



THE AMERICAN
INSTITUTE
OF ARCHITECTS

Issue Brief

The American Institute of Architects • Government Advocacy • Federal Issue Position and Analysis

Key Points

- *Buildings are major users of energy. They are also major generators of air pollution, waste and stormwater runoff.*
- *America needs to make a national commitment to the construction of more high-performance, energy-efficient buildings.*
- *The risks of climate change are so significant that immediate action is necessary to use market-based methods to slow and reverse the growth in the nation's production of greenhouse gases.*
- *Technologies now exist that diminish the environmental impact of a building, but may require a higher "up-front" capital expenditure. These technologies often pay for themselves in energy savings alone over the lifetime of the building.*
- *The AIA supports a transparent, consensus process for developing green building standards.*

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Sustainable Design / Energy Conservation and the Built Environment

AIA Position

The American Institute of Architects (AIA) supports a dramatic increase in the number of high-performance, energy-efficient "green" buildings constructed in both the public and private sectors. This change is vital to America's goal of reducing our dependence on foreign energy sources while protecting the environment and the public health and safety of all Americans. The AIA believes achieving this goal will require a significant federal legislative commitment to changing the incentives for energy use.

Action Sought

The AIA urges the following legislative steps: (1) The AIA supports legislation that would cap greenhouse gas production and allow the trading of production "credits" as a means of cost effectively slowing and reversing trends in climate change; (2) The AIA will work with the National Institute for Building Sciences (NIBS) to assess the effectiveness of current voluntary rating systems and consensus standards for high performance buildings, evaluate where additional research is needed and recommend steps to accelerate the development of such standards; (3) The AIA supports funding a pilot project to demonstrate the lifecycle cost-effectiveness of "green" design in public buildings and the economic impact of legislation to create tax incentives (accelerated depreciation) for private sector owners of "green" buildings. This tax relief would be based on a consensus-based standard such as those being studied by NIBS. The AIA also supports a transparent, consensus process, undertaken by a national body, to develop green building standards that include life-cycle costing, regional climate differences, environmental context, and building type differences.

Explanation and Justification

Buildings are major users of energy. They are also major generators of air pollution, waste and stormwater runoff. Technologies now exist that diminish the environmental impact of a building. These technologies often pay for themselves in energy savings alone over the lifetime of the building. The AIA believes that the cost savings and environmental benefits that can be realized throughout the lifetime of a building far outweigh the initial costs of building green.

Capping greenhouse gas emissions will create incentives to build more energy-efficient structures and renovate existing structures to reduce energy consumption.

The Energy Policy Act of 2005 tasks the Energy Department with the responsibility of entering into an agreement with the National Institute of Building Sciences to:

- assess whether current voluntary consensus-based standards and rating systems for sustainability in architecture are consistent with the current state of the art, including relevant research and development activities of the Department
- determine if additional research is needed to implement these standards
- recommend steps for the Energy Department to take to accelerate the development of consensus standards for high-performance buildings.

The AIA will work with NIBS and the DOE in this effort.

What America Thinks: In a recent nationwide poll of voters (1,000 sample, margin of error +/- 3.1) conducted January 3-5, 2006, by two respected national pollsters—The Tarrance Group, a Republican firm, and Lake Snell and Perry, a Democratic firm—74 percent of voters polled said that “government *should take the lead* in promoting real estate development that conserves our natural resources such as oil, gas, and electricity.”

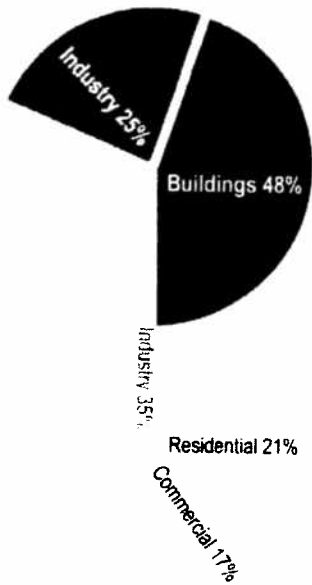
In addition, 71 percent of voters polled believe that “global warming is already having an affect on weather, and government should immediately put into effect new energy policies that drastically reduce greenhouse gas emissions that maybe causing climate damage.”

