

# TOWARD A SUSTAINABLE DALLAS

An Overview of LEED,  
Green Building Programs  
and recommendations for  
next steps

Presented to the  
Dallas City Council

OCTOBER 17, 2007



# Purpose

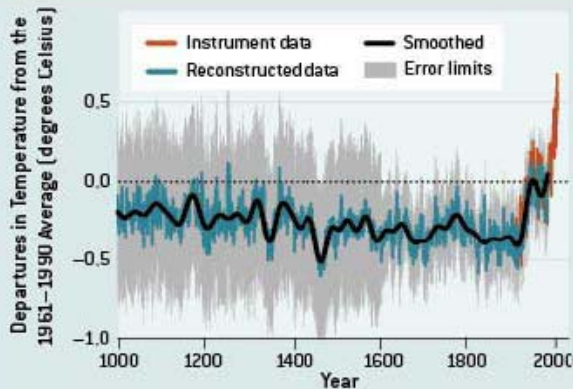
---

- Demonstrate the environmental impact of buildings and the benefits of green building
- Provide an overview of LEED and Green Building Programs
- Provide an overview of the Dallas Green Building Program
- Provide recommendations for implementation of a green building program for all residential and non-residential construction in the City of Dallas

# An Overview

## THE HEAT IS ON

A U.S. senator has called global warming the "greatest hoax" ever foisted on the American people. But despite persistently strident rhetoric, skeptics are having an ever harder time making their arguments: scientific support for warming continues to grow.



This "hockey stick graph," from one of many studies showing a recent sharp increase in average temperatures, received criticism from warming skeptics, who questioned the underlying data. A report released in June by the National Research Council lends new credence to the sticklike trend line that traces an upward path of temperatures during the 20th century.

Source: Scientific American September 2006

## The problem

- The U.S. holds less than **5%** of the world's population but produces nearly **25%** of global carbon emissions.

Source Scientific American September 2006

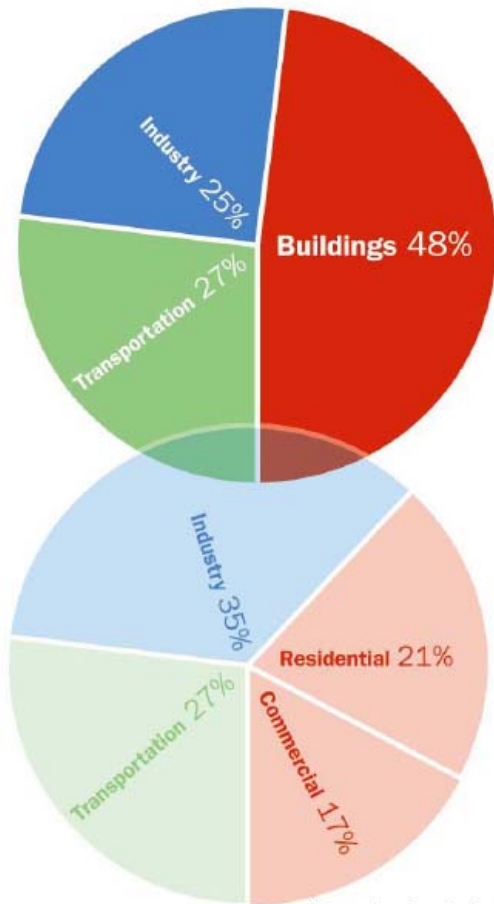
- National Climatic Data Center Reports 2006:

**2.2 degrees** warmer than average

**.07 degrees** warmer than 1998

**6<sup>th</sup> warmest year** on record

# An Overview



Source: American Institute of Architects

## It's the buildings...

- Building design, construction, materials and operation consume more energy than any other part of the economy.
- U.S. Building Sector:
  - **9.8%** of carbons worldwide
  - Same as entire economies of Japan, France, and the United Kingdom

