



# CITY OF AUSTIN 2010 ACHIEVEMENTS



SUSTAINABLE BUILDINGS AND SITES 



## INTRODUCTION

The City of Austin continues to be a leader in implementing sustainable design guidelines.

In 2000, Austin became one of the nation's first cities to require a Leadership in Energy and Environmental Design (LEED) Silver Certification for municipal buildings – both new construction and major renovations.

This **Annual Report** provides an overview of the City's performance in achieving LEED certification or incorporation of the baseline sustainability criteria. It also reports on sustainable site development, green infrastructure, energy conservation, water conservation, green public-private developments and other sustainability initiatives.

The LEED green building certification program is the nationally accepted benchmark for the design, construction and operation of green buildings.

**Austin Energy® Green Building (AEGB)** was established in 1991 to encourage Central Texans to design and construct sustainable buildings. AEGB develops and maintains Austin-specific rating systems that allow the flexibility to carry out the City's aggressive climate protection goals.

In 2010, the City advanced further by naming its first **Chief Sustainability Officer**, Lucia Athens, to provide oversight of Citywide sustainability practices.

### Resolutions

*City Council passed **Municipal Buildings LEED Resolution 20071129-045** in November 2007 and directed the City Manager to:*

- Develop criteria for assessment and achievement of the highest optimal levels of sustainability for new construction, major renovations and interior finish-outs.
- Develop baseline sustainability standards for projects that are not LEED candidates.
- Develop building operation and maintenance standards to ensure municipal buildings are operated and maintained in the most sustainable and feasible manner possible.
- Secure the budget and personnel to implement the resolution and report annually on progress.

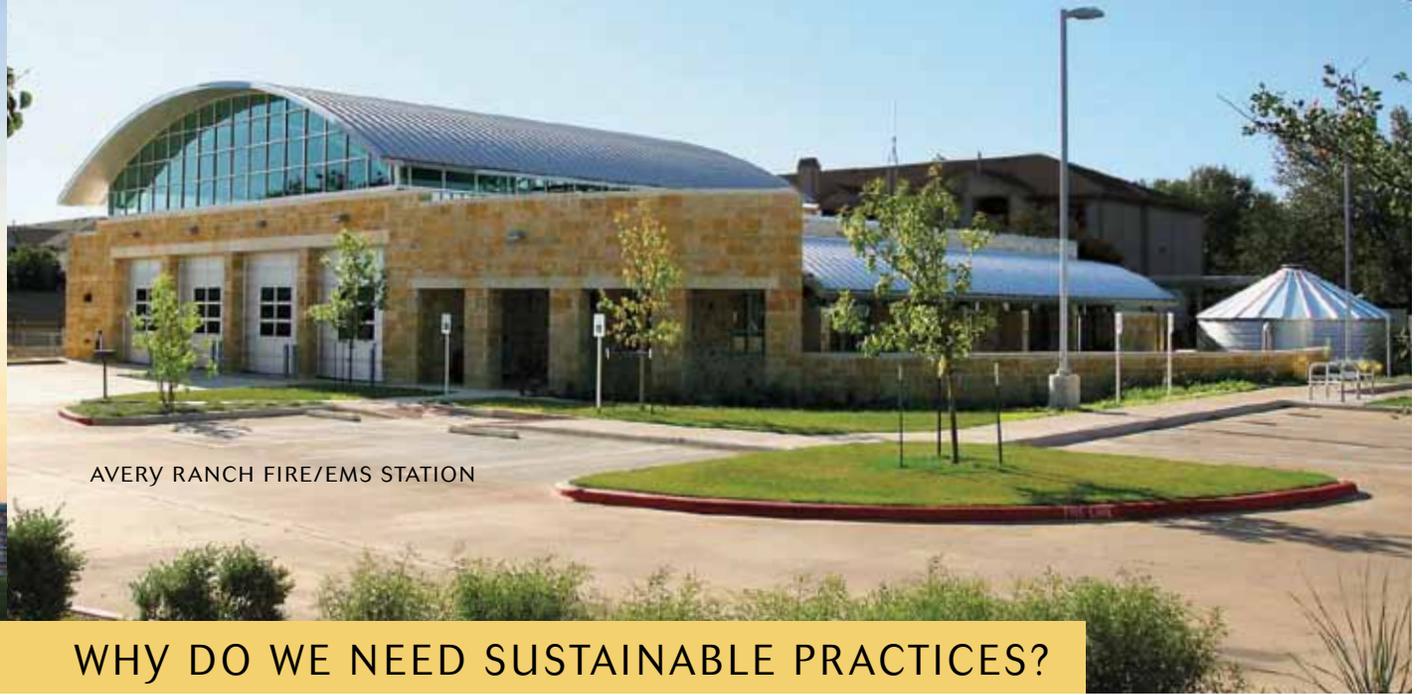
*Concurrent with the **Municipal Buildings LEED Resolution**, City Council passed **Green Infrastructure Resolution 20071129-046** and directed the City Manager to:*

