



ENVIRONMENTAL
EDUCATION CENTER

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Green: Inside and Out

Built in 2010, the Environmental Education Center (EEC) is one of the City of Plano's first green buildings and is certified LEED Platinum by the U.S. Green Building Council. The design incorporates many sustainable features:

- > Architectural site orientation and layout plan for maximum energy efficiency with roof overhangs, east-west orientation and shade.
- > Use of recycled/renewable/nontoxic materials such as low volatile organic compound (VOC) paint and adhesives, reclaimed wood and compressed recycled paper counters, recycled glass terrazzo flooring and fly ash concrete.
- > Energy efficient and renewable energy technologies with solar panels, natural daylighting, photovoltaics, wind turbine and living green roof.
- > Water conservation through rainwater harvesting, greywater recycling, low-flow water system and efficient irrigation methods.
- > Educational opportunities through interpretive displays, interactive programs, workshops and public presentations.

While providing North Texans with a model for energy efficiency and sustainable design, the Environmental Education Center is more than a building. It is a learning environment which incorporates the site's natural habitats and topography as interactive, educational opportunities.

The Texas SmartScape Garden and Nature Explore Garden are designed to demonstrate key ecological concepts, including: composting, worm composting, recycling, gardening, animal habitats, ecological cycles and water issues.

Educational programs are available to assist people in living greener and living healthier. Classes are specifically designed to teach people of all ages how easy it is to live green – inside and out!

Visit our website for a complete listing of programs and classes: livegreeninplano.com.

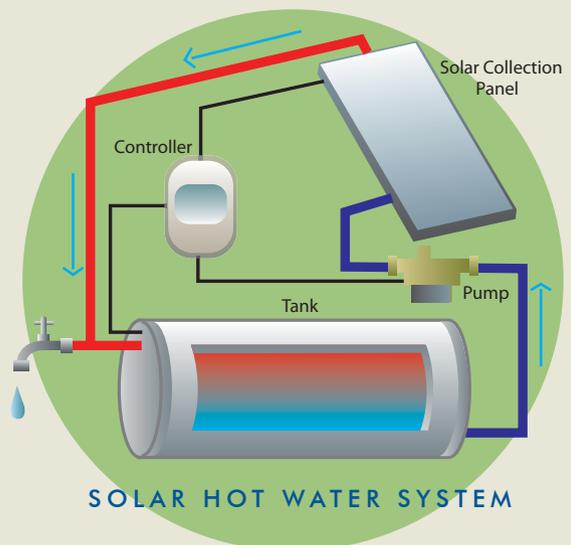
What sustainable features make the EEC green inside?



HARNESSING SUN AND WIND

A 54-panel photovoltaic array generates an estimated 17,909 kWh per year, while a 60-foot wind turbine produces 3,000 kWh per year. Clean and renewable, these energy sources provide about 30 percent of the EEC's electricity needs.

Thermal heat is the primary energy source for the building's hot water. A single thermal solar panel installed at ground level is oriented due south to maximize sun exposure and energy collection from the sun. Similar to a car's radiator system, this panel transfers the sun's heat into a closed-looped working fluid, which then circulates to heat the water stored in the EEC's water heater.





THE LIVING ROOF

The roof of the EEC is alive...with plants!

Stored rainwater irrigates native plants and grasses atop the building. The living roof insulates the EEC, filters carbon dioxide (CO₂) and other pollutants from the air, reduces storm water run-off, and lowers the heat island effect.

A ground-level demonstration replicates the living roof construction and models the irrigation mechanism for maintaining the plants.

PERVIOUS PAVING

Not your average concrete parking lot, creating a pervious parking surface employs a 6 to 8-inch layer of crushed granite over a 6 to 8-inch layer of crushed concrete.

The pervious layers act as a filtration system removing oil, brake dust and road grime from rainwater. Rainwater filtered through the pervious lot enters natural waterways with less chemical and particle contamination.

HARVESTING RAIN

Two connected cisterns collect rainwater which is otherwise lost as runoff. Rainwater harvesting prevents soil erosion and reduces contamination of the adjacent waterway with chemicals and road grime washed off during rain events.

Stored rainwater irrigates the living roof, flushes toilets and irrigates landscaping.



CONSERVING WATER

The men's restroom is complete with a waterless urinal. Instead of wasting water with every flush, an oil-filled cartridge installed at the base of the urinal allows urine to pass into the drain pipes while keeping odor from escaping.

Waterless urinals are touch-free and save an estimated 40,000 gallons of water per urinal per year.

Choose how you use! Dual flush toilets use only enough water to flush liquids (.82 gallons per flush) or solids (1.6 gallons per flush). The user simply selects the correct flushing level. If less water is needed, then a stopping mechanism allows the user to stop a flush at any time.