Reinforcing the public popularity of “green” buildings, it was also found in the Tarrance-Lake poll that 84 percent of voters said they agreed with the statement, “New tax breaks should be given to encourage the design and construction of buildings that significantly reduce pollution and energy consumption.” Voters in demographic groups across the board were strongly in agreement on this issue.



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Architects and Climate Change

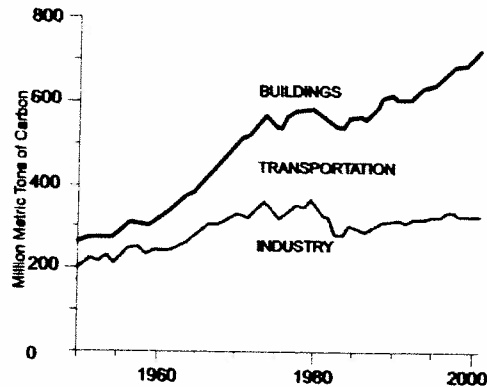


GRAPHIC 1: Combining the annual energy required to operate residential, commercial, and industrial buildings along with the embodied energy of industry-produced building materials like carpet, tile, glass, and concrete exposes buildings as the largest energy consuming and greenhouse gas emitting sector.

Key Points

- ↔ *The biggest source of emissions and energy consumption both in this country and around the globe: buildings.*
- ↔ *The Building Sector, as the major U.S. and global source of demand for energy and materials that produce by-product greenhouse gases, is poised to fuel the world's rush toward climate change.*

Buildings Account For Half Of All Greenhouse Gas Emissions



GRAPHIC 2: U.S. CO2 Emissions by Sector.

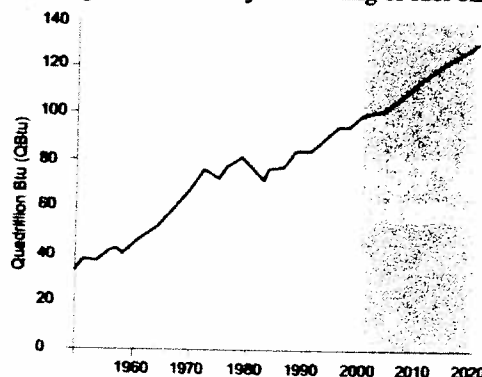
In our quest to dramatically cut greenhouse gas emissions and lessen our dependence on fossil fuels, we have overlooked the biggest source of emissions and energy consumption both in this country and around the globe: buildings and the energy they consume each year. Buildings and their construction account for nearly half of all the greenhouse gas emissions and energy consumed in this country each year. This includes energy used in the production and transportation of materials to building construction sites, as well as the energy used to operate buildings. Globally the percentage is even greater. The Building Sector is the key source of demand for energy and materials that produce by-product greenhouse gases.

U.S. annual energy consumption is projected to increase by 37% (34 quadrillion Btu) and greenhouse gas emissions by 36% over the next twenty years. Annual global energy consumption is projected to increase by 54% (230 quadrillion Btu) over this same period.

Building Sector Emissions Are Increasing Dramatically

Buildings have a lifespan that lasts for 50 to 100 years throughout which they consume energy and produce emissions. The Building Sector as the major U.S. and global greenhouse gas emitting sector, is poised to fuel the world's rush toward climate change. The U.S. alone is projected to need 1,300 to 1,900 new power plants over the next 20 years (about one power plant per week). Most of this new energy will be needed to operate buildings.

The United States will add 22 million buildings that will not only consume electricity produced at a central power plant, but also directly burn oil, natural gas and/or propane in boilers, furnaces and hot water heaters. In fact, 58% of end-use energy needed to operate a building is consumed by the burning of fuel onsite.