- Ensure municipal building projects are constructed to meet the provisions of the City's Commercial Design Standards and other sustainability initiatives.
- Present municipal building projects to the Design Commission to ensure compliance with City design and sustainability standards.
- Include consultation with the Watershed Protection Department regarding innovative site development opportunities.

### Interdepartmental Sustainability Working Group (ISWG)

The ISWG is comprised of City staff charged with ensuring Citywide implementation of the Municipal Buildings LEED and Green Infrastructure Resolutions. ISWG ensures ongoing coordination with City departments for compliance with the resolutions and use of "Baseline Sustainability Criteria" for projects where LEED certification is not feasible due to scope and/or budget. ISWG maintains documentation and prepares an annual report for the City Manager. Currently, 33 LEED-Accredited Professionals are employed by the City. For details of the process development, refer to previous reports online at [www.cityofaustin.org/publicworks/sustainability/](http://www.cityofaustin.org/publicworks/sustainability/).





AVERY RANCH FIRE/EMS STATION

## WHY DO WE NEED SUSTAINABLE PRACTICES?

Sustainable buildings and sites reduce environmental impacts through the use of green principles in design, construction and operation of facilities. This report focuses on City of Austin buildings as well as site development projects.

### Buildings and Environmental Impacts

According to the Department of Energy, buildings in the United States are responsible for:

- 70% of electricity consumption
- 40% of total energy consumption
- 38% of all carbon emissions

Increased energy efficiency in buildings would reduce greenhouse gas (GHG) emissions by 1.1 gigatons a year and save \$130 billion a year. According to the Environmental Protection Agency, if one of every 100 homes in the U.S. was retrofitted with water-efficient fixtures, we could save 100 million kWh of electricity per year. This would represent a GHG reduction equivalent of removing 15,000 automobiles from the road.

### Sustainable Sites Initiative® (SSI)

Sustainable sites have the potential to improve and regenerate the natural benefits and services provided by ecosystems. The American Society of Landscape Architects and the Lady Bird Johnson Wildflower Center, with the participation of City of Austin staff, started SSI, which is dedicated to this transformation of land development and management practices.

### Reduction of Greenhouse Gases

Sustainable buildings and sites reduce GHG emissions and contribute to a healthy environment. Five City facilities have committed to carbon reduction by developing Building Climate Protection Plans with the facilitation of the Austin Climate Protection Program:

- City Hall
- Combined Transportation, Emergency and Communications Center
- One Texas Center
- Rutherford Lane Campus
- Technicenter

Each facility has set goals to reduce electricity, natural gas and water consumption, and all are now 100% powered by **GreenChoice**®, Austin Energy's renewable energy program. This is the driving force behind their 71% combined carbon emission reduction from 2007 levels.

The City of Austin has 12 facilities with LEED certification to date. The information below shows how one of these LEED certified buildings can avoid many metric tons of carbon dioxide (CO<sub>2</sub>) equivalent (MTCO<sub>2</sub>e) emissions per year.

