



2009 Annual Report





"Austin has a long tradition of sustainability as a way of life. It's a fundamental part of our quest to be the most livable city in the country. This report clearly shows how a shared community vision, effective management and continuous improvement can produce sustainable results. Programs like Austin Energy Green Building set us apart from our peers and serve as examples of how being the best-managed city in America can leave a lasting and meaningful impact on our community and our world."

Marc Ott
Austin City Manager

Welcome to the Austin Energy Green Building annual report. After more than 18 years of rating homes and buildings, promoting the benefits of green building to the public and reaching out to the building industry, we decided it was time to compile our annual statistics and program news into a single resource that can be used by anyone interested in sustainability.



Austin Energy Green Building began in 1991 as a single family homes program, and the first green building program in the nation. Over the years, we have evolved to include the Commercial and Multifamily green building programs and responsibility for developing and enforcing the City of Austin energy code. We have added consulting services for other governments interested in starting green building programs and, more recently, we've taken on responsibility for several parts of the Austin Climate Protection Plan.

Through all of this growth and change, we have tracked and reported various performance measures and statistics. Some of these are the same ones we have been tracking for many years, such as kilowatts of demand reduction and kilowatt hours of energy savings. Others, like tons of construction waste diverted from landfills, we have only recently begun to track. All of it is valuable information that helps paint the picture of sustainability in Austin. Until now, parts of this information have been reported in various places—but never in one accessible source.

As the United States moves to a carbon-constrained economy and world leaders begin to develop the follow-up to the Kyoto Protocol, we in the energy efficiency and green building movement must strive to accurately measure and effectively communicate the quantitative results of our work. We must continue to provide good data on direct energy savings. And we must also begin translating the savings in water use and the diversion of construction waste into metrics that have value and meaning to regulators, the building industry and the public.

With this report, we hope to fill that quantitative gap while still striving to improve our qualitative reporting in the form of building ratings and inspiring case studies. It is my hope that each year we can improve the way we discuss green building projects so that the information we provide becomes even more valuable.

Richard Morgan
Manager, Austin Energy Green Building

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Walkway to the river overlook at the LCRA Redbud Center





History

Austin Energy Green Building was the first comprehensive program in the United States designed to encourage sustainable building in residential, commercial and municipal construction. Over the years, our name has changed, our staff has grown from two to twenty members and the scope and volume of our work has increased dramatically. Through all these changes, our mission has remained the same: **to lead the transformation of the building industry to a sustainable future.**

1992 The Green Building Program is the only U.S. program to win an award for outstanding local government environmental initiatives at the United Nations Earth Summit in Rio de Janeiro.

With another U.S. Department of Energy grant, staff writes the first Sustainable Building Sourcebook.

In its first year using the new rating tool, the Green Building Program rates 14 single family homes in Austin.

1994 With funding from a third U.S. Department of Energy grant, the Green Building Program, Habitat for Humanity and the American Institute for Learning complete the construction of a green model home, known as the Green Habitat Learning Project.

Austin City Council passes a resolution to apply green standards to city facilities. Public Works partners with the Green Building Program to develop sustainable building guidelines for municipal projects.



1985 Austin City Council creates the Austin Energy Star program for residential construction as one of many new energy conservation programs designed to delay the construction of a new power plant. The program is housed in the Environmental and Conservation Services Department.



1991 Austin Energy Star evolves into the Green Building Program with the help of a grant from the U.S. Department of Energy.

The Center for Maximum Potential Building Systems and the Green Building Program collaborate to develop the first residential green building rating tool.

1993 The Green Building Program becomes a charter member of the newly formed U.S. Green Building Council.



1995 The Green Building Program develops a sustainability checklist for commercial buildings, thereby inaugurating its Commercial program.



1998 The Green Building Program becomes part of the municipal electric utility, Austin Energy, and changes its name to Austin Energy Green Building (AEGB).

Staff creates the multifamily green building rating tool.

AEGB sponsors the "Our House" television series to promote energy efficiency and green building.

The Development Review and Inspections Department partners with the AEGB to improve enforcement of the energy code.



2000 City Council requires Leadership in Energy and Environmental Design (LEED®) Silver rating for all municipal buildings.

Using funding from a U. S. Department of Energy grant, staff creates the Green By Design CD-ROM to promote the use of green building practices in single family homes.

AEGB establishes Manage It Green consulting services to help other cities and utilities create green building programs.

2002 AEGB hosts the first U.S. Green Building Council national conference, attracting more than 4,200 participants from 27 countries.

AEGB wins the National Association of Home Builders' Outstanding Green Building Program award.

The American Council for an Energy-Efficient Economy recognizes AEGB as "exemplary."



2004 City Council adopts the Master Development Agreement for the Robert Mueller Municipal Airport Redevelopment, requiring all buildings to be AEGB rated and/or LEED certified.

AEGB hosts the National Association of Home Builders' National Green Building Conference.



2006 AEGB hosts the annual Affordable Comfort conference.



2008 AEGB wins Best Architectural Trend in the Austin Chronicle's Best of Austin 2008 Readers Poll.

The Dell Children's Medical Center of Central Texas in the Mueller redevelopment becomes the first commercial building to earn five stars from AEGB and the first hospital in the world to receive LEED Platinum certification.

1997

1997 The Green Building Program partners with the Texas Solar Energy Society to conduct the first annual Cool House Tour showcasing outstanding green homes in Austin.



1998

1999

1999 AEGB launches its Web site.

The City of Austin Neighborhood Housing and Community Development department partners with AEGB to incentivize green affordable housing construction.

2000

2001

2001 The City of Austin becomes part of the Smart Growth Network and adopts the International Energy Conservation Code with local amendments, to be implemented by AEGB.

AEGB offers quarterly Green By Design workshops for the general public to encourage the use of sustainable building techniques in single family construction.



2002

2003 City Council requires all new downtown construction to earn a green building rating.

AEGB receives the Public Sector Leadership Award from the U.S. Green Building Council.

2003

2004

2005 AEGB rates over 1,000 single family homes in just one year.



2005

2006

2007 City Council adopts the Austin Climate Protection Plan and the Zero Energy Capable Homes task force recommendation that all new single family homes be zero energy capable by 2015.

Austin adopts the 2006 International Energy Conservation Code.

AEGB oversees the renovation of an Austin single family home on the PBS television series "This Old House." The house earns five stars, the program's highest rating.

2007

2008

2009 The inaugural class graduates from Green Boots, a program designed to educate home builders and trade contractors in green building practices, developed in partnership with the Home Builders Association of Greater Austin.

AEGB rates 712 single family homes, 1,721 multifamily units and 2.3 million square feet of commercial space, saving 30.7 million kilowatt hours of electricity and preventing almost 20 million tons of associated carbon dioxide emissions from being released into the atmosphere.



2009



Owner: SETON Healthcare Network
Architect: Karlsberger
Engineers: ccrd partners (MEP), Bury+Partners (civil)
General Contractor: White Construction
Landscape: TBG Partners

Results

Austin Energy Green Building (AEGB) is a proud contributor to the City of Austin's nationally recognized conservation program, which provides the Austin community with valuable energy and electrical demand savings. Since 1982, these programs have reduced peak electrical demand by 865 megawatts, equal to about one-third of Austin Energy's total power generation capacity. The program has also provided energy savings of about 1.4 million megawatt hours.

AEGB contributes between 25 percent and 30 percent of these critical energy and demand savings every year through two major activities: a) improvements to the energy code and b) building rating and consulting.

Enforcing and improving the progressive City of Austin energy code accounts for more than half of AEGB's savings. The remaining energy and demand savings come from AEGB's Single Family, Multifamily and Commercial building rating programs. Each of these programs has a unique green building rating tool which evaluates the sustainability of participating buildings on a scale of one star to five stars in the areas of energy efficiency, water efficiency, materials, site, indoor environmental quality, community impact and innovation.

The Dell Children's Medical Center of Central Texas: AEGB's first five-star commercial building and the first hospital in the world to earn LEED Platinum certification
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Electrical demand and energy consumption are two different but related ways of looking at electricity use in the utility business. At AEGB, we report savings of both.

Demand is the amount of electric power a customer needs at a given moment, typically measured in kilowatts (kW) or megawatts (MW).

1 MW = 1,000 kW

A 3-ton air conditioner has a demand of about 3 kW, or consumes electric power at a rate of about 3 kW.

Peak demand is the highest demand experienced by a utility at a given moment, determining how much generation capacity is needed to serve all customers. Austin Energy experiences peak demand during the hottest part of the day in the summer months when most customers are running their air conditioners.

Reducing peak demand is critical for utilities because it allows them to finance, build and operate fewer costly power plants—thereby reducing their operating expenses.

Energy is the amount of electricity used over a period of time, typically measured in kilowatt hours (kWh) or megawatt hours (MWh).

