

Intelligent Irrigation

BRE Properties is saving tens of thousands of dollars by letting a smart irrigation system water the lawn for them.

By Anita Blumenthal

When BRE Properties Inc. installed a smart irrigation system at one of its hilly Seattle properties, it discovered that gee-whiz science translated into \$47,000 in savings within four months.

This smart irrigation technology considers a host of variables – soil, slope, sunlight, plant type and so on – then beams in local weather data and comes up with the optimal watering plan: just the right amount at just the right intervals and intensity.

BRE installed the WeatherTRAK system from HydroPoint Data Systems Inc. at its Ballinger Commons community in Seattle in mid-May 2005, at the beginning of the summer watering season.



Smart irrigation at BRE's Ballinger Commons ensures that two different landscape zones—turf and shrub/floral plantings—automatically receive exactly the right amount of water every day to suit their different needs.

“We had a large turf area and a continual problem of standing water, which is a sign of over-watering,” said Tyler Kemmer, BRE’s Vice President of Ancillary Services. “So we figured we would save a substantial amount of water if the system worked.”

A savings of \$47,000 on its water bills in the first season made her a believer. BRE installed the system at a second Seattle community in June 2005 and saw \$14,000 in water bill savings.

On a national level, the Irrigation Association is publicizing the technology’s ability to save money, to conserve resources and to protect the environment. The association designated July as Smart Irrigation Month, focusing its campaign largely on preventing over-watering.

A Preventable Problem

Over-watering is common across the country, even though it wastes money and resources. The Irrigation Association estimates that nationwide, communities are overwatered an average of 30 percent, and HydroPoint has found much higher rates at some apartment communities it has surveyed in the Southwest and Pacific Northwest. There is no plus side to this excess. Over-watering literally drowns plants, rots their roots and inhibits nutrient absorption. It invites fungal disease and insect infestations. The result: costly treatments or replanting. Also, over-watering causes standing water that attracts mosquitoes and can give rise to mold and mildew. It produces runoff, which erodes the landscape and can stain and crack sidewalk, hardscape and paved areas, such as parking lots, so re-slurrying is needed more often.

Additionally, runoff is an environmental hazard because it can drain pesticides and fertilizer into the ground water. When runoff flows into storm drains and remains untreated, it goes directly to surface water, such as creeks and streams. Smart irrigation systems relieve all those headaches by giving plants the precise amount of water they need at the right intervals and intensity, given the soil, slope, plant type and weather.

Smart Irrigation 101: The Other ET

How much water does a plant need today? That depends on how much moisture it lost yesterday. The term for that loss is evapotranspiration, or ET, which has two facets: direct evaporation of water from the surface of the soil, and plant transpiration—the movement of moisture from the plant into the air via tiny pores in its leaves. ET rates are affected mainly by temperature, relative humidity, wind and amount of direct sunlight. The ages of plants also play a role. Smart technology applies mathematical models to ET values in a

particular landscape zone and calculates the optimal watering program for that day. When it rains, the system shuts off.

Satellites, the Internet and sophisticated data analysis can be used to determine the daily ET value for any given section of the community.

Ben Slick, Hydro Point's Senior Vice President for Sales and Services, explained that every day across the country, a vast network of weather stations transmits data to a National Oceanographic and Atmospheric Administration (NOAA) satellite. HydroPoint downloads information from the NOAA satellite and other sources and analyzes it to calculate local ET down to a square kilometer (0.6 square miles).

Then, HydroPoint transmits ET data to its wireless network, which broadcasts the appropriate ET information to the WeatherTRAK-enabled controllers installed at the community. Using this ET data, the controllers, which also contain all the pertinent information about the landscape environment, automatically adjust the irrigation program. Each controller can irrigate as many as 48 valves—that means 48 separate landscape zones, all with different needs—and the valves control the sprinklers.

Gradual Roll-Out, Rapid ROI

Not surprisingly, BRE Properties, a REIT that develops, acquires and manages apartment properties in the western United States, is rolling out smart irrigation systems at more of its 85 apartment communities (24,000 units) in California, Arizona, Washington and Colorado.

However, Kemmer said she is implementing the roll-out slowly because “this is a major change for landscapers and onsite staff. They need to buy into the system and feel confident that it will, in fact, supply the amount of water needed to provide the lush landscape they are supposed to maintain.”

In May 2006, BRE installed another half-dozen systems and will continue at this slow and steady rate because at this point, Kemmer explained, each new site takes as much handholding as the first. But she also pointed out that any system that repays the initial investment cost within a year is worth some TLC.

Kemmer also said that the smart irrigation controllers provide their own smart backup system. As Slick explained, “In the rare case when the controller does not receive the daily satellite watering instructions, the controller will beep and flash the toll-free customer service number and continue to water, based on the user's programmed schedule while making automated adjustments based on default ET values for the region and the season.”

Rebates Now, Mandates Later

Many local governments and water agencies offer rebates, loans and other incentives to residential and commercial property owners who install smart irrigation systems. The list includes agencies in Arizona, California, Colorado, Florida, Georgia, Oregon, Nevada, New Mexico, Texas and Washington.

In the future, smart irrigation could be required, rather than simply encouraged. A California law states that by 2010, all irrigation controllers sold in the state must be certified as “smart.”

“Smart” criteria have been established by a Smart Water Applications Technology (SWAT) performance protocol, developed by the Irrigation Association and a group of water agencies. The protocol measures whether plants get the water they need and how much, if any, runoff occurs.

As of June 2006, smart irrigation controllers available from several companies had received perfect scores on the SWAT protocol, which is a requirement in some cities. ■

Calculate Your Water Usage Online

Community managers interested in estimating their water and cost savings with smart irrigation can use the online calculator at www.weathertrak.com.

Reprinted with permission from the July 2006 issue of UNITS magazine, published by the National Apartment Association (NAA). For more information about NAA, please visit www.naahq.org or call 703/518-6141.