## AVERY RANCH FIRE/EMS STATION

THE AVERY RANCH FIRE/EMS STATION was awarded a LEED Gold certification. The 9,125 square-foot building is located on a 2.68 acre site. Its sustainable features include:

### SITE

Drought-tolerant landscape, solar panels that, in addition to producing electricity, provide shaded/covered parking; 15,000 gallon rainwater storage tank; alternative-fuel vehicle parking spaces; bio-diesel fuel station and bicycle racks

### ENERGY CONSERVATION

*Estimated annual energy savings of 60,179 kWh of electricity*  
Solar panels provide 16,000 kWh of electricity per year, which represents 7% of the building's energy consumption. High-performance, energy-efficient heating, air-conditioning, lighting and gas/electrical systems are estimated to reduce energy use by 30.4%. The Austin Energy GreenChoice program will supply 100% of its electricity.

**TOTAL AVOIDED EMISSIONS: 83 Metric Tons of CO<sub>2</sub> per year**

### WATER CONSERVATION

*Estimated annual savings of 306,331 gallons of water*  
Water-efficient toilet fixtures and showers are expected to reduce water use by 31.8%. The drought-tolerant, native Texas plants combined with a high-efficiency irrigation system and a rainwater collection system are expected to eliminate the need for potable water use for landscaping.

**TOTAL AVOIDED EMISSIONS: 0.45 Metric Tons of CO<sub>2</sub> per year**

### CONSTRUCTION WASTE MANAGEMENT

*200 tons, or 76% of the waste from construction, were diverted from the landfill.*

**TOTAL AVOIDED EMISSIONS: 24 Metric Tons of CO<sub>2</sub>**

### POSITIVE ENVIRONMENTAL IMPACTS

#### ESTIMATED ANNUAL ENERGY AND WATER SAVINGS:

Emissions avoided are equivalent to the CO<sub>2</sub> emissions from the energy use of seven average homes in one year. 

#### CONSTRUCTION WASTE DIVERTED:

Emissions avoided are equivalent to the CO<sub>2</sub> emissions from energy use of two average homes in one year. 



PUBLIC SAFETY TRAINING FACILITY

## NEW BUILDINGS AND MAJOR RENOVATIONS

Over the last 20 years, the City of Austin has built new buildings and renovated existing ones through bond programs. The City continues to add more LEED-certified projects to its portfolio every year. Since 2000, 12 projects have achieved LEED certification.

### LEED Certified Projects

- Combined Transportation, Emergency and Communications Center – Silver (2003)
- Far Southeast Austin EMS Station – Gold (2004)
- Austin City Hall – Gold (2004)
- Circle C Fire/EMS Station – Silver (2005)
- George Washington Carver Museum – Certified (2005)
- Carver Branch Library – Certified (2005)
- City Hall Café and Store – Gold (2007)
- Austin Resource Center for the Homeless – Silver (2008) and Five-Star Austin Energy Green Building Rating
- Sand Hill Control/Administration Building – Certified (2008)
- Gus Garcia Recreation Center – Gold (2009)
- Turner Roberts Recreation Center – Silver (2010)
- Avery Ranch Fire/EMS Station – Gold (2011)

### LEED Registered Projects – Existing Buildings

- Austin City Hall
- Austin Convention Center
- Circle C Fire/EMS Station
- North Village Branch Library
- Palmer Events Center
- Twin Oaks Branch Library

### LEED Registered Projects – New Buildings in Design or Construction Phase

- African-American Cultural and Heritage Facility
- Asian-American Resource Center
- Austin Animal Shelter
- Austin Energy System Control Center
- Dittmar Recreation Center Renovation
- EMS Station #33
- Morris Williams Golf Course Pro-Shop/Cart Barn
- Municipal Court/Northeast Police Substation
- New Central Library
- Northwest Recreation Center Renovation
- Water Treatment Plant 4 Administration Building
- Water Treatment Plant 4 Maintenance Building
- Watershed Protection Field Operations Facility

### Austin Energy Green Building Rating

- Pickle Elementary School/St. John Community Center – Three-Star Rating (2001)
- Ruiz Branch Library – Three-Star Rating (2004)

### LEED Certification Application in Process

- McBeth Recreation Center Renovation
- Mexican-American Cultural Center Phase 1A
- Public Safety Training Facility

The Public Safety Training Facility is currently under review for LEED certification. This facility is expected to achieve at minimum a LEED Silver certification.