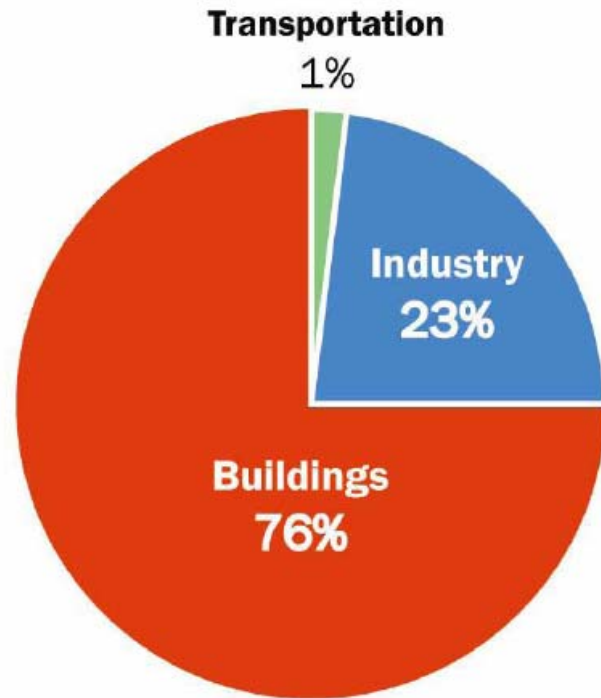
# An Overview



## It's the buildings...

- **300 billion square feet** of buildings in the US are the single largest contributor to global warming in the country
  - **48%** of all energy consumption and greenhouse gas emissions (GHG) in the US annually is from buildings
  - **76%** of all power plant generated electricity is used to operate buildings globally.

# An Overview



*Source: American Institute of Architects*

## Who uses the power?

- Operating buildings consume electrical power at an amazing rate
- The U.S. alone is projected to need **1,300 to 1,900** new power plants over the next 20 years – **1 per week.**

