



Photo by
Leslie Lee, Texas
Water Resources
Institute.

Home sweet home

Texas A&M AgriLife opens the first WaterSense-labeled house in Dallas-Fort Worth

On any given evening in the 1980s, after a long day of working on the 240-acre property, the groundskeeper for the Texas A&M AgriLife Research and Extension Center at Dallas would have headed home to a small, red brick house behind the center's main buildings.

With an average-sized yard and a modest 1,500 square-foot floor plan, the 30-year-old home wouldn't have looked like much of an attraction. But today, after a water-minded renovation of the once-abandoned house, the thousands of visitors who have toured it this year would probably disagree.

The 2013 version of the home bears little resemblance to its former self. From the new water-efficient fixtures to the oasis-like backyard, the house stands as proof that conservation can be both practical and beautiful.

The first of its kind

The transformation began in summer 2012, when AgriLife staff started a major overhaul of the home. They replaced fixtures and appliances, installed efficient hot water and irrigation systems, and landscaped the yard to be water-efficient. Their goal was two-fold: to earn certification from WaterSense, a nationwide program established by



the U.S. Environmental Protection Agency (EPA), and to make the home an appealing and convincing demonstration site where consumers would visit and learn about water conservation.

“I’ve found over the years with Extension that if your demonstration doesn’t look good, modern, contemporary and doable, then people aren’t going to do it,” said Dotty Woodson, Texas A&M AgriLife Extension Service program specialist for water resources.

“So, we updated as much in the house as possible — every light fixture, every door knob, every door hinge,” said Patrick Dickinson, Texas A&M AgriLife Research program coordinator for urban water.

More than 1,000 people attended the house’s grand opening in March 2013, when it was certified by EPA as a WaterSense home. Approximately 1,000 other homes in the United States are certified, but this WaterSense home is unique. Not only is it the first WaterSense-labeled home in the Dallas-

Fort Worth Metroplex, it’s also the first renovated home, as opposed to a brand new build, to achieve WaterSense-label certification in Texas. It’s the country’s only WaterSense-labeled home open for tours.

“We get busloads of people — realtors, builders, small groups of homeowners,” Woodson said.

EPA’s Region 6 office, located in Dallas, partners with the center to encourage the building of more WaterSense homes in the area. The AgriLife center promotes water-efficient homes to local homebuilders and municipalities.

“The WaterSense-labeled home on our campus is a great learning tool and demonstration site,” said Clint Wolfe, AgriLife Research program manager for urban water. “Our hope is that local builders will embrace the WaterSense program and the benefits it can offer their clients. As water resources become more limited, building homes with the certification only makes sense.” ➡

Patrick Dickinson of Texas A&M AgriLife Research gives a tour of the WaterSense home and its backyard, which includes crushed blue glass that is a water-permeable, safe and decorative landscaping material. Photos by Leslie Lee, Texas Water Resources Institute.



To be WaterSense-certified, homes must meet standard criteria in three areas: indoor water use, including plumbing, plumbing fixtures and appliances; outdoor water use, including landscape design and any installed irrigation systems, which are optional; and homeowner education.

According to EPA, a WaterSense-labeled new home, compared to a traditional home, can save a family of four as much as 50,000 gallons of water annually. That’s enough water to wash 2,000 loads of laundry. And, because heating less water and using less water also means using less energy, the combined water and energy savings could reduce the home’s utility bills by up to \$600 per year.

WaterSense program following EnergyStar’s lead

“EPA modeled the WaterSense product program after the EnergyStar program,” Woodson said. “The EnergyStar program changed the way manufacturers made electronic equipment, giving them incentives to get that EnergyStar label. WaterSense wants to do that same thing, with all water-using appliances, irrigation materials, all of it.”

The WaterSense-labeling program currently is focused on products that provide a continuous flow of water, such as toilets, bathroom faucets and showerheads, said Karen Sanders, AgriLife Research program assistant for urban water.

“But eventually you will also see washing machines and dishwashers with the WaterSense label,” Woodson said.

Because the team wanted the house to be ‘green’ and not just water-efficient, Dickinson said, the team made changes above and beyond EPA’s criteria. “All of the light bulbs are LED bulbs, the

countertops in the kitchen and bathrooms are made of recycled florescent bulbs and all of the house’s appliances are also EnergyStar-rated,” he said.