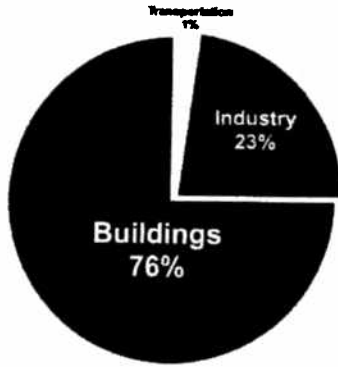
GRAPHIC 3: U.S. Energy Consumption Projections

1 quadrillion Btu is equal to annual energy output of 40 - 1,000MW power plants.



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Architects and Climate Change



GRAPHIC 4: 76% of all power plant generated electricity is used just to operate buildings.

Key Points

- *Architects know that buildings can be designed to operate with less than half the energy of today's average U.S. building at little or no additional cost*
- *By the year 2035, three quarters of the built environment in the U.S. will be either new or renovated.*

This Background Sheet was prepared in collaboration with Edward Mazria AIA, founder of Architecture 2030. For further information see www.architecture2030.org or contact: info@architecture2030.org. The AIA, through its Sustainable Design Task Force and its Committee on the Environment, is working to develop a detailed action plan to meet the greenhouse gas reduction goals set out above.

A Perspective On How To Curb Emissions

Scientists tell us that in order to avoid dangerous climate change we must keep global warming under 2°C above pre-industrial levels (we are currently at 0.7°C above pre-industrial levels). To avoid exceeding this threshold a way forward would involve:

- Promoting sustainable design including resource conservation to achieve a minimum 50 percent reduction from the current level of consumption of fossil fuels used to construct and operate new and renovated buildings by the year 2010.
- Promoting further reductions of fossil fuel consumption by 10 percent or more in each of the following five year intervals so that the cumulative reduction from today's baseline is:

60% in 2015

70% in 2020

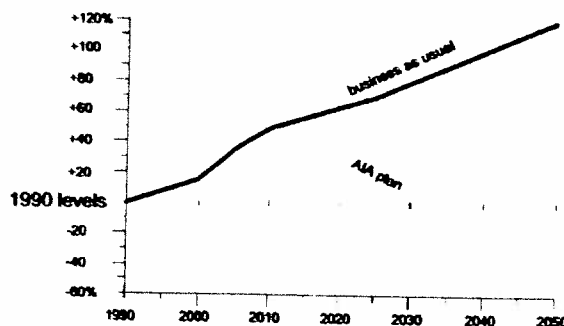
80% in 2025

90% in 2030

carbon-neutral by 2035 (Meaning that the construction and operation of buildings will no longer require the consumption of fossil fuel energy or the emission of greenhouse gases.)

- Driving these reductions through: 1) creating building performance standards in building codes and standards to address private sector structures, and 2) creating governmental mandates that federal and state buildings meet energy efficiency targets.
- Supporting government action to use incentive-based regulatory means to reduce greenhouse gas emissions.

Architects know that buildings can be designed to operate with far less energy than today's average U.S. building at little or no additional cost. This is accomplished through proper siting, building form, glass properties and location, material selection and by incorporating natural heating, cooling and ventilation and day-lighting strategies.



GRAPHIC 5: By enacting a Building Sector initiative like this we can meet a greenhouse gas reduction target of 40% to 60% below 1990 levels by 2050.