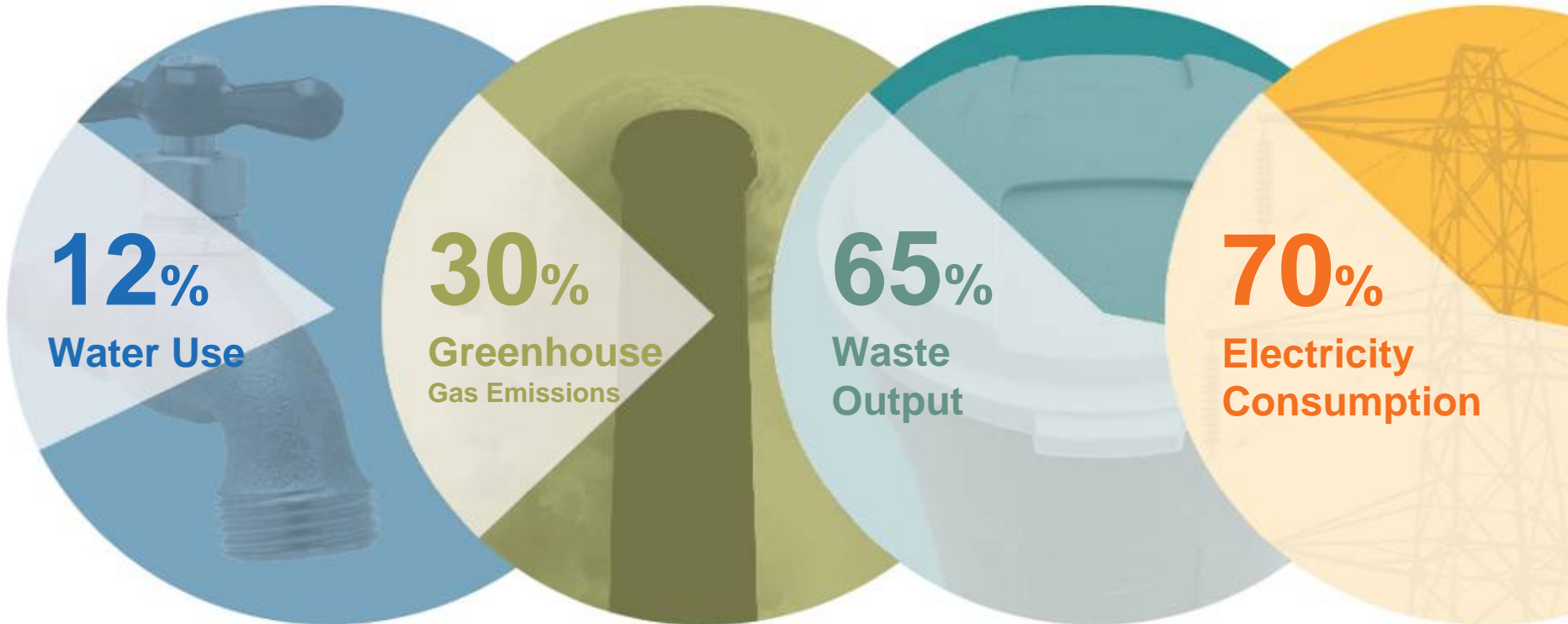
# An Overview



## How about the homes?

- Our housing stock in the United States consumes roughly **20%** of our primary energy and raw materials
- And accounts for **one-fifth** of our nation's climate changing pollution (**5%** of the world's)

# Buildings in the U.S. use:



# GREEN BUILDING

---

- Design and construction practices that **significantly reduce** or **eliminate** the negative impact of buildings on the environment and occupants.
- How can building differently make a difference?
- What are strategies for implementation?