## PUBLIC SAFETY TRAINING FACILITY

The 48,732 square-foot, two-story building provides classrooms and administration offices for Police, Fire and EMS departments. Its sustainable features include:

### SITE

7.4 acres of vegetated open space and drought-tolerant landscape, 18 alternative-fuel vehicle parking spaces and bicycle racks

### ENERGY CONSERVATION

*Estimated annual savings of 327,568 kWh of electricity*

Solar panels provide 61,440 kWh of electricity per year which is 5.9% of the building demand. High-performance, energy-efficient heating, air-conditioning, lighting and gas/electrical systems are expected to reduce energy use by 34%, and 100% of electricity will be supplied by the Austin Energy GreenChoice program.

**TOTAL AVOIDED EMISSIONS: 468 Metric Tons of CO<sub>2</sub> per year**

### WATER CONSERVATION

*Estimated annual savings of 210,286 gallons of water*

Water-efficient toilets, fixtures and showers are expected to reduce water use by 26%. Drought-tolerant, native Texas plants combined with a high-efficiency irrigation system are expected to reduce potable water use for landscaping by 55%.

**TOTAL AVOIDED EMISSIONS: 0.61 Metric Tons of CO<sub>2</sub> per year**

### CONSTRUCTION WASTE MANAGEMENT

*212 tons, or 50.8% of the waste from demolition and construction, were diverted from the landfill.*

**TOTAL AVOIDED EMISSIONS: 263 Metric Tons of CO<sub>2</sub>**

## POSITIVE ENVIRONMENTAL IMPACTS

### ESTIMATED ANNUAL ENERGY AND WATER SAVINGS:

Emissions avoided are equivalent to the CO<sub>2</sub> emissions from energy use of 41 average homes in one year.



### CONSTRUCTION WASTE DIVERTED:

Emissions avoided are equivalent to CO<sub>2</sub> emissions from energy use of 22 average homes in one year.



WILLIAMSON CREEK BIOFILTRATION POND  
AT BEN WHITE BLVD AND IH-35

BIOFILTRATION POND

Williamson Creek Watershed  
Ben White Blvd. and IH-35

Biofiltration is a landscaped water quality control system that, unlike traditional sand filters, features organic soil media and plantings. Pollutants are removed from stormwater runoff through physical filtration and by the biological community of plants and soil microorganisms. Biofiltration is a centerpiece of green infrastructure, providing aesthetic and ecological benefits in which water quality and landscaping requirements can be met simultaneously.

This water quality project is the final installment of a five-pond system designed to treat the runoff from the Texas Department of Transportation's (TXDOT) expansion of the Ben White Blvd. and IH-35 intersection. In order to protect the high-quality water resources of McKinney Falls, Onion Creek and Williamson Creek from increased pollutant loading, the City funded and implemented water quality ponds because TXDOT is not required to provide water quality controls outside of the Edwards Recharge Zone.

This capital improvement project consists of a culvert underneath IH-35 that delivers runoff from 269 acres to a biofiltration/extended detention basin. The basin removes approximately 50% of the incoming pollutant load from the highways and commercial areas near the intersection at a cost of \$1.45 per pound of pollution. Additionally, the pond reduces flash floods and increases day-to-day flow in Williamson Creek.



GREEN INFRASTRUCTURE

Green infrastructure investments make best use of natural and engineered systems to enhance environmental quality and provide efficient utility services.

The Watershed Protection Department, through Resolution 20071129-046 consultation, continues to review City projects for opportunities to incorporate green infrastructure and innovative stormwater facilities in the planning and construction of the following projects:

- African-American Cultural and Heritage Facility
- Watershed Protection Field Operations Facility
- ZACH Topfer Theater – second and third consultations

The Austin Water Utility expanded its reclaimed water program with the installation of a transmission main to the University of Texas and the rehabilitation of 17,000 feet of service main in southeast Austin.