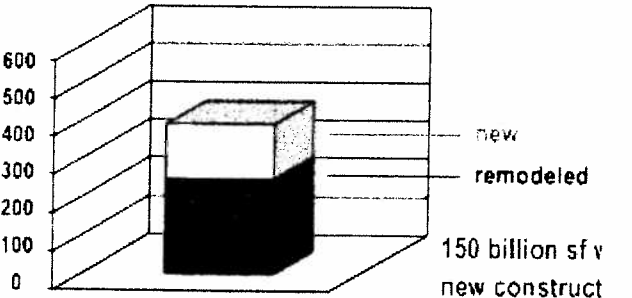
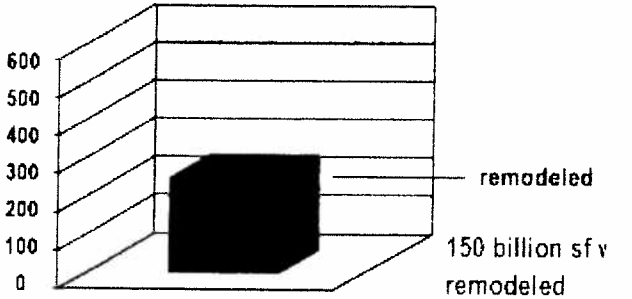
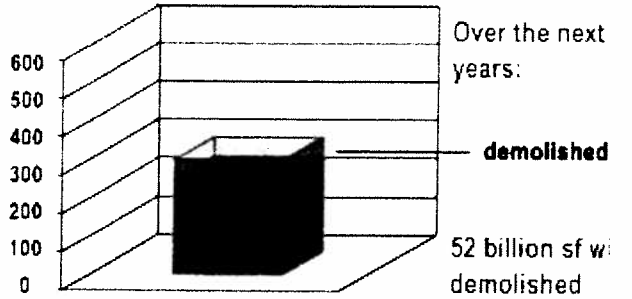
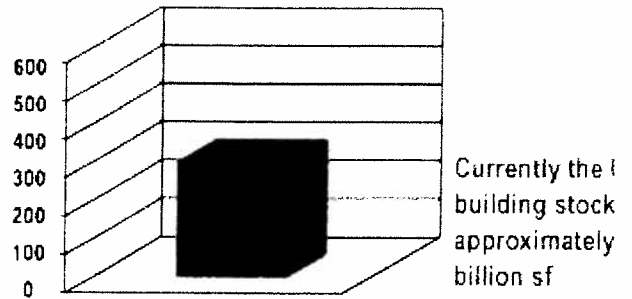
With about 5 billion square feet (sf) of new construction, 5 billion sf of renovation and 1.75 billion sf of demolition taking place in the U.S. each year, by the year 2035, three quarters of the built environment in the U.S. will be either new or renovated. This transformation over the next 30 years represents a historic opportunity for the U.S. architecture and building community, with the support of the federal government, to lead in addressing greenhouse gas emission reductions.



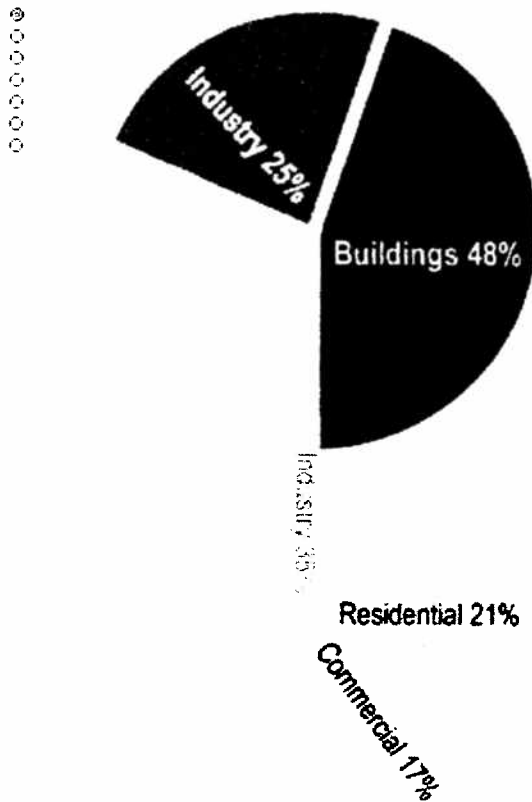
It is time for us to lead in the race against dangerous climate change

In the year 2035, three quarters of the built environment in the U.S. will be either new or renovated. This transformation over the next 30 years represents a historic opportunity for the architecture and building community to reverse the most significant crisis of modern time, climate change.