# Average Savings of Green Buildings



**ENERGY SAVINGS**  
**30%**



**CARBON SAVINGS**  
**35%**



**WATER USE SAVINGS**  
**30-50%**

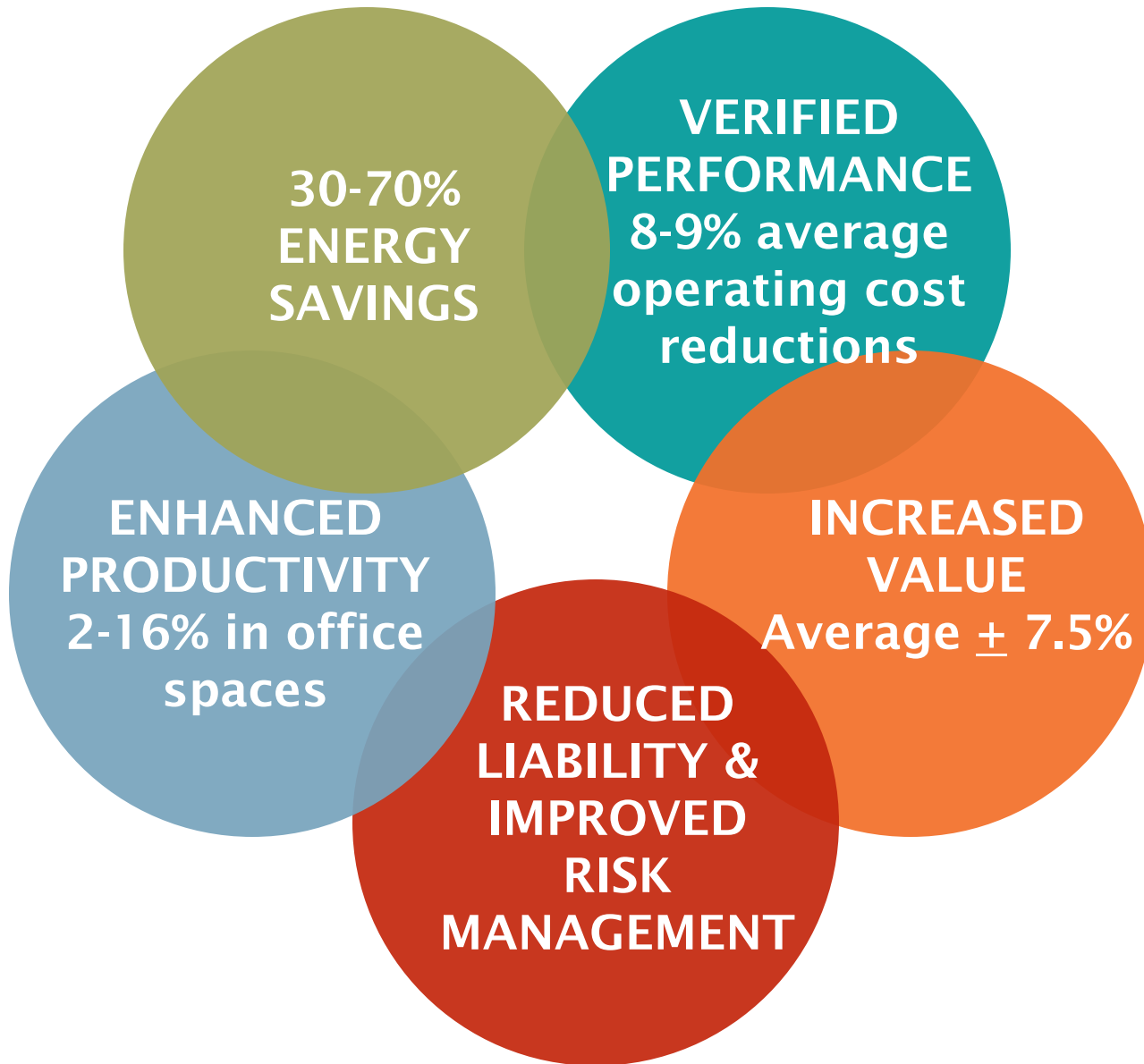


**WASTE COST SAVINGS**  
**50-90%**



Source:  
Capital E

# Improved Bottom Line.



# Differing points of View

- **Pros** - On economic value and cost:

- **78%** of property managers believe sustainable buildings can command 10% higher rents

- Massachusetts study - **1.5 to 2.5%** cost premium returned **10 to 20** times the benefit

*Source: Capital E Greening America's Schools  
October 2006*

- **87%** of business would prefer an efficient building to an iconic one

*Source: Gensler 2006*

- **Cons** - On economic value and cost:

- **57%** of developers in the U.S. still believe business is not prepared to pay higher costs.

- **64%** industry believe first costs biggest obstacle

*Source: McGraw Hill Green Building SmartMarket  
Report 2006*

# Strategies for Implementation



**Stands for:  
Leadership in Energy &  
Environmental Design**

A system for designing, constructing, operating and certifying green buildings.

A product of the US Green Building Council

# LEED



- **Site planning**
  - Careful planning
  - Restore habitat
  - Storm water management
  - Limited irrigated landscape
- **Water efficiency**
  - More efficient fixtures
  - Water re-use

# LEED



- **Energy efficiency**
  - Alternate energy sources
  - High performance building enclosure (walls and roof)
  - Ozone protection
  - Building orientation to minimize heat gain
  - Less operating energy required
  - Downsize air conditioning and heating systems

# LEED



- **Conservation of materials**

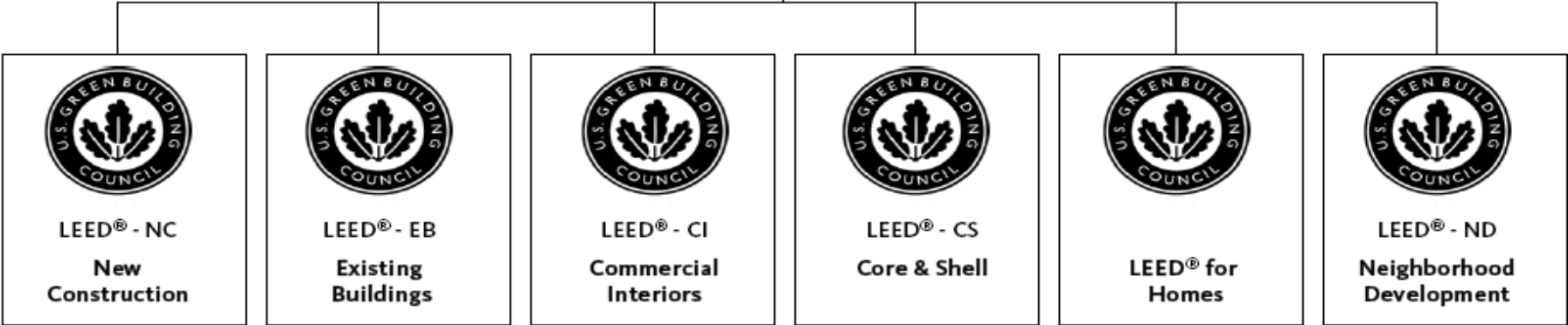
- Source reduction and waste management
- Use recycled materials
- Ability to reuse
- Locally procured
- Occupant recycling