The Public Works Department (PWD), as part of encouraging alternative transportation modes, has added 24 miles of bike lanes, for a total of 161 miles. PWD also added over 60 miles of sidewalks since the start of its pedestrian program. It also provided free bike racks to businesses and held safe commuting education programs for bicyclists and pedestrians.



OFF-GRID LED LIGHTS  
ZILKER PARK  
ESCARPMENT TRAIL

The Parks and Recreation Department:

- Retrofitted the irrigation system for 26 acres of garden beds at the Zilker Botanical Gardens and the Zilker Lawn to convert to a non-potable system using raw water from Lady Bird Lake.
- Partnered with Austin Energy to provide funding for the Neighborhoods program to plant 1,150 trees in 2010 to shade community right-of-ways.
- With neighborhood volunteers, installed Wildlife Habitat Gardens (certified by the National Wildlife Federation) at Fire Stations #16 and #20 in the Crestview neighborhood.
- Installed an off-grid solar photovoltaic lighting system on the Zilker Park Escarpment Trail. It uses light-emitting diode (LED) light fixtures powered by batteries that are charged during the day.

In order to manage Austin's valuable urban forest, a complete tree canopy map was developed. The map revealed that approximately 30% of Austin is covered by tree canopy. The measurement of the tree canopy allows the City to increase tree preservation and reforestation efforts in areas with fewer trees.

Austin Energy's Urban Heat Island Initiative purchased 56 trees for public right-of-ways and 4,479 smaller trees for customers' yards and easements.



AUSTIN PUBLIC LIBRARY  
TWIN OAKS BRANCH

## EXISTING BUILDINGS AND OPERATIONS

The majority of the City's facilities are existing buildings. Major achievements in 2010 were in energy and water conservation.

### Lighting Retrofits

Lighting and controls retrofitted in seven City buildings, including the Austin Convention Center, Town Lake Center, Kramer Lane Service Center and the City Hall Parking Garage, resulted in the following savings:

- Austin Convention Center: Estimated annual savings of 574,217 kWh and \$38,000 by use of T8 fluorescent fixtures.
- Aviation Department: A reduction of 30% in electricity use with 28-watt LED fixtures at the airfield taxiway system.
- City Hall Parking Garage: Estimated annual savings of 565,406 kWh and \$45,283 by use of 53-watt LED fixtures.

### Water Conservation

- Austin Water Utility (AWU): Through its water conservation programs, AWU has estimated savings at one million gallons of water per day for both indoor and outdoor use during fiscal years 2009 and 2010. This will result in an estimated reduction of 1,590 MWh of process electricity and 1096 metric tons of CO<sub>2</sub> emissions.
- Parks & Recreation Department (PAR): Annual savings were estimated at 250,000 gallons of potable water by using low-flow showerheads. Additionally, PAR converted more than 60 acres of irrigation systems from potable to well and reclaimed water.

### Photovoltaic Systems

Solar Photovoltaic Systems were installed at two City facilities in 2010: Avery Ranch Fire/EMS Station and the Dittmar Recreation Center. They are expected to generate a combined total of 12,090 kWh per year, eliminating an estimated 8.3 metric tons of CO<sub>2</sub> emissions.

### Energy Conservation

- Aviation Department: Estimated annual savings of 392,130 kWh of electricity reduction in all its energy conservation efforts in 2010, resulting in 270 metric tons of CO<sub>2</sub> emission reduction.
- One Texas Center: Achieved an Energy Star® rating of 76 in 2009. In 2010, its Energy Star® rating of 92 reflects further reduction in energy use.
- The Continuous Commissioning program has evaluated energy systems for improved efficiency and correct operations at 12 City of Austin facilities.
- Communications and Technology Department: The Nightwatchman power management software remotely manages computers across the City's network. This significantly lowers energy consumption and CO<sub>2</sub> emissions without ever impacting user productivity. Currently, 68% deployment is achieved. At 100% deployment, the estimated savings are 4,900 MWh and \$200,000 which is equivalent to a reduction of 2,500 metric tons of CO<sub>2</sub> emissions per year.