1 MWh = 1,000 kWh

If a 3-ton air conditioner with a demand of 3 kW runs for an hour, it consumes 3 kWh of energy.

Reducing energy consumption is important to customers because it allows them to spend less money on their utility bills and reduce their carbon footprint.

2009 Program Results

AEGB boasted total energy savings of 30.7 million kWh in 2009, its second highest result to date, and demand savings of 13,355 kW. These savings represent the individual achievements of 712 single family homes, 1,721 multifamily units, 2.3 million square feet of commercial space and improvements to the City of Austin energy code.

This year's results are especially impressive in the present economic climate. AEGB is responsible for con-

servation in new construction, so annual energy and demand results depend on activity in the local building sector. The ongoing economic recession has dramatically decreased construction activity in Austin and across the country.

However, though construction has slowed, AEGB's participation rate has grown, thanks to Austin's culture of environmentalism and local building professionals committed to efficient, comfortable, healthy, durable,

beautiful buildings. City planners, too, have contributed to the growing participation rate, as they incorporate green building requirements into zoning agreements.

The upshot? Despite the recession, green buildings are proving their value in Austin and across the U.S. as the private sector demands better buildings with lower operating costs and governments create new incentives and standards.

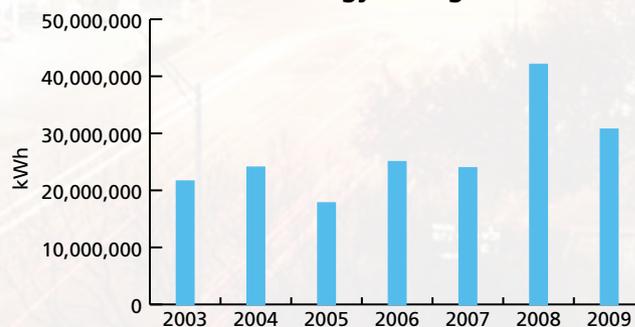


Green buildings such as the 683-foot tall Austonian (center) are transforming Austin's skyline, along with the Monarch, Austin 360, the W Hotel and the Four Seasons.

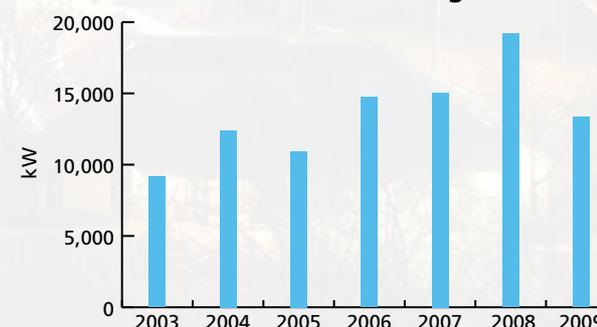
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AEGB Energy and Demand Savings		
Year	Energy (kWh)	Demand (kW)
2003	21,580,300	9,155
2004	24,010,420	12,399
2005	17,757,050	10,935
2006	24,974,400	14,755
2007	23,906,260	15,043
2008	42,038,650	19,175
2009	30,676,760	13,355

AEGB Energy Savings



AEGB Demand Savings



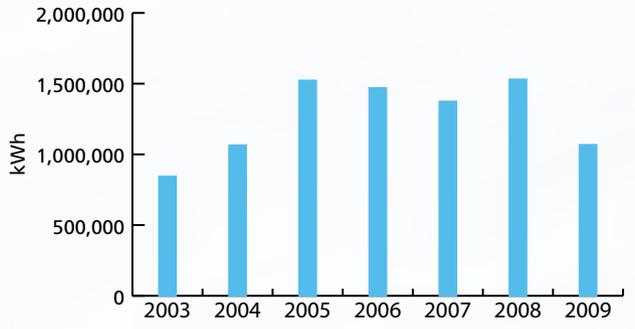
Architect: Leland F. Decker
Builder: The Muskin Company



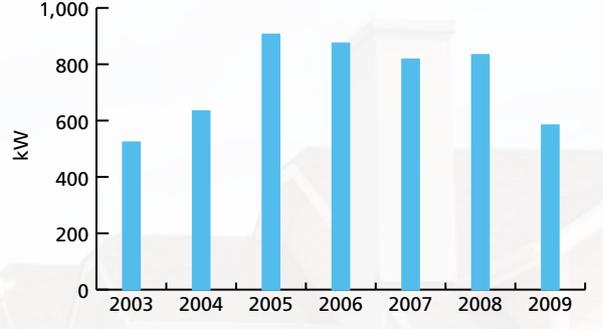
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Mueller's Garden Court features 12 homes arranged around a central courtyard, providing an instant sense of community.

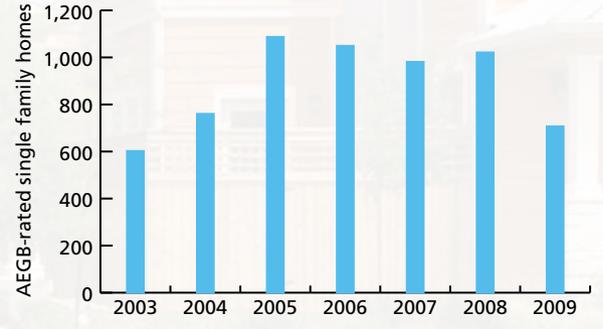
Single Family Energy Savings



Single Family Demand Savings



Single Family Program Participation



Single Family Program Results

The AEGB Single Family program achieved energy savings of over 1 million kWh in 2009, preventing 690 tons of carbon dioxide from being released into the atmosphere.

Perhaps an even greater achievement, however, is the increase in the rate of program participation. From 2003 to 2008, AEGB-rated homes made up about 20 percent of the single family market in Austin. In 2009, about 40 percent of new homes in Austin earned an AEGB rating.

While the Single Family program's share of AEGB's total annual energy and demand savings is relatively small, the program plays a key role in helping AEGB reach the general public as well as building professionals. AEGB Single Family staff work not only with builders and architects, but with homeowners, as well. The program also sponsors quarterly workshops, known as Green By Design, to educate the public on the basics of sustainable design, construction and operation.

Green Features & Achievements

Energy

This home features carefully planned daylighting and passive cooling, with ducts and mechanical equipment located inside the thermal enclosure. This smart design allows a 3-ton, 19 SEER, variable-speed heat pump to provide this 2,200 square foot home with a comfortable environment and very low utility bills.

Water

High-efficiency toilets and low-flow faucets save indoor water. Rain barrels supply irrigation water for xeriscaped front and back yards and a vegetable garden.

Site

The site was graded to reduce water runoff and prevent erosion. Homeowners worked to preserve surrounding trees during construction.