Billion Square Feet (sf)
Source: AIA Research Corporation



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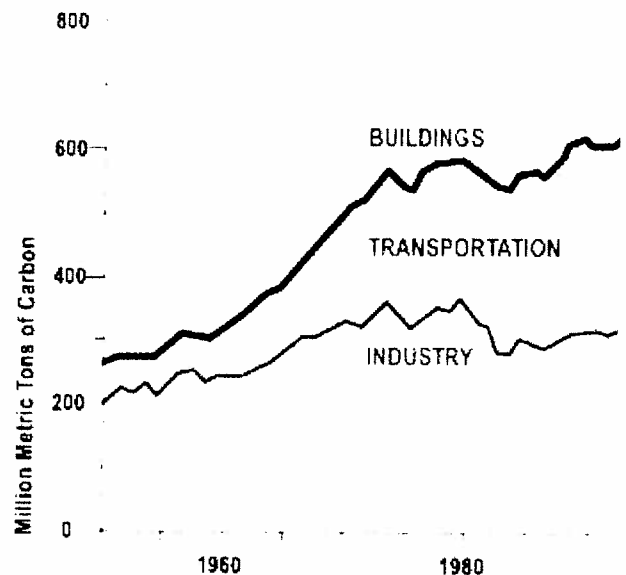
U.S. ENERGY CONSUMPTION BY SECTOR

Source: U.S. Energy Information Administration statistics Graphic Published first in Metropolis Magazine, October 2003 Issue.

“Unknowingly, the architecture and building community is responsible for almost half of all U.S. greenhouse gas emissions annually. Globally the percentage is even greater.”

next

Combining the annual energy required to residential, commercial, and industrial buildings along with the embodied energy of industrial produced building materials like carpet, tile and concrete exposes buildings as the largest energy consuming and greenhouse gas emitting sector.



U.S. CO₂ EMISSIONS BY SECTOR

Source: U.S. Energy Information Administration statistics



State of New Mexico

Office of the Governor

Bill Richardson
Governor

EXECUTIVE ORDER 2006-001

STATE OF NEW MEXICO ENERGY EFFICIENT GREEN BUILDING STANDARDS FOR STATE BUILDINGS

WHEREAS, the State of New Mexico is committed to improving the health of its employees and its citizens, increasing the production and use of clean energy sources, reducing waste, conserving water, and reducing greenhouse gas emissions, and desires to empower sustainable economic development;

WHEREAS, the Federal Government through programs fostered within many of its key agencies, numerous State governments as well as municipalities across the U.S. have adopted high performance green building principles through the incorporation of the U.S. Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) rating system into their building services;

WHEREAS, a recent study by the Lawrence Berkley National Laboratory completed the most definitive cost-benefit analysis of green buildings ever conducted and concluded that the financial benefits of green design are between \$50 and \$70 per square foot in a LEED building, more than 10 times the additional cost associated with building green. Additionally, the large positive impact on employee productivity and health gains suggests that green building has a cost-effective impact beyond just the utility bill savings;

WHEREAS, studies have indicated that student attendance and performance is higher in green school buildings;

WHEREAS, recognizing that a building's initial construction costs represents only 20-30 percent of the building's entire costs over its 30 to 40 year life, emphasis should be placed on the "life cycle costs" of a public building rather than solely on its initial capital costs; and

WHEREAS, the construction industry in the State of New Mexico represents a significant portion of our economy and a significant portion of the building industry is represented by small business and an increase in sustainable building practices will encourage and promote new and innovative small business development throughout the State.

NOW, THEREFORE, I, Bill Richardson, Governor of the State of New Mexico, declare that the state adopt specific standards to implement and facilitate the use of high performance energy efficient green building practices for all state-funded existing and new buildings throughout the State of New Mexico.

