is poor. It is estimated that the average home is irrigating for an ET of 0.4 in a city where the average daily ET is 0.12.

Beyond the water waste issue of whether too much water is being applied, is the issue of runoff. In 2000, confronted with rising pollution levels in Santa Monica Bay and a determination that urban runoff was a primary contributor, Santa Monica constructed the Santa Monica Urban Runoff Recycling Facility (SMURRF). The SMURRF captures 97% of the City's dry-weather storm drain flow and recycles it for use in irrigation and toilet flushing. On average, the SMURRF intercepts 325,000 gallons per day in dry weather. That's, roughly, one acre-foot per day dumped, literally, in the street.

So where does this water come from? Car washing, a little; gardeners washing down sidewalks, a little more. But our analysis says the big one for Santa Monica is misdirected and misapplied residential irrigation.

THE PROGRAM:
So what are we doing about it? We have a five-part program:

~ Grants and Rebates for Irrigation-Related Improvements
In October of this year the City's Environmental Programs Division established a competitive grant program which gives selected applicants grants up to $20,000 for landscape projects that reduce water use in Santa Monica. $80,000 in grants will be awarded every six months.
~ The City plans to participate in Metropolitan Water District's Turf Replacement Program which is similar to the one currently in place in Las Vegas. However, Santa Monica's program imposes additional requirements for concurrent irrigation system improvements.

~ Ordinance Enforcement
The City has a group of ordinances which prohibit specific forms of water-wasting activity. The one most frequently violated prohibits irrigation overspray onto hardscape and irrigation runoff. In 2002 the City Council increased the fine for violations of this ordinance to $250 for the first offense with increasing fines for subsequent offenses. In April 2003, City Code Enforcement Officers began 4AM to midnight patrols specifically targeting water waste violations. 500 citations were issued in the first five months, most for irrigation-related issues.

~ Weather-Based Irrigation Controllers
The city offers a rebate for the installation of weather-based irrigation controllers. In addition, residents who receive citations for landscape water waste through our enforcement program can make an equivalent investment in a weather-based controller in lieu of paying the fine.

~ Promotion of Water-Efficient Plants & Irrigation
The City operates three demonstration gardens, conducts tours of water-efficient residential gardens and holds workshops for residents and landscape professionals specifically to promote the use of California-friendly plants and efficient irrigation systems.

~ On-site retention of runoff
Santa Monica is one of the first cities in the nation to require runoff retention as part of all new construction, residential and commercial. System requirements are based on the total square-footage of buildings and hardscape on the property. The first 0.75" of any water application to these surfaces must be directed to and retained in an on-site facility. While intended primarily for rainfall events, misdirected irrigation or irrigation runoff to on-site hardscape is also recovered.

HOW'S THE PROGRAM DOING:
Visit us at http://www.santa-monica.org/environment/policy/water/ for an update.