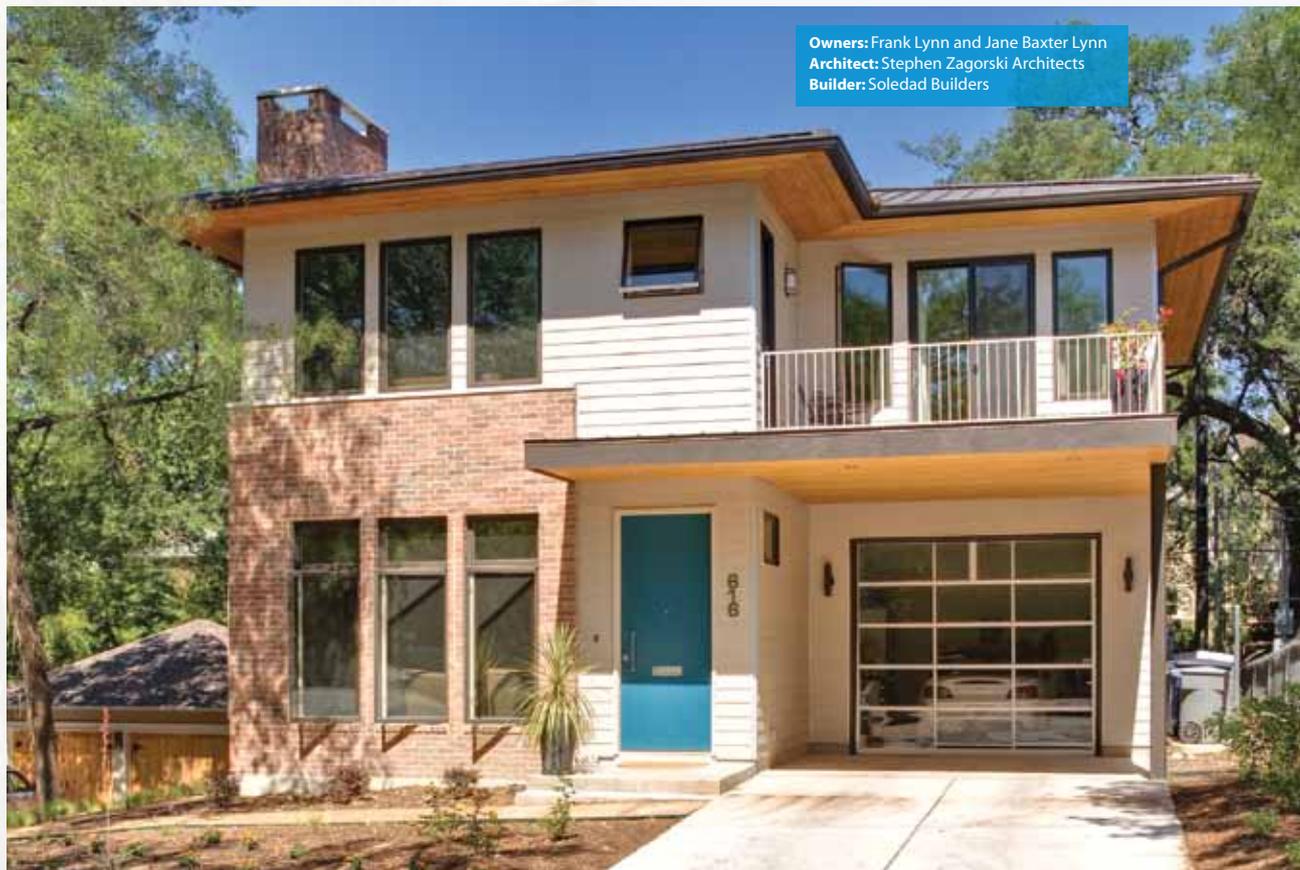
Materials

Construction waste was shredded for mulch and used on-site. Finishing materials include recycled glass tile and quartz counters.

Indoor Environmental Quality

Low-VOC finishes and paints adorn the interior. Stained concrete and wood floors eliminate the need for carpet, which traps allergens. The house features integrated pest management techniques, such as borate application on the frame and termite barrier at slab penetrations.

Owners: Frank Lynn and Jane Baxter Lynn
Architect: Stephen Zagorski Architects
Builder: Soledad Builders



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616 Pressler Street



Located just a half mile from downtown Austin in the historic Old West Austin neighborhood, 616 Pressler Street is the highest scoring project to date under the Austin Energy Green Building Single Family rating, version 8.0.

How did it score so high?

"Pressler was the result of smart decisions made up front," said builder Marc Molak. "The simplicity of the original design helped it all come together."

It was important for the architect, builder and homeowners to have a close working relationship throughout the building process as well. Together, the team selected smart design elements, such as well-placed operable windows, generous 36-inch eaves to reduce heat gain and a screened back porch to buffer west-facing windows from the sun. Features like these provide important energy savings, sometimes at little or no extra cost.

"It was a good team, and we were goal-oriented from the start," said architect Stephen Zagorski.

Developer: High Street Residential
Architect: JHP Architecture
Engineers: Jordan & Skala (MEP), Bury+Partners (civil)
General Contractor: Texas BBL
Landscape: RTKL Associates



Midtown Commons at Crestview Station, a three-star multifamily development, provides residents easy access to transit and retail.

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Multifamily Program Results

The Multifamily program rated 1,721 units in 2009, achieving energy savings of 1.8 million kWh.

The youngest of AEGB’s programs—and one of just a handful of multifamily green building programs in the country—the program addresses the specific challenges of building green apartment communities. Multifamily property owners often have few incentives to invest in energy and water efficiency because tenants—not owners—benefit from the cost savings these upgrades provide. Tenants, who often stay for just a year or two, also

have little reason to improve the properties. The Multifamily program helps project teams identify affordable green strategies that provide long-term value to owners, tenants and the community.

In recent years, the City of Austin’s green affordable housing program, known as S.M.A.R.T. Housing™ has helped the Multifamily program grow. Thanks to programs like this, AEGB-rated units made up 76 percent of all multifamily units completed in Austin in 2009.

2009 Multifamily Results	
Units rated	1,721
Energy savings (kWh)	1,812,470
Demand savings (kW)	950

2009 Rated Multifamily Projects	
3-Star Ratings	Ashton Terraces at Southpark Meadows Villages at the Domain, Building P
2-Star Ratings	Camden Cedar Hills The Estates at Southpark Meadows Santora Villas
1-Star Ratings	The Vintage Pearl

Green Features & Achievements

Energy

High-efficiency lighting and windows, as well as ENERGY STAR® roofing, ceiling fans, refrigerators and washing machines, contribute to substantial building energy savings.

Water

Low-flow plumbing fixtures and high-efficiency clothes and dishwashers provide 27 percent savings in building water use.

Site

Building is located in a desired development corridor. Proximity to public transit and 10 on-site bicycle stations offer residents alternatives to private vehicles.

Materials

Project team diverted 85 percent of project construction waste from landfills. Strategies included stockpiling and creating an inventory for stone and brick from demolition of structures previously on the site.

Indoor Environmental Quality

All living rooms, bedrooms and common gathering spaces have views to the outdoors. Low-emitting finishes, as well as direct-to-exterior ventilation for cook tops and bathrooms, contribute to better indoor air quality.



Owner: Austin Presbyterian Theological Seminary
Architect: O'Connell Robertson
Engineers: O'Connell Robertson (MEP), Datum Engineers (structural)
Commissioning: ACR Engineering
General Contractor: American Constructors

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John F. & Nancy Anderson House



The John F. and Nancy Anderson House, which provides apartment housing to students of the Austin Presbyterian Theological Seminary, demonstrates how much a project team can achieve on a tight budget.

"We have a responsibility to be good stewards of our finances and good stewards of the environment," said Renee Menke, director of auxiliary enterprises at the seminary.

The project team exceeded their original goal for a one-star AEGB rating and achieved two stars. One of their most laudable decisions was to commit to a five-year

subscription to the Austin Energy GreenChoice® renewable energy program. Anderson House is the first multifamily AEGB participant to subscribe to GreenChoice for all its housing units.

Anderson House is the first of several new student apartments the seminary is planning.

"Hopefully, we'll be able to do even more to make the next building sustainable," said Kurt Gabbard, vice president for business affairs at the seminary.



Owner: Will Work For Food
Designer/Builder: Miles Building and Design
Engineers: EEA Consulting Engineers (MEP)
Commissioning: ACR Engineering

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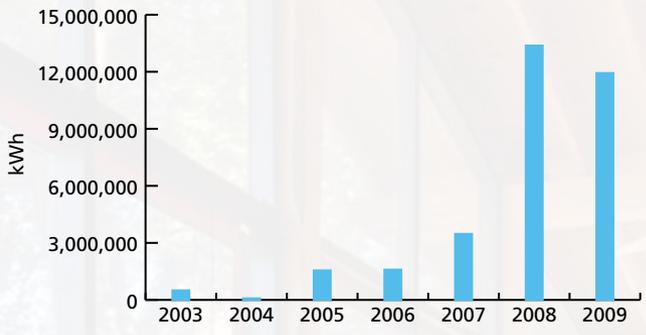
House Pizzeria earned four stars for features such as this unconditioned outdoor dining area.

Commercial Program Results

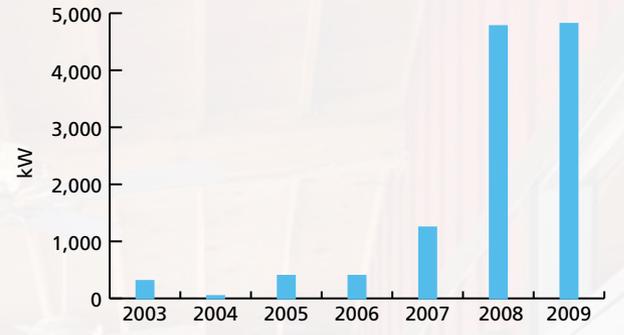
Despite the economic downturn and resulting slowdown in construction, the AEGB Commercial program attained 4,813 kW in demand savings, the highest result to date. Energy savings totaled nearly 12 million kWh, enough energy to power 747 average Austin homes for a year.

The Commercial program quantifies construction waste and water savings as well. In 2009, almost 27,000 tons of construction waste was recycled, reused or otherwise diverted from landfills.

Commercial Energy Savings



Commercial Demand Savings



Commercial Gas, Water and Construction Waste Savings

Natural Gas (mBTU)	
2008	14,710
2009	9,494

Building Water (gallons)	
2007	2,037,400
2008	12,838,100
2009	17,572,400

Irrigation Water (gallons)	Peak (July)	
	Annual	
2007	1,195,000	7,170,000
2008	6,431,600	38,589,600
2009	3,773,100	22,638,600

Construction Waste (tons)	
2007	3,327
2008	40,479
2009	26,881

AEGB-rated commercial projects will save an estimated 22.6 million gallons in irrigation water each year and 18.7 million gallons in building water. Combined, that's enough water to run an ENERGY STAR®-qualified dishwasher over 7 million times or to fill 63 Olympic-size swimming pools.

