



Developing solutions for sustainable living—the Urban Living Laboratory

The world's largest 'living laboratory' for research on green living

With many new innovative and green technologies emerging in the 21st century, how do manufacturers really know if their products are making a difference in the environment? And how do they know if these so-called green products are being used correctly by consumers to decrease their water usage or electricity bill, or even improve air quality?

The answer: the Urban Living Laboratory (ULL)—a mixed-use, multifamily research community in which green technologies will be monitored daily for 75 years. The ULL is being developed through a public-private partnership between The Texas A&M University System and Realty Appreciation, LTD, and is slated to break ground in late 2011.

The idea of an urban research laboratory began with land that was not being utilized at the Texas AgriLife Research and Extension Center at Dallas, which was originally situated in a rural setting. Over the years, Dallas has expanded and the center now sits in the middle of one of the nation's largest urban environments; this rapid growth has created a greater need for research on urban issues.

"Therefore, why not use this land for urban research," said Dr. Allan Jones, associate director and professor at the center. This sprawling 73-acre, 1.1 million square foot, 36-building community in Dallas, considered to be the world's largest "living laboratory," will feature five Leadership in Energy and Environmental Design, or LEED-certified building types including multifamily housing, office

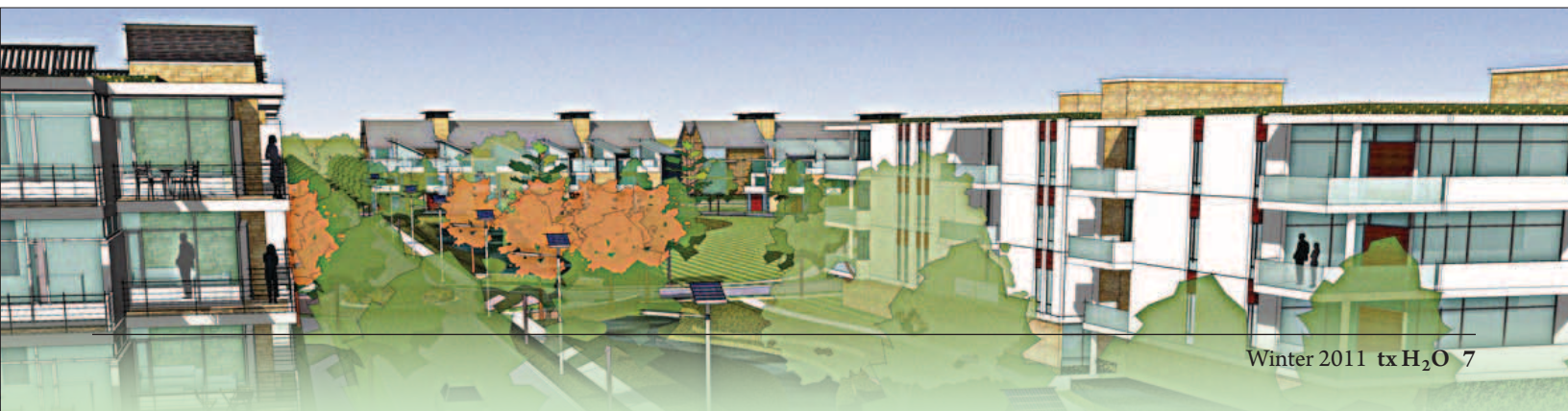
and retail space, two hotels, and a visitors center. All buildings will be designed to meet LEED Silver standards, and some may achieve LEED Gold or Platinum status. ULL researchers will record and observe how families live and work in this environment, testing elements from water resources management to urban design and economics to transportation and logistics.

At first read, it almost sounds like a scene from *The Truman Show*, a movie about a man whose everyday life is recorded as a television show while he is oblivious to it. However, research at the ULL will be completely noninvasive, focusing on three important resources—air, water, and energy—as well as transportation and human behavior.

"The ULL itself represents the world's largest LEED-certified research, demonstration, and teaching laboratory for research related to water, air quality, transportation, and human behavior to help enhance the viability and sustainability in urban environments," said Kevin Rogers, Realty Appreciation director of real estate.

More than 20 companies have jumped on board to either donate products or provide products at a discounted cost—from lighting to fixtures, roofing to concrete—and in turn have access to the ULL's research results. As part of the ULL's "Technology Refresh" program, these LEED-certified buildings will be constructed to evolve over time, and companies have agreed to upgrade their products every seven to 10 years. ➡

The Urban Living Laboratory will include multifamily apartments.