### Renewable Power for City Facilities

The City of Austin's renewable energy strategy is to reduce fossil-fuel energy consumption and greenhouse gas emissions by moving all City departments' electric accounts to the Austin Energy GreenChoice program by October 2011.

## AUSTIN CONVENTION CENTER DEPARTMENT (ACCD)

The ACCD is progressing through the second year of LEED for Existing Buildings certification.

**ENERGY** – Existing chillers were removed in 2010 after connecting to the downtown chilled water loop. LED lighting has been installed in all meeting rooms.

**WASTE** – ACCD began its first year of composting in 2010; over 150,000 lbs. of material was sent to Texas Disposal Systems for composting. Overall waste diversion for ACCD has increased from 30 to 70% in the last 12 months.

**WATER** – All of the original restroom fixtures have been replaced with low-flow alternatives.

**PURCHASING** – Sustainable-oriented purchasing has risen from 15 to over 90% in office and cleaning supplies, equipment, building materials and numerous other categories.

## AUSTIN PUBLIC LIBRARY (APL)

The APL's Climate Protection Plan goal is to achieve carbon neutrality by 2020 and energy reduction of 15% per employee per year.

**ENERGY** – 66,300 kWh per year is generated through photovoltaic systems at six branch locations. Retro-commissioning was performed for Faulk Central Library and Austin History Center. Building Automated Systems are used at 22 branch libraries to monitor heating, ventilation and air-conditioning systems.

**LIGHTING** – More than 2,000 fluorescent lamps have been replaced with 28-watt lamps in several branches, reducing energy load by 23%. Day lighting control systems in two of the newest branch libraries automatically dim or shut off light fixtures when the building has sufficient natural light.

**WATER CONSERVATION** – Rainwater and condensation from air-conditioning systems collect a total of 16,000 gallons for irrigation.

**WASTE** – The Recycle Reads program, APL's used bookstore, diverted 200,000 cubic tons of books and electronic media from area landfills.



AUSTIN PUBLIC LIBRARY  
CARVER BRANCH



## PUBLIC/PRIVATE DEVELOPMENTS AND INITIATIVES

### Sustainability achievements go beyond those of City-owned and occupied buildings and infrastructure.

#### W Austin Hotel and Residences

Block 21 is a 1.08 million square-foot, mixed-use development that is home to the W Austin Hotel and Residences, as well as a live music venue and recording studio. The project is expected to achieve a LEED Silver certification and a Three-Star AEGB rating. Most notable features and achievements include:

- Heat island mitigation through underground parking and a highly reflective “cool” roof
- Water-efficient plumbing fixtures use 30% less water, resulting in calculated annual savings of 2.4 million gallons
- High-performance glazing with integral shading, energy-efficient lighting and use of LED stage lighting
- Almost 75% of construction debris from the landfill, totaling 4.5 million tons diverted
- Comprehensive green cleaning and integrated pest management
- Hotel use of single-stream recycling and composting to achieve zero waste goals

#### Mueller Redevelopment

Mueller is a LEED-ND Silver-certified pilot project which recognizes sustainable Neighborhood Development, a pilot site for an innovative Smart Grid project funded by the U.S. Department of Energy and the site for world’s first LEED Platinum-certified medical center.

- This project received the 2010 Livable Vision Award in Aesthetics category for 15 solar-powered, flower-shaped sculptures.
- Achieved an AEGB rating and/or LEED certification on all commercial projects. All homes have achieved at a minimum a Three-Star AEGB rating
- The project uses reclaimed water for irrigation for right-of-way landscaping, parkland and commercial building sites.