2009 Rated Commercial Projects

5-Star Ratings
University Federal Credit Union - Ben White Branch

4-Star Ratings
House Pizzeria Lance Armstrong Foundation LBJ High School Theatre Seton Family of Hospitals Administration Offices

3-Star Ratings
Dots* Family Christian* Fashionique* Great Nails* Jamba Juice* Overton Elementary School Papa John's* Starbucks*

2-Star Ratings
Austin Studios Akins High School Addition Graham Elementary School Jordan Elementary School Addition Tower of the Hills

1-Star Ratings
21 Rio Austin Music Hall The Block on 23rd The Block on Rio Grande Capitol Tower College Houses: Nueces Co-op Crescent Apartments Four Points Centre La Vista de Guadalupe Legacy on the Lake Prominent Pointe II Spring Condominium Texan Pearl Wheatsville Food Co-op Addition

*Mueller Austin location

Green Features & Achievements

Energy

Optimal building orientation, high-performance windows and a highly efficient HVAC system contribute to building energy savings of 32 percent.

Water

Low-flow toilets and water-conserving fixtures reduce indoor water use. Captured air conditioning condensate provides water for toilets. Four rainwater cisterns with a combined capacity of 31,100 gallons provide water for an educational water feature and drip-and-flow irrigation for 12,000 native and adapted plant and tree species. Bioswales purify storm water runoff. Project earned all water points under the AEGB commercial rating.

Site

Brownfield remediation included the removal and recycling of an abandoned laboratory, underground gasoline storage tanks and asbestos.

Materials

24 percent of the total cost of building materials went to products with recycled content; 48 percent to regionally manufactured products; and 28 percent to regionally extracted goods. Over 82 percent of project construction waste was diverted.

Indoor Environmental Quality

Low cubicle walls and a smart floor plan allow daylight to reach nearly all workspaces. Automated monitors measure indoor carbon dioxide levels to optimize ventilation rates and conserve energy.



Architect: Barnes Gromatzky Kosarek Architects
Engineers: Jose I. Guerra (MEP, structural)
Commissioning: ACR Engineering
General Contractor: Thos. S. Byrne
Landscape: J. Robert Anderson

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LCRA Redbud Center



LEED GOLD CERTIFICATION

As manager of the Lower Colorado River and Highland Lakes and Dams, the Lower Colorado River Authority (LCRA) had ambitious goals for a new river and emergency operations center. The project team envisioned a facility that would not only be sustainable, but would embody LCRA's commitment to environmentalism.

The solution? The team designed a high-performance building that included an interactive science learning center open to the public. At the center, visitors

can turn wheels to generate hydroelectricity and learn about the Lower Colorado River using a replica of its lakes and dams. The Colorado River Foundation uses the facility for class field trips, receiving 1,200 local students in the first 10 months.

The Redbud Center's educational potential goes beyond the learning center.

"The building itself is a teaching tool," said Erin O'Neil Franz, executive director of the Colorado River Foundation. "You come to the building and you see the dual flush toilet system and the water cisterns. You see how you can capture and reuse water."

Architect: Jackson & McElhane
Engineers: Jose I. Guerra (MEP)
Commissioning: ACR Engineering
General Contractor: Thos. S. Byrne
Photovoltaic System: Meridian Solar



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University Federal Credit Union — Ben White Branch



Only the second project to date to receive an AEGB five-star commercial rating, the University Federal Credit Union (UFCU) Ben White Branch team reduced building energy use by 41 percent, diverted 99 percent of project construction waste from the landfill and reduced indoor potable water use by 93 percent.

The branch is not only a high-performance building: It has been the catalyst for change in the UFCU corporate culture.

“It made us think about things we weren’t doing,” said Steve Kubala, UFCU senior vice president for operations. “We recycle at every branch and don’t consume bottled water anymore. At our corporate campus, we added an attic ventilation system to extend the life of the air conditioners, and we retrofitted the lights with large fluorescent bulbs.”

UFCU plans to use green building techniques in all new branches opening in the coming years.

“My long-term goal is to leave a positive legacy of building,” said Steve. “In 15 years, I’d love to have several of these buildings out there and know that we did the right thing for our employees, the community and the environment.”

Green Features & Achievements

Energy

Information provided by a thorough three-dimensional sun study was used to determine the size and location of the overhangs. High-performance glazing, a cool roof and efficient lighting further reduced the energy load. Electricity generated by solar panels supplies 25 percent of building energy needs.

Water

A rainwater catchment system provides water for irrigation and for flushing high-efficiency toilets and pint urinals, contributing to building water savings of 90 percent.

Site

Selection of an urban site allows easy access to public transit and nearby mixed-use neighborhoods.

Materials

78 percent of material expenditures went to products manufactured in Texas; 43 percent went to products with recycled content; and 100 percent of wood materials are certified by the Forest Stewardship Council. Project team diverted 99 percent of construction waste from the landfill.

Indoor Environmental Quality

Daylighting and outdoor views make the branch a great place to visit and work. Low-emitting materials, such as paints, flooring and cabinetry, contribute to healthier indoor air.

Codes and Standards

AEGB achieves impressive energy and demand savings by helping to implement the City of Austin energy code, which is the minimum energy efficiency standard for renovations and new construction. To ensure the code remains one of the most progressive in the country, AEGB staff members work to update it every three years.

In 2009, AEGB staff worked with local stakeholders to prepare for City Council's adoption of the 2009 International Energy Conservation Code, planned for 2010. Staff also negotiated local amendments to the code, which further increase energy efficiency. These local amendments will require, for example, commissioning of

heating, ventilation and air conditioning systems in commercial buildings to make certain they are operating efficiently.

Even more important than working to advance the energy code, AEGB staff works with builders, inspectors and plan reviewers to ensure it is effectively enforced. To further these efforts, AEGB staff concluded a project in 2009 with Texas A&M University to develop an energy code compliance calculator as part of the Texas Climate Vision Homes Initiative. Funded by a grant from the Department of Energy and the Texas State Energy Conservation Office, the Web-based calculator helps designers and builders assess

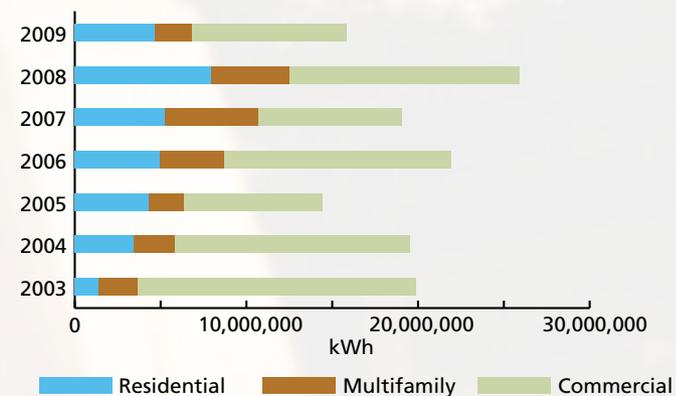
AEGB staff member John Umphress inspects an attic for energy code compliance.

©2009 Ben Sklar

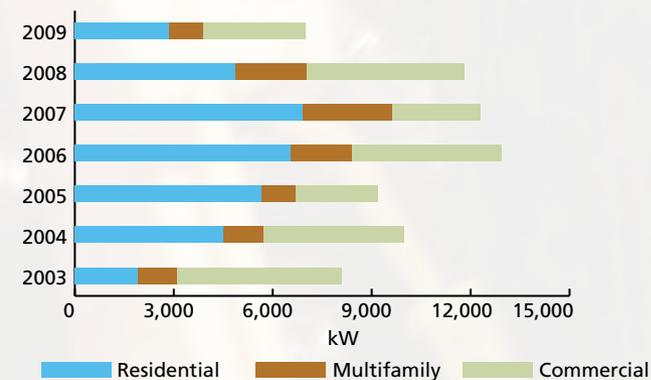


how well residential projects comply with the energy code before applying for a building permit. It also allows the calculation of emissions generated by residential buildings based on their projected annual energy use.