IT IS THEREFORE ORDERED that all Executive Branch state agencies, including the Higher Education Department, adopt the U.S. Green Building Council's LEED™ rating system consistent with all applicable laws to achieve the following:

- New construction of public buildings in excess of 15,000 square feet and/or using over 50 kW peak electrical demand shall build to and achieve a minimum rating of "LEED™ Silver." In achieving its LEED™ rating, the project must achieve a minimum delivered energy performance standard of one half the U.S. energy consumption for that building type as defined by the U.S. Department of Energy.
- New construction and renovation projects of public buildings between 5,000-15,000 square feet in size shall achieve a minimum delivered energy performance standard of one half the U.S. energy consumption for that building type as defined by the U.S. Department of Energy.
- Renovations of public buildings in excess of 15,000 square feet and/or using over 50 kW peak electrical demand and comprising upgrades or replacement of two of the three major systems (HVAC, lighting, and plumbing), shall achieve a minimum rating of "LEED Silver" and a minimum delivered energy performance standard of one half the U.S. energy consumption for that building type as defined by the U.S. Department of Energy.
- All other new construction, renovations, repairs, and replacements of state buildings shall employ cost-effective, energy-efficient, green building practices to the maximum extent possible; and

IT IS FURTHER ORDERED, that the General Services Department, in coordination with the Energy, Minerals and Natural Resources Department, the Construction Industries Division, and the New Mexico Chapter of the U.S. Green Building Council, shall develop criteria and a workable process for implementing this system; and

IT IS FURTHER ORDERED, that the General Services Department encourage private-sector building owners that lease to State agencies to comply with the same energy-efficiency performance standards required of State agencies in this Executive Order by offering preference points as determined by the Evaluation Committee for each lease RFP conducted under jurisdiction of the General Services Department; and

IT IS FURTHER ORDERED, that the Energy, Minerals, and Natural Resources Department (EMNRD) convene a "Public Schools Clean Energy Task Force" that shall be advisory in nature and shall make recommendations to implement aggressive energy efficiency measures in all existing school buildings and in the construction of all new schools and school renovations, including adopting the same energy efficiency standards established for executive branch agencies in this order. The Task Force shall also address the public schools' implementation of Executive Order 05-049, *Requiring the Increased Use of Renewable Fuels in New Mexico State Government*. The Task Force shall consist of representatives from EMNRD, Public Education Department, New Mexico Coalition of School Administrators, New Mexico School Boards Association, Public School Facilities Authority, Public Schools Capitol Outlay Task Force, and other members as appropriate. The Task Force shall report to the Governor by August 1, 2006 on its findings and recommendations; and

IT IS FURTHER ORDERED, that the Local Government Division of the Department of Finance and Administration, evaluate and develop recommendations to ensure that the siting of public buildings, including schools, minimizes transportation-related energy usage; and

IT IS FURTHER ORDERED, that the Construction Industries Division (CID) and the Construction Industries Commission (CIC) pursue updating residential and commercial building codes to promote and encourage consumers to develop state-of-the-art cost-effective energy efficient buildings and, in cooperation with EMNRD, engage the active support and participation from the CID and CIC on green building outreach, training, and technical assistance efforts; and

IT IS FURTHER ORDERED, that all State agencies are encouraged to work cooperatively with one another to achieve the goals outlined in this executive order.

THIS ORDER supersedes any other previous orders, proclamations, or directives in conflict. This Executive Order shall take effect immediately and shall remain in effect until such time as the Governor rescinds it.

ATTEST



REBECCA VIGIL-GIRON
SECRETARY OF STATE

DONE AT THE EXECUTIVE OFFICE THIS 16TH
DAY OF JANUARY, 2006

WITNESS MY HAND AND THE GREAT SEAL
OF THE STATE OF NEW MEXICO



BILL RICHARDSON
GOVERNOR