- **Indoor environmental quality**

- Control and efficiency
- Infiltration and air exchange
- Tobacco smoke control
- Sustainable cleaning products
- Day lighting and views

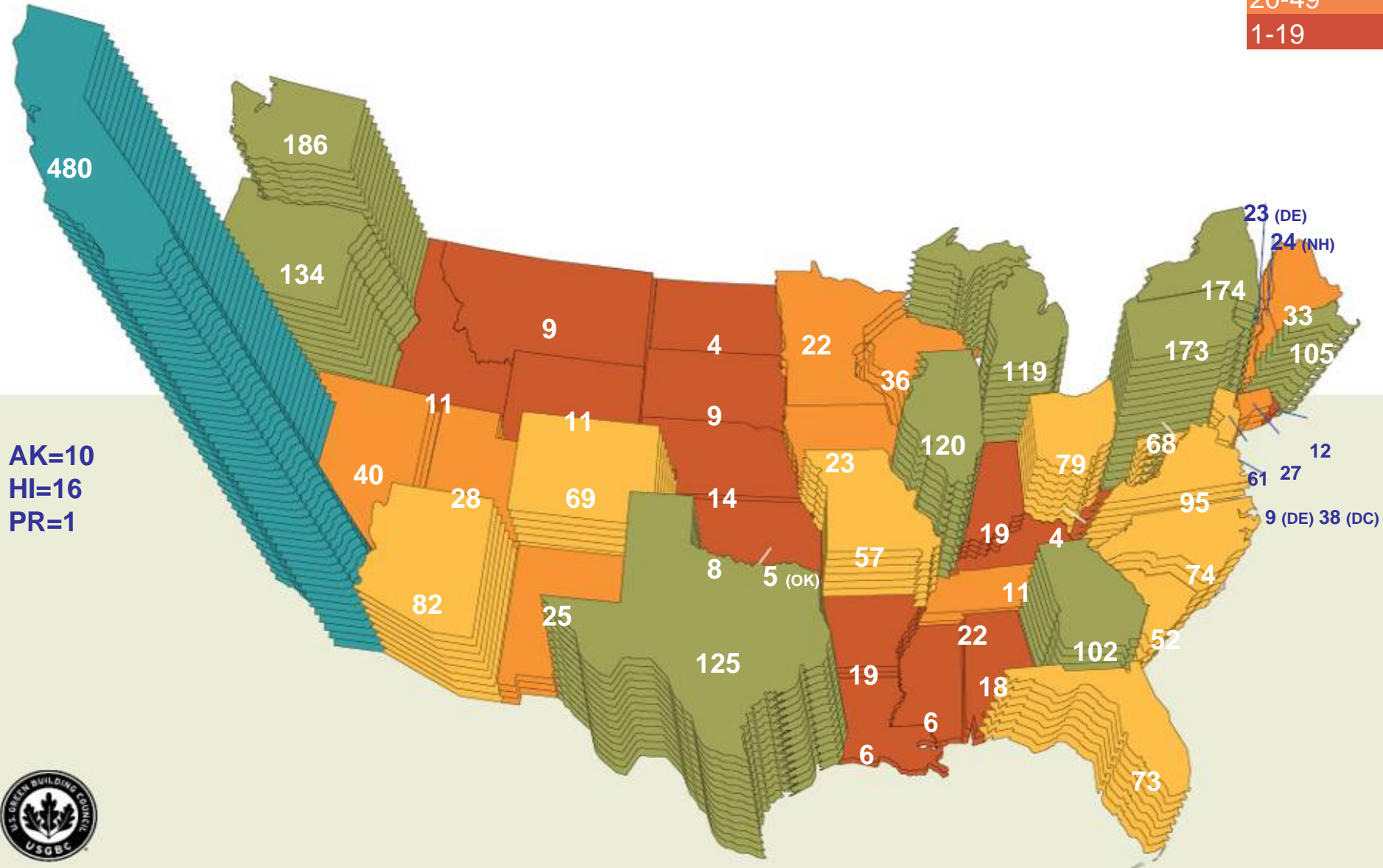
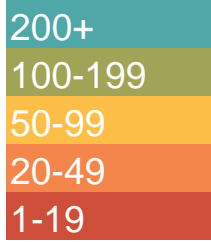
# Levels of LEED Ratings