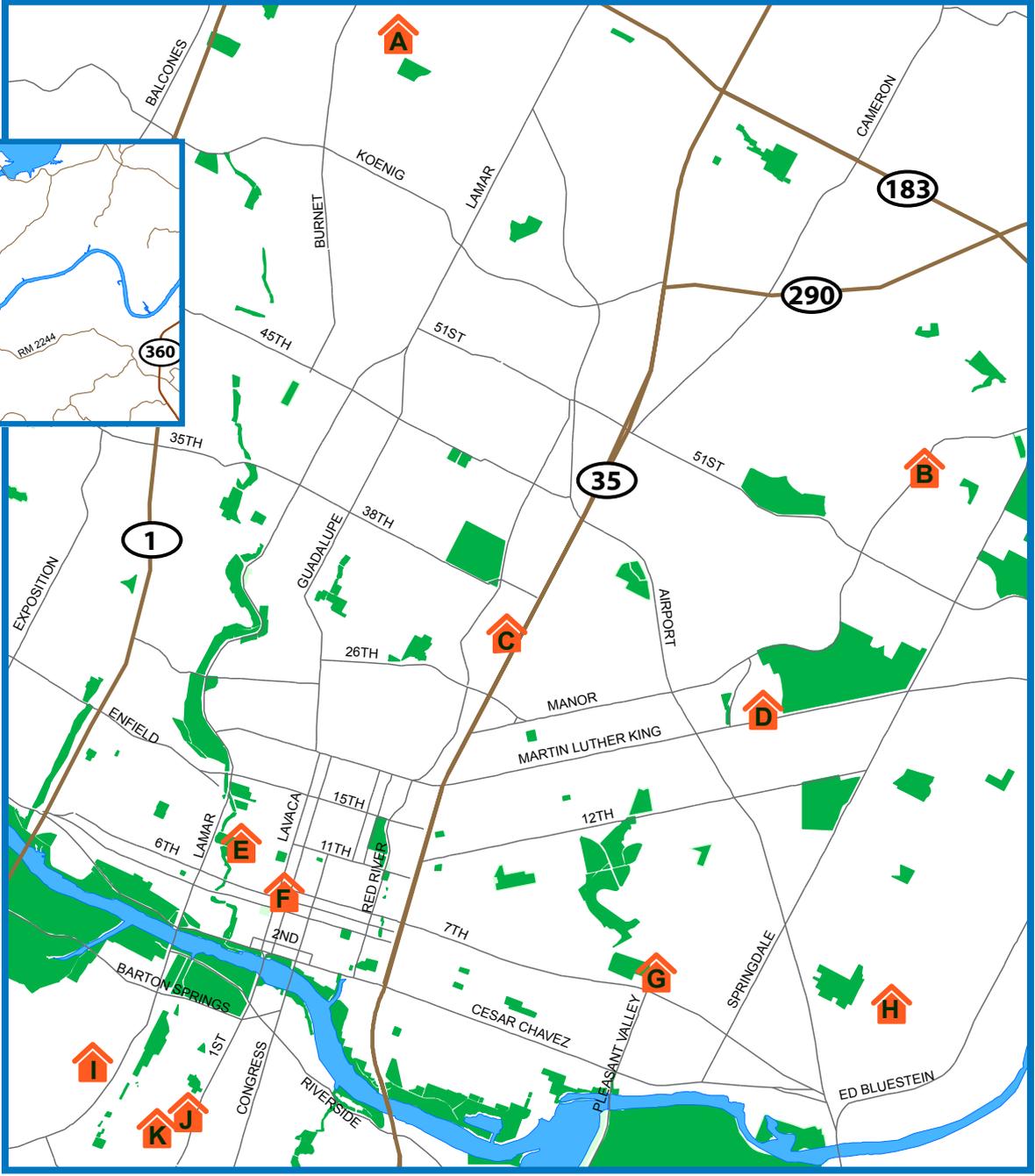
Energy Savings from Energy Code Activities



Demand Savings from Energy Code Activities



Projects to Watch: 2010 and Beyond



A. 1901 Cullen uses an innovative pavilion roof to harvest rainwater, provide shade and support solar power generation systems. *Design Team: Caleb Schafer, David E. Ward*



B. Pecan Springs Commons creates a safe, family-oriented residential community by providing sustainable energy and water efficient housing. *Architect: Austin Community Design & Development Center*



C. University Park is a pedestrian-friendly live/work/play development, mitigating urban heat island effects with reflective concrete streets, trees and a district energy plant. *Architect: PageSoutherlandPage*



D. Franklin Gardens provides sustainable low-income senior housing with a focus on energy efficiency and healthy indoor air. *Architect: hatch + ulland owen architects*



G. Lifeworks Resource Center focuses on abundant daylighting and comfortable outdoor spaces in a new social services building. *Architect: Miró Rivera Architects*



J. 612 West Monroe is a live/work site with three separate buildings: a home, a historic bed-and-breakfast and a yoga studio. *Design Team: Keith Hazel, Sue Long*



E. 904 West is a live/work commercial and multifamily development offering individually-metered solar photovoltaic systems and LED lighting. *Architect: Charles Fisk Architecture*



H. Sol: Solutions Oriented Living combines affordability, quality design and environmental responsibility in a unique 38-home net zero development. *Architect: KRDB*



K. 707 West Milton reclaims a former brownfield with a well-oriented new home designed for passive cooling and energy efficiency. *Architect: Stuart Sampley Design Studio*

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F. The Austonian's residents enjoy low-carbon living thanks to a chilled water HVAC system, rainwater collection and efficient windows. *Architect: Ziegler Cooper Architects*



I. The Willows is a four-story, completely ADA-accessible multifamily building with half the units available for 40 or more years to very low-income tenants. *Architect: A. Ray Payne*



L. Lakeway Regional Medical Center reduces car pollution by using a master transportation plan and native plants to filter on-site storm water runoff. *Architect: PageSouthernlandPage*

Education & Outreach

Education and outreach activities are an invaluable way to share our expertise with industry professionals and building owners across Austin and around the world. AEGB coordinates and staffs three major educational series for laymen and building professionals, described in the coming pages. Many AEGB staff members make presentations on green building to local, national and international audiences of building professionals and policy makers. In addition to these activities, staff frequently volunteer at fairs, trade shows, expositions and conferences.

Green By Design

Green By Design, a quarterly single family residential green building workshop, is the centerpiece of AEGB's public education programs.

First offered in 2001, the day-long workshop is aimed at the general public and building professionals new to the principles of green building. The sessions, taught by Austin Energy staff, focus on building for the hot and humid Central Texas climate. Topics include goal setting, designing for local conditions, materials and products, heating and cooling systems, lighting and appliances, landscaping, maintenance, integrated pest management and, most critical of all, the importance of teamwork in achieving a successful green building.

In addition to hearing presentations on green building strategies, attendees have the opportunity to speak one-on-one with AEGB staff. They meet workshop sponsors who showcase their products and services during lunch and breaks. Sponsors include architects, builders, green realtors, heating and cooling contractors, home performance testing companies, solar installers and sustainable building materials suppliers.

In 2009, the workshop attracted 514 attendees from across Texas and from as far away as New York, Pennsylvania, Iowa and New Mexico. Also among the attendees were architecture students from the Monterrey Institute of Technology and Higher Education, Texas State University-San Marcos and The University of Texas at Austin.



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AEGB staff member Mary McLeod responds to questions during the Green By Design workshop. (page 18)
Jessica Galloway, AEGB staff, helps builders with the finer points of the single family rating tool. (page 19)

Professional Development Seminars

AEGB hosts free monthly professional development seminars, where building professionals and City of Austin employees can learn from experts about a wide variety of green building topics. Continuing education units are available for American Institute of Architects and Texas Institute of Building Design members. The 2009 seminar topics and speakers are listed in the table to the right.

Green Boots

In 2009, AEGB partnered with the Home Builders Association of Greater Austin to offer a 12-session single family green building education series for trade contractors, architects and builders.

The series, known as Green Boots, covered seven essential components of green building in sessions taught by nearly 60 field experts. Average session attendance was 68. Twenty-three building professionals attended all 12 sessions, graduating with Green Boots certification.

"We were very impressed with the quality of all the guest speakers," said Tim Howe, a builder with ATX Builders and a Green Boots graduate. "There is not another course that could come close to what you've provided us with for the price of this one."

The 2010 Green Boots series has been expanded to include remodeling and address existing home challenges, such as weatherization, duct leakage and City of Austin energy audit requirements. There will also be additional classes and field trips for Green Boots graduates interested in earning continuing education credits.