DUAL FLUSH COMPARISON

Dual flush toilets in both restrooms use only enough water to flush liquids or solids at the user's discretion. A stopping mechanism allows the user to stop a flush at any time if too much water is being consumed.

(16 OZ GLASSES OF WATER)



105 Oz. Per Flush
LIQUID WASTE



205 Oz. Per Flush
SOLID WASTE



INDOOR AIR QUALITY

Take a deep breath and enjoy the EEC's indoor air. It's fresh and clean and doesn't have a whiff of telltale chemical "new building smell." All products and finishes inside the EEC used low-emitting volatile organic compounds (VOC) to improve indoor air quality.

Innovative recycled rubber walk-off mats allow visitors to rid their shoes of small dust, dirt and pollen particles upon entering the building. These contaminants would otherwise contribute to lower indoor air quality.

The mechanical ventilation system monitors indoor carbon dioxide (CO₂) levels. The system adjusts the volume of fresh outdoor air being pulled into the building in proportion with the stale indoor air exhausted outside. This technology ensures the indoor CO₂ level doesn't exceed 10 percent of the activation point, which is 600 ppm (parts per million).

Artwork reflects the aesthetic beauty of reused materials... a broken tile mosaic surrounds the cistern, aluminum cans flutter as butterflies, reclaimed street signs provide roofing, and obsolete license plates twine as ivy and flowers.



RIDE, WALK OR BIKE

Providing infrastructure conducive to eco-friendly transportation is the key to encouraging more people to ride, walk or bike.

A bright red bike rack allows visitors to safely store their bicycles while visiting the EEC. Combining the next family bike ride with a visit to the EEC does both the body AND the environment some good.

A Dallas Area Rapid Transit (DART) bus stop is located in close proximity to the EEC. It provides convenient alternative transportation to all facilities located at the City of Plano's Parkway Service Center, including the Household Chemical Reuse Center, Plano Community Garden and the Green 'n' Clean Garage. Using mass transit improves air quality and is a cost-effective means of getting around town.



ENERGY EFFICIENCY

Restroom light fixtures are motion activated, while outdoor lighting is light-emitting diode (LED).

The sloped roof is made of Structural Insulated Panels (SIP). This efficient insulating material consists of rigid foam sandwiched between layers of structural board and garners a R-value of 48.

The “cool roof” is a highly reflective, raised-seam galvanized metal surface which reduces heat gain and lowers the heat island effect.

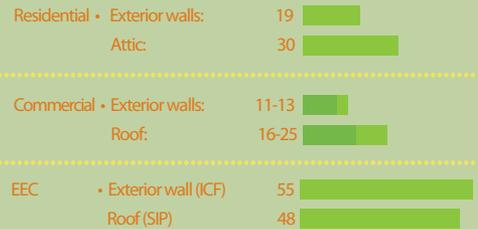
The exterior walls of the EEC are made of Insulated Concrete Forms (ICF) consisting of recycled concrete and steel. Together with well-insulated foam surfaces, these energy-efficient walls achieve a R-value of 55.

Incorporating passive solar design is an easy way to reduce energy costs. It begins with a thoughtful site plan which determines the building’s location and how it is situated on the land. Strategically placed windows provide natural lighting and ventilation to the entire building. The ambient temperature of the room fluctuates with the “daylighting” offered by the windows. Using the sun to its full potential saves money on lighting and heating.

The EEC has a variable-speed heating and air conditioning system. Units with variable speed fans spin at different speeds depending on the heating and cooling needs of the facility. Unlike the conventional single-speed motor, variable speed systems generate significant energy savings while providing a comfortable space and reducing system noise.

INSULATION BY THE NUMBERS

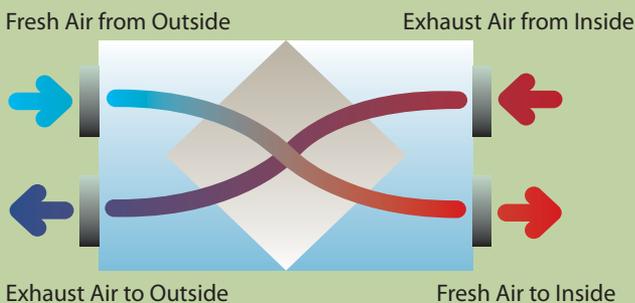
R-value is the measure of thermal resistance used in the building and construction industry. The bigger the R-value number, the better the building insulation’s effectiveness.



(R-values currently required by 2003 IECC Code as of Jan. 1, 2010.)

LIGHTING

The EEC’s lighting system was designed and installed to reduce light pollution so people can see the stars! The building’s lighting plan reduces the impact of unnatural lighting on nocturnal animals, and lowers energy usage. In support of the International Dark Sky Association, all exterior lighting fixtures are placed to direct required lighting on specific surfaces/areas or baffled to shield the light source from direct view. This approach minimizes lighting the entire site, and prevents the associated “urban sky glow” which brightens the night sky obscuring constellations.