#### Solid Waste Services (SWS)

- **Universal Recycling Ordinance:** In November 2009, City Council approved an ordinance (effective 10/1/2012) requiring businesses in Austin to recycle at least five materials, including mixed paper, cardboard, aluminum cans, plastics (#1 and #2) and glass containers.
- **Office Stream Initiative:** SWS implemented a new contract with a private hauler for waste and recycling services at City facilities. The objective is to increase recycling and resource recovery rates, improve efficiency, save money and reduce materials sent to the landfill.
- **Austin Reblend:** With grant funding from the Capital Area Council of Governments, SWS developed a 100% post-consumer, rebled flat paint made from paint collected at the City’s Household Hazardous Waste Collection Facility. The “reblended” paint contains low volatile organic compounds and is compliant with AEGB requirements. To date, 3,417 gallons of paint have been recovered and 1,577 gallons given away to Austinites.

#### Upcoming Public/Private Developments

- City of Austin/YMCA North Austin Community Recreation Center
- Mexic-Arte Museum
- ZACH Topfer Theater



## INITIATIVES

#### New Commercial Landscape Ordinance

Since the 1980s, Austin has required landscaping of commercial, multi-family and industrial projects for aesthetics, buffering, screening and urban heat island abatement. This landscaping has traditionally relied on potable water irrigation. On December 16, 2010, City Council approved a new ordinance requiring rainfall runoff be directed to a portion of landscapes to reduce potable water consumption and improve water quality. Thus, Austin joins a host of green communities embracing green infrastructure designs. A variety of methods may be used to comply with the ordinance, including overland flow, rain gardens, rainwater harvesting and preservation of undisturbed natural areas/existing trees.

#### Construction Equipment Emissions Reduction Resolution

In February 2010, City Council passed **Resolution 20100211-019**, directing the City Manager to identify actionable steps to reduce NO<sub>x</sub>, particulate matter and greenhouse gas emissions associated with construction and demolition projects including, but not limited to, Capital Improvements Projects. A cross-departmental team has prepared a draft specification and emission reduction tool kit for use on some test projects. Results of the test projects will be presented to the Council.



THE SOLAR TREE AT  
DITTMAR RECREATION  
CENTER

PHOTOS:

LEFT, SOLAR TREE AT NIGHT:  
BARNA KANTOR (ARTIST)

PAGE 2, CITYSCAPE AND CANOE:  
SAM BUTLER

PAGE 6, CARVER LIBRARY:  
PAUL BARDAGJY

ALL OTHER PHOTOS: AUSTIN ENERGY  
MARKETING COMMUNICATIONS

## ISWG RESOURCES

TEAM	DEPARTMENT
Pharr Andrews	Austin Climate Protection
Dylan Siegler	Austin Climate Protection
David Thomas	Austin Convention Center
Liana Kallivoka	Austin Energy Green Building
Richard Morgan	Austin Energy Green Building
John Gillum	Austin Public Library
Heidi Tse	Austin Public Library
John Warren	Capital Planning Office
Lucia Athens	Office of Sustainability
Paul Hopingardner	Computer Technology Management
Nick Naccarato	Economic Growth and Redevelopment Services Office
D'Anne Williams	Parks and Recreation
Peter Davis	Public Works
Kalpana Sutaria	Public Works
Jessica King	Solid Waste Services
Aiden Cohen	Solid Waste Services
Tom Ennis	Watershed Protection
Matt Hollon	Watershed Protection
Mike Kelly	Watershed Protection

## RESOURCES

For more information on this report, resolutions, case studies and prior reports, please visit [www.cityofaustin.org/publicworks/sustainability](http://www.cityofaustin.org/publicworks/sustainability)

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**NEW LEAF PAPER®**  
 ENVIRONMENTAL BENEFITS STATEMENT *of using post-consumer waste fiber vs. virgin fiber*

The City of Austin saved the following resources by using Imagination (FSC), made with 100% recycled fiber and 100% post-consumer waste, processed chlorine free, designated Ancient Forest Friendly™ and manufactured with electricity that is offset with Green-e® certified renewable energy certificates.

trees	water	energy	solid waste	greenhouse gases
9	4087	3	248	849
fully grown	gallons	Million BTUs	pounds	pounds

Calculations based on research by Environmental Defense and other members of the Paper Task Force.

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