2009 Professional Development Seminars

Easy Living: Universal Design

David Deming, Registered Accessibility Specialist
Ron Menard, City of Austin Planning and Development Review
Susan Welker, Harris Welker Architects
David Webber, Webber + Studio

"Watts Up" in Lighting

Brett Anderson, Facility Solutions Group
Brian Johnston, Lighting, Inc.
Dennis Lilley, Austin Energy

Interior Design for Health and Productivity

Adele Houghton, Adele Houghton Consulting

Show Me the Green: Tax Deductions and Rebates for Energy Efficient Buildings

Julio Gonzalez, Engineered Tax Services

Designing for Food Resources

Marla Camp, Edible Austin magazine
Justin Doak, ecoxera
Pamela "Sweetpea" Hoover, Natural Gardener

New Infrastructure Opportunities for Sustainable Building

Andres Carvallo, Austin Energy
Aide Fitch, Austin Sustainable Infrastructure Group
Dan Pedersen, Austin Water Utility

Guided Tour of the LCRA Redbud Center

Guy Dawes, Lower Colorado River Authority
Lauren Goldberg, Barnes Gromatzky Kosarek Architects
Larry Walker, Lower Colorado River Authority

High Performance Residential HVAC Systems

Phillip Leach, Stan's Heating and Air Conditioning
Tom Turner, Austin Energy

Beyond Photovoltaics: Net Zero Energy Building

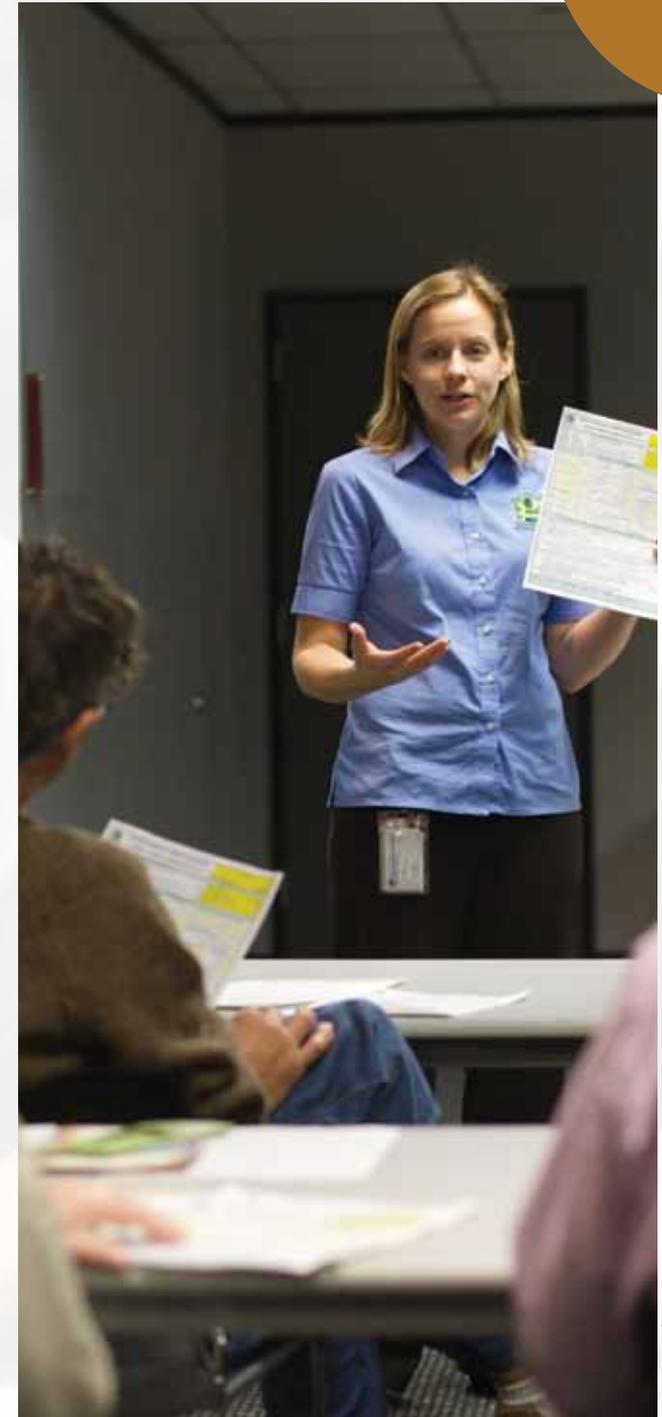
Michael Gatto, Austin Community Design & Development Center
Michelle Ng, Austin Community Design & Development Center

Zero Waste

David Greene, Austin Water Utility
Jessica King, City of Austin Solid Waste Services

Multimodal Transportation

Nadia Barrera, City of Austin Public Works
Leah Haynie, Austin Climate Protection Program
Jana McCann, ROMA Design Group
Molly Scarbrough, City of Austin Planning and Development Review





Reaching Out

In 2009, AEGB staff made presentations around the world and influenced green building policy and program development at the local, state, national and international levels.

Selected Presentations

- ASHRAE Winter Conference | Chicago, Illinois
- Building Commissioning Association Convention and Exposition | Long Island, New York
- Green and Affordable Housing Conference | New York City Housing Preservation and Development | New York, New York
- GreenBuild 2008 | U.S. Green Building Council | Boston, Massachusetts
- Renewable Energy Roundup | Texas Solar Energy Society | Fredericksburg, Texas
- Structures Congress 2009 | American Society of Civil Engineers | Austin, Texas
- Sustainable Building Round Tables | United Nations Environment Programme Sustainable Buildings and Climate Initiative | Madrid, Spain

Selected Policy and Program Development Activities

- Austin Community College Building Construction Technology, Advisory Board chair: *Bryan Bomer*
- City of Austin Energy Conservation Audit and Disclosure task force: *Richard Morgan*
- City of Austin Green Roofs Advisory Committee member: *Maureen Scanlon*
- City of Austin Interdepartmental Sustainability Working Group members: *Liana Kallivoka, Richard Morgan*
- International Green Construction Code Energy Work Group chair: *Richard Morgan*
- LEED 2012 Development Summit participant: *Liana Kallivoka*
- LEED Market Advisory Committee core member: *Liana Kallivoka*

Selected Staff Achievements and Recognitions

- Home Builders Association of Greater Austin 2009 Associate of the Year: *Miki Cook*
- International Codes Council energy code plan reviewer and inspector certification: *Michael Husted*
- New LEED Accredited Professionals: *Patricia House, Michael Husted, Katherine Murray, Sophie Roark*
- New LEED for Homes Accredited Professionals: *Miki Cook, Anne Johnson, Liana Kallivoka*
- New Certified Energy Managers: *Anne Johnson, Sarah Talkington, Jeff Wacker*
- USGBC Central Texas-Balcones Chapter 2009 Green School Awards jury panel member: *Liana Kallivoka*

Members of the local building community celebrate at the annual AEGB networking party.

Partnerships & Initiatives

At the heart of our mission is durable change in the building industry, achievable only with the help of partners from the public, private and non-profit sectors. At the local level, AEGB has collaborated to implement green building standards and served as members of task forces to set long-term goals for new, existing and municipal buildings. As a recognized leader in green building, AEGB has also contributed to initiatives at the state, national and international levels.

Mueller Redevelopment

The City of Austin is well on its way to meeting ambitious green goals for the Mueller redevelopment, a planned community where diversity meets economic development, fiscal responsibility and sustainability.

Located at the former Robert Mueller Municipal Airport site in north central Austin, the community showcases green community design, green infrastructure and green buildings. Under the Mueller Master Plan, all buildings in the 711 acre development must meet green building standards. Commercial and multifamily buildings are required to achieve a two-star AEGB rating or LEED certification. Single family homes must earn at least a three-star AEGB rating.

Sustainability at Mueller goes beyond the walls of the buildings. Outstanding community design allows residents access to 140 acres of parks and greenways. Families with different lifestyles and incomes can live in the same neighborhood, thanks to the inclusion of a variety of housing types. Green infrastructure, such as a district energy center and a reclaimed water system,

Mueller by the Numbers

As of Sept. 30, 2009

Commercial Construction

Commercial buildings completed*	29
AEGB-rated commercial buildings*	26
3-star ratings	21
4-star ratings	4
5-star ratings	1
LEED-certified commercial buildings*	6
LEED Silver	2
LEED Gold	2
LEED Platinum	2

Commercial Construction Savings

Annual building water (gallons)	4,507,633
Annual irrigation water (gallons)	21,065,616
Annual energy (kWh)	12,929,930
Annual demand (kW)	4,607
Construction waste (tons)	37,063

Residential Construction

AEGB-rated homes*	532
3-star ratings	479
4-star ratings	10
5-star ratings	43
LEED-certified homes*	5

* Three commercial projects and five single family homes achieved both an AEGB rating and LEED certification.

provides businesses and residents with environmentally friendly public services.