The 73-acre, 1.1-million-square foot property will also house a retail district as shown in the two illustrations above.

With the research results provided from the ULL, companies such as the LG Electronics and General Electric can improve and enhance their appliances and consumer electronic products with data that has never before been accessed or researched on this scale.

“It’s really an intelligent research platform where businesses, universities, and government entities can install, test, research, and implement the best ideas for sustainable living in the 21st century,” Rogers said. “Johnson Controls Inc. will develop a state-of-the-art technology platform to collect and transport data to the ULL’s main hub, the Sustainability Center, which will also act as a visitors center for manufacturers to showcase their products.”

Rogers said the project will bring together interdisciplinary experts from 14 major universities, not just Texas A&M University, to develop, deploy, test, and evaluate new and emerging green technologies in an actual living environment.

“The grand idea is to make this a catalyst for research in the urban area,” Jones said. “This is going to be a fertile environment to bring different

groups together on a repeated basis with everybody committed to working together. From the A&M System’s point of view, over time we will be able to insert faculty ideas into this process and share in intellectual property, as well as enhanced research and education.”

With 800 apartment units, 200,000 square feet of office space, and 100,000 square feet of retail space, nearly 3,500 people will live and work in this environment full time. Rogers predicts residents will not only have significantly lower utility bills (30 percent to 50 percent less) than anywhere else in the Dallas-Fort Worth Metroplex because of the technologies employed at the ULL, they will also have access to their own energy- and water-use data. In a nonintrusive manner, millions of bytes of data will be collected every second on indoor and outdoor water and energy use for each apartment, office, retail space, and so on. A technology panel in each unit will generate data that is sent to a network operating center.

“The ULL will track all electricity and water usage—every outlet, every plugged-in appliance,



Other facts about the Urban Living Laboratory:

- The ULL will provide economic opportunities with the creation of 1,800 jobs and potential major research and education funding for scientists in Texas AgriLife Research, the Texas AgriLife Extension Service, The Texas A&M University System, and other universities.
- This community will create the world's largest "living laboratory" for research and education on energy efficiencies, emerging technologies, and green living in urban environments.
- The ULL will advance the viability of urban sustainable environments that can be replicated throughout the nation.
- The Dallas Area Rapid Transit—DART—is planning to build a station near the ULL.
- The goal of this project is to change the way cities are built and operated by creating a compelling business case (backed-up by science-based data) for the benefits of green buildings, and by developing a sustainable model that can be replicated in any region (and in any city) that is striving to accommodate accelerated urban growth.

every drop of water used—and where it is used will be monitored," he said. Once occupants see results of their day-to-day activities, they could be motivated to lower their utility bills even more by monitoring their own daily water and energy use.

"We want to see if residents will make a conscious effort to conserve water and energy because they have this data in their hands," he said.

One of the primary goals of the ULL is to reduce indoor water use by at least 30 percent. Buildings will include low-flow showerheads, efficient washing machines that use 60 percent less water and energy than the conventional top-load washers, and energy-efficient dishwashers as well as other energy-efficient fixtures and appliances.

For outdoor water conservation, the ULL will use a greywater recycling system. Greywater is any used wash water (except from toilets). Wash water comprises 50 percent to 80 percent of wastewater generated from buildings, and after proper treatment, it can be reused for landscape irrigation and wetlands purposes.

Overall, the ULL aims to reduce outdoor water use by at least 50 percent by designing an integrated stormwater management system, which will include structures to capture stormwater flow for irrigation purposes. Sources of stormwater including precipitation, floodwater, lawn irrigation runoff, and surface water used for such purposes as car washing and window washing will be captured by ponds, reservoirs, and rain gardens. The ULL will then take conservation a step further by implementing water-efficient landscapes. Strategies will include using native and adapted plant species, contouring the land to direct rainwater to maximize capture and retention, and minimizing the use of turfgrasses that require regular irrigation.

"The next step is to replicate what we're doing at the ULL throughout the United States and throughout the world," Rogers said. "We want to build a mini-city, basically, that works environmentally, economically, and socially, and one that we are able to replicate."

For more information about the ULL, visit urbanlivinglaboratory.com. 

The architect's rendering depicts the community. Construction is slated for late 2011.