## Rating System Product Portfolio



# LEED for new construction buildings as of 07/06

## Distribution by geography



AK=10  
HI=16  
PR=1



# LEED in the City of Dallas



- Adopted on **January 22, 2003** – all projects over **10,000 s.f.** starting with the 2003 Bond Program will be LEED Silver Certified
- As of today, over **120** projects throughout DFW are seeking LEED certification
- **22** are City of Dallas Projects

# LEED in the City of Dallas



## Why Dallas adopted LEED?

- Long term operating cost savings
- To facilitate positive results for the environment, occupant health and financial return
- LEED allows a way to measure and compare “green” facilities
- Prepared to pay initial higher cost in exchange for higher return on building maintenance and operation costs
- To practice leadership by example

# Dallas LEED Buildings



## Jack Evans Police Headquarters - Home of the Dallas Police Department, the six-story structure is just over **350,000 s.f.**

- The design focused on reducing heat gain through passive design and energy load reduction strategies.
  - Higher wall insulation values
  - Reflective roof material
  - Occupancy sensors in spaces
- The building is expected to use **40% less energy** and generate **\$246,000** in annual savings.
- Project developed on a Brownfield site.
- **100%** of building irrigation is from collected and stored rain water
- Reduced use of potable water by **50%**
- Diverted **80%** of the construction waste from the landfill
- Over **25%** of the building materials manufactured regionally.
- Implemented Indoor Air Quality plan during construction.
- LEED Silver certified December 2005

# Dallas LEED Buildings



**Northwest Service Center (NWSC)** - A **92,271** square foot maintenance complex that sits on a **17-acre**, site in Northwest Dallas.

- Project developed on a Brownfield site
- The vehicle wash facility utilizes a wastewater reclamation system and enjoys a **68.4%** reduction in water use.
- Water saving devices include water free urinals and low flow fixtures.
- Over **56%** of the materials used (by value) included recycled content.
- The complex contains over **10,000 square yards** of recycled content concrete and 646 tons of recycled steel.
- Over **80%** of the project's materials were manufactured within **500** miles of the project site.
- Extensive Indoor Air Quality (IAQ) program was implemented.
  - No smoking, eating and drinking inside the buildings during the construction process.
  - All materials properly stored and protected from weather and cross contamination.
  - During installation of mechanical equipment all ductwork was cleaned and protected.
- LEED Gold certified November 2006

# Dallas LEED Buildings



**Mc Commas Eco Park – A**  
20,000 s.f. research, training and  
technology center

- **Tilt wall construction with additional insulation combined with structural insulated roof panel system to provide a high building thermal mass for reduced energy cooling requirements**
- **Extensive use of day lighting strategies with sun shading devices**
- **LEED Silver certified 2005**

# Dallas LEED Buildings



## Hensley Field Operations Center – An **80,000 s.f.** replacement vehicle maintenance center.

- Highly efficient plumbing fixtures to reduce water usage by **50%**
- Highly efficient lighting fixtures and day lighting strategies to reduce electrical usage by an estimated **25%**.
- Photovoltaic (solar panel) array to offset electrical usage of the facility.
- Roof-top cistern for use of rainwater to irrigate interior plants instead of potable (treated) water. Native landscaping across the site, eliminating the need for an irrigation system
- Geo-thermal well system for cooling and in order to reduce equipment sizes.
- Recycled/reused over **85%** of the waste generated by construction.
- Almost **25%** of all the construction materials used are made up of recycled content.
- Over **80%** of the construction materials used were manufactured locally, and over **40%** of those materials were extracted regionally.
- LEED Gold certified December 2005

# Dallas LEED Buildings



**South Central Police Building-** a **35,000 s.f.** facility.

## Proposed strategies:

- Use of geothermal system for up to 58% reduction in energy cost
- 30% reduction in water consumption through use of low flow fixtures.
- Low emitting adhesives and sealants
- Collection of rain water from rooftops for irrigation
- Permeable paving for overflow public parking
- Energy star roofing system

# Dallas LEED Buildings



**Homeless Assistance Center**- A **58,000 s.f.** facility to empower homeless individuals and families to sustain and maintain permanent housing.