Mueller has received national and international recognition for its accomplishments. In 2007, the U.S. Green Building Council selected Mueller as a pilot for its new rating system for planned communities, known as LEED for Neighborhood Development. Mueller has since earned Stage 2 Silver certification, making it the



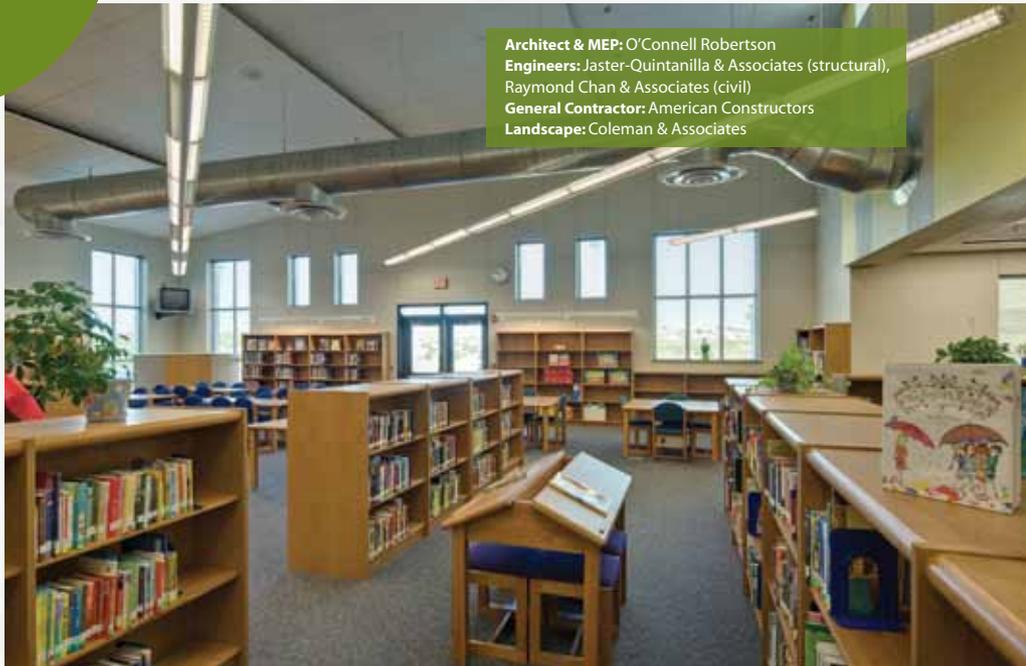
Retail stores provide some of the 10,000 new jobs projected for Mueller.



Mueller row houses, townhomes and single family homes have porches designed for getting to know the neighbors.

Photos: ©2009 Patrick Y. Wong

first certified Texas community. In 2008, Natural Home magazine placed Mueller among America's Top 10 Green Housing Developments. And in 2009, Mueller won an honorable mention at the International Economic Development Council's Excellence in Economic Development awards.



Architect & MEP: O'Connell Robertson
Engineers: Jaster-Quintanilla & Associates (structural), Raymond Chan & Associates (civil)
General Contractor: American Constructors
Landscape: Coleman & Associates

Overton Elementary earned a three-star rating and the USGBC Central Texas-Balcones 2009 Green School Award.



Architects: Pfluger Associates, Limbacher & Godfrey
Engineers: HMG & Associates (MEP), Jose I. Guerra (structural), Lopez Garcia Group (civil)
General Contractor: Bartlett Cocke
Landscape: Coleman & Associates

Garcia Middle School's ample natural light helps students, teachers and staff to be alert and productive.

Photos: ©2009 Patrick Y. Wong

Austin Independent School District

With 13 AEGB-rated projects and counting, Austin Independent School District (AISD) is aiming for an "A" in sustainability.

AISD committed to green, high-performance schools with the approval of the 2004 and 2008 bond programs, which prioritize sustainable practices across the district. Under these programs, new school buildings and additions must achieve a minimum two-star AEGB rating.

With the help of AEGB staff and a sustainability team made up of ACR Engineering, the Center for Maximum Potential Building Systems, Cotera+Reed and Studio D Consulting & Design, AISD had completed 13 AEGB-rated projects at the end of September 2009.

AISD's green building efforts have served as a catalyst for other district-wide sustainability efforts,

such as green housekeeping and integrated pest management programs. And in October 2009, the U.S. Environmental Protection Agency named AISD the number one green-powered school district in America for its participation in the Austin Energy GreenChoice® renewable energy program.

In addition to providing students, teachers and employees with the benefits of healthy, green buildings, AISD's efforts have created hands-on learning opportunities for local design professionals.

"For some of the design community, it was their maiden voyage in green building," said Paul Turner, executive director of facilities for AISD. "It's been a fantastic professional development opportunity."

AISD by the Numbers As of Sept. 30, 2009

AEGB-Rated School Buildings and Additions	13
2-star ratings	8
3-star ratings	3
4-star ratings	2
AEGB-Rated Project Savings	
Annual building water (gallons)	4,308,584
Annual irrigation water (gallons)	32,113,080
Annual energy (kWh)	3,521,152
Annual demand (kW)	1,210
Construction waste (tons)	4,646

Austin Climate Protection Plan

AEGB is helping Austin buildings reach the progressive energy efficiency goals set in the Austin Climate Protection Plan. Under the plan, by 2015, all new single family homes must be zero energy capable and commercial buildings should be 75 percent more efficient than the 2001 City of Austin energy code.

“It’s the first step of many when it comes to meeting Austin’s targets for energy efficiency and emissions reductions,” said AEGB manager Richard Morgan. “But it’s a very positive step.”

To achieve the objectives for single family homes, AEGB staff served on the task force that developed the Zero Energy Capable Homes plan. The plan defines “zero energy capable” as approximately 65 percent more efficient than the 2001 City of Austin energy code. At this level of efficiency, these homes will be capable of using net zero energy over the course of a year, with the addition of on-site electricity generation such as solar panels.

AEGB staff have worked diligently to ensure that the latest City of Austin energy code, slated for adoption in 2010, makes significant strides toward achieving these very high levels of efficiency in both commercial and residential construction. In addition, Austin Energy has partnered with the developers of the Guadalupe-Saldaña Net Zero Subdivision to build a prototype of a net zero development ahead of the 2015 deadline. Despite these advances, reaching the Climate Protection Plan goals will be an extraordinary challenge, demanding real innovation and a strong partnership with the construction industry.

“It can’t be done with technology or equipment efficiency alone,” said Richard. “It gets us thinking about how to design buildings that really work.”



Developer: Guadalupe Neighborhood Development Corporation
Architects: KRDB, Nelsen Partners, Studio Momentum, hatch + ulland owen
Sustainable Design Consulting: ACDDC
Civil Engineer: Jones & Carter

Guadalupe-Saldaña Net Zero Subdivision

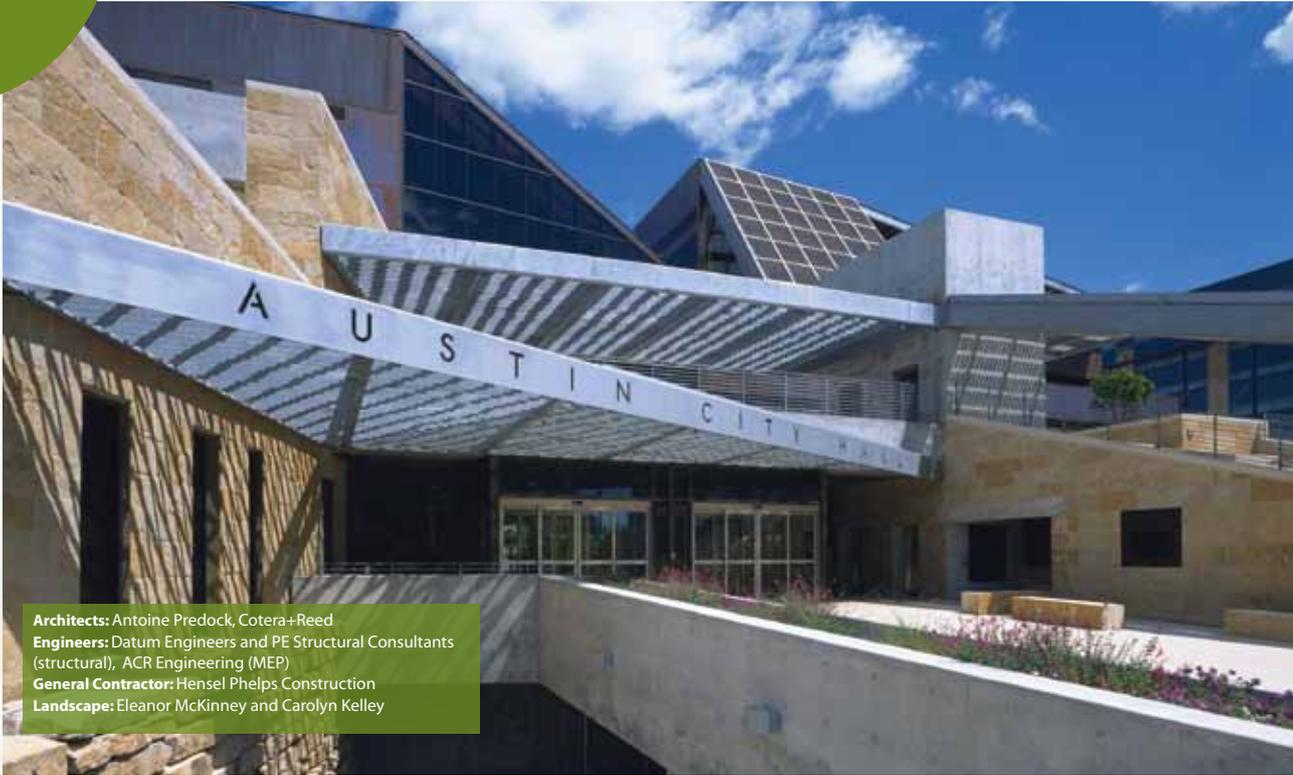
Though the Austin Climate Protection Plan won’t require new homes to be zero energy capable until 2015, two Austin organizations aim to design and build a net zero subdivision well before the deadline.