Another of the home’s features is less obvious: the tankless, on-demand hot water system. Visitors might not even notice this particular efficiency if it wasn’t for the education-minded home’s wall cut-outs displaying the pipes and accompanying posters explaining how the system works. A circular hot water system is enclosed in the attic, and each drop location (for example, a bathroom) has an activation switch that is either hard-wired, such as a button by the sink, or wireless, such as a motion detector by the door. The guest bathroom’s hot water is activated by a motion detector, which Dickinson said is a good option for a room often used by children.

“The tankless technology has been around for about a decade or so, but the on-demand aspect is newer,” Sanders said. “There is a drop within 10–12 feet of each location, and the system gets hot water there within 10 seconds of activation. So, you get hot water pretty quick.”

The system saves both water and energy, Sanders said, because it’s only running when activated, and only to activated locations, instead of constantly running and heating water like traditional tank hot water heaters would.

Water conservation, DIY-style

A variety of partners worked with the center on the project, helping to make the high quality of the home possible. EPA and Dallas Water Utilities were the main partners, Woodson said, but many other companies provided materials and expertise. The staff also saved costs and made the project more

The WaterSense home’s bathrooms are equipped with activation switches connected to the on-demand tankless hot water system. Photo by Leslie Lee, Texas Water Resources Institute.

relatable to consumers by doing the vast majority of the renovations themselves.

“We did 85–90 percent of the work on the house ourselves,” Sanders said. “We only had help with the labor on the flooring, fencing and rock work.”

“We know that for a project like this to succeed, it has to be relatable,” Dickinson said. “So when we can tell homeowners that yes, we installed that toilet ourselves, they can relate to it better. We’re not plumbers, we’re not electricians, but we were still able to do so much of it ourselves, so it’s doable for you as well.”

The do-it-yourself (DIY) nature of the home doesn’t stop there: Almost all its furniture was repurposed from discarded materials from the Center. For example, the base of the kitchen island came from an old drafting table.

The home’s backyard was also completed almost entirely by the staff, and it is an array of textures and colors: shrubs, Hameln grass, river rocks, slate stones for the patio, decorative crushed blue glass, Blackfoot daisies and water-efficient Zoysia Palisades turfgrass.

Dickinson designed the landscape and plant selection for the home, and the yard will eventually include a rain garden. All of the plants are either native or adaptive, he said, which means they are appropriate and water-efficient for the region.

“We’ve selected plants for their scent, for their blooms, for their water-efficiency,” Woodson said. “Blackfoot daisies will bloom all summer long.”

“The plants we selected are so dependable and hardy — you never have to worry about them, unless you overwater them,” Dickinson said.

The 1,000-gallon rainwater tank at the rear of the home provides all of the irrigation water for both the front and back yard. The system is equipped with a backup municipal water irrigation line, if needed. Once the landscape is established, the yards will use only rainwater, Woodson said.

“All of the landscaping is irrigated with drip, except the two lawn areas, where we are demonstrating efficient, multi-stream rotors,” she said.

An affordable investment

“The return on investment is what I like to promote,” Sanders said. “With the two showerheads, two faucets and two toilets, that’s approximately a \$500 total investment for retrofitting two bathrooms, so you’ll get your return on investment pretty quickly.”

Dickinson noted that prices for water-efficient dual flush toilets, such as those used in the WaterSense home, range from \$99 to \$550.

“The WaterSense home’s dual-flush toilets use either 1.1 or 1.6 gallons, whereas some older toilets use up to 2–5 gallons per flush,” he said. “The bathroom sinks save 14 gallons per person, per day. So, 14 gallons, multiplied by 4 people, for 365 days — the water savings add up very quickly, and that gives you an idea of how much water you can save with these simple changes.”

Some consumers might worry that changing to a water-efficient shower could reduce water pressure, but a spinning mechanism inside the WaterSense showerhead replicates water pressure while reducing the amount of water used, Dickinson said. “It literally projects the water, and you save water that way,” he said.

Many cities offer rebates and incentives for replacing older toilets with water-efficient models, and some cities will give homeowners up to two efficient toilets, Woodson said. Often, rebates and incentives are also available for irrigation efficiency upgrades, rainwater collection systems and smart irrigation controllers.

According to the experts at the Dallas center, taking advantage of such incentives and using WaterSense products and standards is well worth the investment.

“Overall, making these small changes inside, plus changing the irrigation controller and converting to drip irrigation, made this home about 65 percent more water efficient than the average home,” Dickinson said. “And that can add up to huge savings on a water bill.” 💧

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The workings of the tankless hot water system are demonstrated throughout the WaterSense home in Dallas. Photo by Leslie Lee, Texas Water Resources Institute.