ENERGY RECOVERY VENTILATION

An Energy Recovery Ventilation (ERV) system uses building sensors to indicate when fresh air is needed. By drawing in and conditioning outside fresh air through the exhaust airflow on-demand, rather than constantly, energy costs are reduced.

SUSTAINABLE BUILDING MATERIALS

The EEC incorporates the eco-elegance of EnviroGLAS products, made from post-consumer and industrial glass, recycled bathroom fixture porcelain and windshield glass. EnviroGLAS is featured in kitchen countertops, restroom walls and floors, and provides an artistic element for the entryway's Live Green in Plano logo.



The computer countertop is constructed from reused wood. Originally, the refurbished 1940s oak beams were building material for a dormitory located in Denton, Texas at the University of North Texas.

The presentation counter is Richlite, a composite material made from recycled paper, cardboard and rapidly renewable tree fiber.



The foundation and wall concrete contains 20 percent fly ash waste, a by-product of coal combustion which is diverted from the landfill through the concrete manufacturing process.

The back exterior wall is constructed of stone mined from an Austin, Texas quarry. Local products and resources are sustainable, as they minimize pollution associated with long-distance shipping.

The structural steel selected for construction of the building and parking canopy contains 95 percent post consumer recycled metal.



This material represents one of the most established and successful recycling industries dating back 150 years.

MINIMIZING WASTE: GREEN PRACTICES AND SMART CONSUMER CHOICES

The EEC is an example of zero waste principles. Trash sent to the landfill is minimized, and resource life cycles are maximized through material reuse and recycling. There are clearly marked trash, recycle and organic waste receptacles located throughout the site.

Food and landscape waste gleaned from organic waste receptacles fortifies an organic recycling compost demonstration, where it decomposes and returns to nature as a nutrient-rich soil additive.

All products purchased for use at the EEC, including paper and plastic products, comply with the City of Plano's Environmental Purchasing Policy. For example, paper plates and plastic cups used at the EEC must be compostable and recyclable, respectively. The EEC leads by example in its environmental stewardship practices.

Material reuse examples at the EEC provide inspiration for creativity. The landscape mulch is composed of recycled wood chips and acts as a protective layer placed over soil which suppresses weeds, prevents erosion, insulates plants and conserves soil moisture.

Old water meter lids and vintage bricks create a stepping stone path and teaching area walkway. Reclaimed park benches provide seating and outdated street signs serve as roofing shingles.

SAVING WITH ENERGY STAR

The refrigerator and dishwasher in the EEC's kitchen are Energy Star rated under an international standard for energy-efficient consumer products. They are certified as more energy-efficient than the minimum industry standards.

Energy Star appliances generally save 10-20 percent more energy than other products in their respective categories.

What sustainable features make the EEC green outside?

NATURE EXPLORE GARDEN

Connecting children with nature is an integral part of learning and living. The Nature Explore Garden is designed to engage children in exploring and interacting with the natural world as part of their daily lives, helping to develop a lifelong sense of wonder.

The Nature Explore Garden reconnects young children with nature through activities engaging important skills in science, math, music, movement, language, literacy, art, and social and visual-spatial development.

There are endless possibilities to discover nature:

- > crawl through a tunnel like a worm
- > catch a bug
- > sneak a peek at the root viewing box
- > create music which mimics nature
- > weave with natural objects
- > dig for worms and hold one
- > hide in a chrysalis
- > spot a bird
- > plant a seed in the children's garden
- > hunt recycled objects
- > count the rings on a giant tree cookie



TEXAS SMARTSCAPE GARDEN

This landscape showcases native and well-adapted plants for the North Texas area, which are both heat and drought tolerant.

Visitors learn how to conserve and preserve the health of water and soil while having an attractive and vigorous garden. Rain water harvesting and a variety of compost bins are in use at the site.

The gardens are free and open to the public every day during daylight hours.



BACKYARD COMPOST DEMONSTRATION

This site is an outdoor teaching classroom which displays and demonstrates a variety of working compost bins. The bin selection reflects those readily available in the retail market, as well as those you build yourself.

The site serves as a hands-on learning laboratory for compost classes taught by the City, but is also designed to offer an educational experience for the self-guided, walk-through visitor.

The natural choice for private events.

The Environmental Education Center is a sustainable, green venue which provides a distinctive, natural location for special events such as meetings, weddings, showers, parties and family reunions.



By holding your event at the Environmental Education Center or the surrounding gardens, you provide your guests with a relaxing and comfortable environment while educating them about best practices for living green at home or work.

For rental information and availability inquiries, call (972)769-4130 or visit our website:

eecgreenevents.com.

A BIRD'S EYE VIEW OF THE EEC



CONTACT US

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