- Green Roof over Food service pavilion
- Grey water system
- All storm water is treated onsite before being released into the public storm water drain system.



**Fire Station #38** - A **12,300 s.f.** replacement fire station with two full apparatus bays and two half bays, capable of supporting 15 firefighters per shift.

- All storm water is treated onsite before being released into the public storm water drain system.
- Incorporates a green housecleaning plan, including detergents with no phosphorous.

# Green Building incentives



## Current incentives for private developments in Dallas

- Revised Building and Development Codes to allow sustainable development practices
- Trade floor area ration (FAR) in Planned Developments for LEED buildings
- Offer expedited review and issuance of Building Permit for LEED and Energy Star projects

# LEED Policy Update



## Public Works and Transportation 2006 Bond Program facilities

- Increase requirement for all City funded facilities to meet LEED 2.2 NC **Gold**.
- In addition to all LEED system prerequisites, these additional points must be achieved:
  - **WE Credit 3.1 – Water Use Reduction: 20%**
  - **EA Credit 1 – Optimize Energy Performance** - a minimum of **3** points must be achieved

# Other Green Building Programs



# Local government activity

**A recent survey report by the U.S. Conference of Mayors revealed that:**

- **9 out of 10** cities anticipated requiring in the next year that new city buildings be energy efficient, healthy and environmentally sustainable.
- **87%** of cities require, or anticipate requiring in the next year, that city government buildings undergoing major rehabilitation be energy efficient, healthy and environmentally sustainable.
  - **56%** have a policy in place
  - **31%** anticipate they will adopt such a policy in the next year

# Local government activity

- **2 in 3** cities have changed, or are in the process of changing, their residential and commercial building codes and/or ordinances to encourage that buildings undergoing major rehabilitation be energy efficient, healthy, and environmentally sustainable.
- **78%** of cities are undertaking efforts to encourage the private sector to construct buildings that are energy efficient, healthy and use sustainable building techniques
- **88%** of cities are undertaking efforts to educate the public about the importance of making buildings energy efficient, healthy, and environmentally sustainable
- **3 in 4** cities have changed, or are in the process of changing, their residential and commercial building codes and/or ordinances to encourage construction of new buildings that are energy efficient, healthy, and environmentally sustainable.

# Portland



- Requires Gold certification for City facilities
- City with the most LEED certified buildings in the US
- A **\$2.5 million fund** for green building incentives in the commercial and residential markets
- The highest free public bike-to-work rate

# Boston



- Green building task force launched in 2003
- Article 37, enacted in **January of 2007**, requires all major new construction and rehabilitation projects to earn 26 LEED-NC points to be **“LEED certifiable”**
- **LEED Silver** rating standard as goal for public buildings

# Washington, DC



- The bill passed on **November 12, 2006** requires all commercial development of **50,000 square feet** or more to meet the US Green Building Council's standards starting in **2012**.
- All city-owned commercial projects **funded in 2008 or later** would have to attain certification, and district-funded housing projects would be required to follow similar environmental standards.

# San Francisco



- Green building ordinance adopted in **2004** requires all new city-owned and leased projects to achieve LEED Silver
- Passed a **\$100 million solar bond** measure to install large solar systems
- The Mayor of San Francisco's Task Force on Green Buildings recently completed a report outlining actions that can be taken by the city.
  - A phased approach for achievement of LEED (Certified in 2008 and Gold by 2012) or GreenPoint (25 points in 2009 and 75 points by 2012) certification.
  - A range of incentives for superior performance (development, financial, permit process improvements),

# Minnesota



- A home that is registered with the program and is shown to meet its requirements through verification during design and construction will be certified as a Minnesota Green Homes Remodel.
- In addition to the benefits listed above, certified projects may qualify for:
  - Mortgage and home equity rate discounts
  - Rebates on building materials and products
  - Tax credits
  - Preferred utility rates
  - Preferred homeowner and health insurance rates