The Guadalupe-Saldaña Net Zero Subdivision, a partnership of non-profit Guadalupe Neighborhood Development Corporation and Austin builder Saldaña Homes, will feature 90 units of net zero capable green affordable housing. Of these units, 60 will have solar panels and should therefore consume net zero energy over the course of a year. The Austin Community Design & Development Center, an affordable green design non-profit, is providing sustainable design and project management services.

“Guadalupe-Saldaña is proving that zero net energy is feasible,” said AEGB manager Richard Morgan.

Guadalupe-Saldaña at a Glance

Location	East Austin at Webberville Road and Goodwin Avenue
Site	11.4 acres
Housing mix	90 units - Single family homes - Duplexes - Townhomes
Affordability	100 percent affordable housing - 35 percent tenant-occupied - 65 percent owner-occupied
AEGB rating goal	5 stars for all units
Net zero goal	60 units net zero - Solar panels and water heating provided by Austin Energy 30 units net zero capable - No funding available for solar panels
Projected completion	Late 2011



Architects: Antoine Predock, Cotera+Reed
Engineers: Datum Engineers and PE Structural Consultants (structural), ACR Engineering (MEP)
General Contractor: Hensel Phelps Construction
Landscape: Eleanor McKinney and Carolyn Kelley

© 2008 Timothy Hursley

City Hall, certified LEED Gold in 2006, embodies the City of Austin’s firm commitment to sustainability.

Pecan Street Project

The Pecan Street Project, an Austin clean energy non-profit, launched with a bold mission: to establish the City of Austin as America’s clean energy laboratory.

The vision was exciting enough to attract the volunteer labor of more than 100 local energy experts from the public and private sectors and academia. Working in teams, these participants developed a roadmap to the Pecan Street vision over nine months in 2009.

AEGB staff contributed to the effort by leading the energy efficiency team, responsible for devising strategies to make Austin’s building stock the most efficient in the nation. At the heart of the team’s recommendations was a transition from prescriptive building codes, which address the efficiency of individual building components, to performance-based building codes, which address whole-building energy consumption. The team’s technical report is being compiled with those of the other Pecan Street teams in a document slated for release in 2010.

The project is preparing to move from the planning to the implementation phase. The transition will be helped along by a \$10.4 million grant from the U.S. Department of Energy for the Pecan Street Project to develop a smart grid demonstration project at the Mueller Redevelopment, Austin’s award-winning green community.

Greening Municipal Buildings

As a national leader in green building, the City of Austin holds itself to high standards when it comes to its own buildings.

By Council resolution, municipal projects must earn LEED Silver certification. This standard applies not only to new construction, but to renovations, additions and interior finish-outs. New and existing buildings must adhere to green operations standards and take advantage of green infrastructure opportunities.

AEGB staff are driving these efforts by serving on the Interdepartmental Sustainability Working Group, the team implementing the standards. As members, AEGB staff have collaborated to develop sustainability guidelines and helped educate other city departments about LEED certification, green operations and green infrastructure.

Improving Existing Buildings

While AEGB’s primary focus is new construction, Austin’s existing building stock also represents a critical opportunity for energy savings. For many years, Austin Energy has offered rebates and incentives for a variety of energy efficiency upgrades. And in 2009, a new existing buildings policy took effect, known as the Energy Conservation Audit and Disclosure (ECAD) ordinance.

The ordinance is an innovative market transformation tool requiring building owners to have energy audits performed on their buildings and reveal the results to tenants and potential buyers. AEGB staff served on the task force responsible for developing the details of the policy.

From June to November 2009, 2,333 single family homes were audited and 45 commercial properties submitted ratings. The policy has created jobs for energy auditors and service contractors alike.

Shaping Green Building Across the State...

AEGB helps to influence environmental policy making at the state level by reviewing bills during the biennial sessions of the Texas Legislature.

The 2009 legislative session saw an unusually large number of bills related to energy efficiency and green building. Some of these bills concerned standards for state-owned buildings, statewide building codes, energy efficiency requirements for utilities and incentive programs for on-site renewable generation. AEGB worked with City of Austin government relations staff, legislators and their staff to analyze and improve these bills.

One bill passed that will significantly impact energy use and renewable energy. HB 1937 allows Texas cities to create so-called solar financing programs. These programs allow home and building owners to pay for energy efficiency upgrades and solar installations through increased property taxes, thereby avoiding high initial costs sometimes associated with these projects.



At Dell Children's Medical Center of Central Texas, attention to detail...

Across the Country...

The International Code Council, American Institute of Architects and ASTM International have partnered to develop the first national green building code, known as the International Green Construction Code.

AEGB is playing a key role in creating this new code. Manager Richard Morgan is serving as one of the 28 voting members of the Sustainable Building Technology Committee, the committee responsible for the three-year code development process. He also chairs the energy working group.

The first version of the code will be published in 2012. The committee aims for it to be a comprehensive, accessible and enforceable set of standards, adoptable by all code jurisdictions.



creates healing sanctuaries...

And Around The World

The Sustainable Buildings and Climate Initiative, a partnership of the United Nations Environment Programme and the global building sector, provides a platform to promote sustainable building practices worldwide. Focus areas include helping governments to choose policy tools that encourage green building and establishing international green building standards.

AEGB contributed to the initiative's efforts in 2008 and 2009 by participating in meetings with building sector stakeholders from around the world. At roundtable discussions in Madrid on sustainable building in cities, AEGB staff made a presentation on the City of Austin's green building successes.

Staff also participated in a symposium organized by the initiative in Washington, D.C., where over 80 invited building sector leaders collaborated for two days to refine a call to action on buildings and climate change. The document aimed to influence delegates to the December 2009 Copenhagen climate negotiations.



and beautiful vistas.



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Services

AEGB offers a range of services and resources for building owners, building professionals, decision makers and others interested in leading the transformation of the building industry to a sustainable future.

Building Rating and Consulting

AEGB rates new and substantially renovated buildings using a five-star scale assessing energy efficiency, water efficiency, materials, site, indoor environmental quality, community impact and innovation. During the rating process, AEGB staff members become an integral part of the project design and construction teams, helping developers, owners, architects, builders, engineers and consultants set and achieve their sustainability goals. Services include the following:

- Building rating using the AEGB single family, multifamily and commercial rating tools
- Goal-setting for energy and water use, indoor environmental quality, resource conservation, pollution control, site, building orientation, systems and materials selection
- S.M.A.R.T. Housing™ compliance assistance
- Sustainability consulting and design charrette coordination

- Project document review from the programming phase to occupancy
- Marketing and promotion of sustainability efforts

Resources and Education

Laymen and building professionals alike can benefit from AEGB’s educational opportunities and resource offerings.

- Seminars: Free monthly professional development seminars for building professionals on a variety of current topics, with continuing education credits available from the American Institute of Architects and the Texas Institute of Building Design
- Green By Design: A quarterly workshop on building and renovating green single family homes, appropriate for green building beginners
- Green Boots: A green building education series for single family construction, suitable for trade contractors, architects and builders
- Online resources: Case studies, a directory of local professionals, an events calendar, a guide to rebates and loans, fact sheets and more
- Customized presentations and trainings

Program Development Consulting

For over 15 years, AEGB staff has worked to help cities, utilities and other organizations develop green building programs and sustainability plans through the Manage It Green consulting program. Services include:

- Developing guidelines for green construction, operations and maintenance
- Developing local building rating systems
- Creating educational and marketing materials
- Assistance with rebates and incentive programs
- Consulting on projects outside the Austin Energy service area

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Acknowledgments

Austin Energy Green Building would like to thank all those who make our jobs possible.

We are grateful to City Council, the mayor, the city manager and Austin’s citizens. Without their vision for a livable and sustainable city, we would not be tasked with the many challenges that get us up every morning.

We are grateful to Austin Energy’s leadership team and our colleagues. Because they value and cultivate conservation, the work we love to do is recognized as a critical function of a successful utility rather than mere “environmentalism.”

And we are grateful to Austin’s green building community, especially the project teams whose buildings we rate. Without their commitment to sustainability, innovation and making Austin an even better place to live, our work could not exist.



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AEGB Staff:

- Front row, from left to right
 Lisa Nutt, Anne Johnson, Maureen Scanlon, Sophie Roark, Liana Kallivoka, Mary McLeod, Susan Peterson, Shelly Comer, Sarah Talkington, Patricia House
- Back row, from left to right
 Michael Husted, Teresa Dixon, Jeff Wacker, Jessica Galloway, John Umphress, Katherine Murray, Richard Morgan, Bryan Bomer
- Missing - Miki Cook

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Austin Energy Green Building 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.

12	Trees
5331	Gallons of Water
4	Million BTUs of Energy
324	Pounds of Solid Waste
1107	Pounds of Greenhouse Gases

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

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