# San Antonio



- City of San Antonio's Economic Development Department has an Incentive Scorecard for developers.
- Points are supplied to projects that are participating in the LEED certification program. Score more than **90 pts.**, project may be eligible for the following benefits:
  - 100% Reduction in License Fees For Use of Public Right-of-Way;
  - 100% Reduction in Closure of Public Right-of-Way Fees;
  - 50% Reduction in Per Square Foot Fee of Barricade Permit;
  - 50% Reduction in Temporary Street Closure Fees;
  - 100% Waiver of Preliminary Review Fees;
  - 100% Waiver Plan Review by Appointment Fees; and
  - Rebate up to \$100,000 per project in SAWS Water and Sewer Impact Fees. In mixed-use projects, waivers or rebates are limited to the portion of impact fees associated with the residential component of the project.

# Austin



- The Residential Green Building Program rates new and remodeled homes using sustainable guidelines on a scale of **1 to 5 stars**: the more stars the more green features in the home.
- Homes are rated in six areas:
  - Energy efficiency
  - Testing
  - Water efficiency
  - Materials efficiency
  - Health and safety
  - Community
- Homes may qualify for rebates or free home energy improvements

# Frisco



- **Residential green building program** adopted in **2005**; contains standards for energy efficiency, water efficiency, waste recycling and indoor air quality of homes.
- Minimum standard of energy efficiency for homes based on **EPA's Energy Star**
- **Commercial green building program** adopted in **2006** contains provisions for energy efficiency to mitigate urban heat island and create a pedestrian environment; construction waste management and recycling; water conservation and education.

# Green Built North Texas



Green Built<sup>™</sup>  
North Texas  
- A Home Builders Association Initiative

- **Greenbuilt's** resource-efficient, green homes follow guidelines set forth by the Home Builders Association's Green Built North Texas program.
- These guidelines address strategies for improving energy efficiency, water efficiency, indoor air quality, material usage, site management, waste recycling and cleaner electricity.

# Habitat for Humanity



- Dallas initiated pilot project in which **6** residences financed through a **Sustainable Skylines EPA grant** are built to LEED for Homes certified level and Greenbuilt North Texas in **2008**.
- **LEED for Homes** has been chosen as one of the standards because the system addresses all issues of building efficiency/sustainability and requires external verification.
- **Green Built North Texas** has been chosen because it has been adopted by the Homebuilder's Association of North Texas.

# Dallas



Established a green building task force in **spring of 2007** with members from the residential and commercial sectors to develop recommendations with the following goals:

- To advance public policies and programs that encourage or require private sector green building practices
- To help meet the state implementation plan (SIP) for the DFW region

# Dallas Green Building Task Force

- Divided into:
  - Commercial Buildings
  - Residential Buildings
  - Land Development
- Membership from: US Green Building Council, Urban Forest Advisory Committee, American Institute of Architects, Environmental Health Commission, North Texas Homebuilder's Association, Texas Real Estate Commission, commercial developers and City Staff

# Task Force Next Steps

- Define standard for “green” for:
  - Housing
  - Commercial construction
  - Small vs. large projects
  - New vs. renovation projects
- Produce report with recommended actions for the City to develop a green building program for all residential and non-residential projects in the City of Dallas, including code and ordinance changes
- Recommend education and outreach activities for the building community and building owners
- Suggest implementation methods and resources for City Staff.
- Provide timeline for phasing in and implementation of the green building program
- Present recommended plan to Council

# Task Force Next Steps

- **For Land Development:**
  - Council approved funds for FY 07/08 to hire a consultant to transform the NCTCOG's iSWM storm drainage design guidance manual into City Code.
  - Task force to work with consultant to recommend development code additions to Council.
  - Task force to solicit input from and educate the design community and developers.

# Recommendation

- **October 24, 2007** – Authorize Resolution:
  - **The City Manager is to solicit input from a wide variety of building industry representatives and building owners in developing a green building program and standards for private development in Dallas.**
  - **The City Manager is to report back to Council by March 12, 2008 with recommendations for the components of a green building program, including the standards for “green” construction in Dallas, training and education programs for the building industry, and other implementation steps for the greening of buildings;**
  - **The goal is that in the future, all new buildings in the City will be built “green”, and all renovation projects in the City will be built “green” to the greatest extent possible considering the nature and limitation of the specific remodeling work.**