



THE AMERICAN INSTITUTE OF ARCHITECTS

STATEMENT OF
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PRESIDENT

“Buildings and Climate Change Legislation”

United States House of Representatives
Committee on Energy and Commerce
Subcommittee on Energy

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Introduction

Chairman Boucher, Ranking Member Upton, and Members of the Subcommittee — good morning. I am Marshall E. Purnell, FAIA, the President of the American Institute of Architects and design principal of Devroux + Purnell Architects and Planners PC here in Washington.

On behalf of the AIA's 84,000 members and the 281,000 Americans who work for architecture firms nationwide, I would like to thank you for the opportunity to appear today to share our thoughts on the potential for energy savings and reductions in greenhouse gas emissions that can be achieved through greater energy efficiency in our nation's buildings.

According to the Department of Energy's Energy Information Administration, buildings and their construction are responsible for nearly half of all greenhouse gas emissions produced in the U.S. every year. DOE's 2007 Building Energy Data Book reveals that the building sector accounts for 39 percent of total U.S. energy consumption, more than both the transportation and industry sectors.¹ The same study found that buildings are responsible for 71 percent of U.S. electricity consumption and that *buildings in the United States alone account for 9.8 percent of carbon dioxide emissions worldwide.*²

In fact, according to the Department of Energy, U.S. *buildings account for nearly the same amount of carbon emissions as all sectors of the economies of Japan, France, and the United Kingdom combined.*³

Most of these emissions come from the combustion of fossil fuels to provide heating, cooling, and lighting and to run electrical equipment and appliances. When combined with other GHG impacts of buildings—such as emissions from the manufacture of building materials and products, the transport of construction and demolition materials, and the passenger and freight transportation associated with urban sprawl—the result is an even larger GHG footprint. Any effective U.S. climate change strategy must consider options for reducing the GHG emissions associated with building construction, use, and location.

Therefore, if we in the United States want to be serious about improving energy efficiency and reducing our nation’s greenhouse gas emissions, buildings *must* be a significant part of the discussion.

The data shows that the building sector is only going to become more critical to the debate over climate change. Annual U.S. energy consumption is projected to increase by 32 percent over the next twenty five years⁴. The AIA believes strongly that now is the time to act to reverse this course and start making significant reductions in the amount of fossil-fuel generated energy our nation consumes through its buildings.

Over the next 30 years, the character of the built environment will change dramatically. Currently, U.S. building stock sits at 300 billion square feet. Experts predict that between now and 2035, 52 billion square feet will be demolished, 150 billion square feet will be remodeled, and another 150 billion square feet will be newly constructed.⁵ Because buildings are such a major producer of greenhouse gases, the AIA believes that if Congress and our nation want to reduce greenhouse gas emissions, addressing energy consumption in the next generation of buildings is a vital endeavor. We believe that the federal government can and must take the lead to change the way our nation's buildings use energy.

Reducing the Carbon Footprint of the Built Environment

To reduce energy consumption in the building sector, the AIA believes that architects must advocate for the sustainable use of our planet's resources through their work for clients. To support this principle, in 2005 the AIA adopted a position stating that all new buildings and major renovations to existing buildings should be designed to meet an immediate 50 percent reduction in fossil fuel-generated energy (compared to a 2003 baseline) and that at five year intervals, that reduction target be increased by at least 10 percent until new and renovated buildings achieve carbon neutrality in 2030.

I am happy to report that in the 2007 energy bill (Energy Independence and Security Act of 2007, P.L. 110-140), Congress included a provision mirroring this AIA policy. As a result of the law, all new and significantly renovated federal buildings will be designed to

meet strict energy efficiency and energy use guidelines. By 2030, the vast majority of our federal buildings will be carbon-neutral.

We are extremely pleased that the federal government's buildings will be at the vanguard of energy efficiency. We also are encouraged that the private sector is beginning to get into the act as well. Architects across the country are utilizing design practices that integrate built and natural systems that enhance both the design quality and environmental performance of buildings. Architects are designing green buildings today that achieve energy efficiency that is, in many cases, far beyond what current building codes require. We are doing this through the use of better planning, technological tools, more efficient building-systems and smarter material selection that incorporate natural heating, cooling, ventilation, and day-lighting strategies.

In order to help architects and the construction industry design, build and operate greener buildings, the AIA has developed a website called 50-to-50 (www.aia.org/fiftytofifty) that provides fifty common-sense methods to reduce the energy footprint of the built environment, everything from building orientation and natural ventilation to photovoltaics and smart controls. Through our "Walk the Walk" campaign, we are educating architects and the public about both the importance of building green and ways to do it.

The potential to save energy and reduce carbon emissions through more intelligent building design, construction, and operation is vast. The buildings identified by the

AIA's Committee on the Environment (COTE) in their annual Top 10 Awards for Sustainable Design on average use between 60 – 70 percent less energy than comparable, conventional buildings.⁶ The sustainable design, materials, and energy efficient equipment pay back the increased capital investment in a short period of time through reduced utility bills. And perhaps more pertinent to this hearing today, these buildings produce far less carbon emissions than conventional buildings, and they do so in a cost-effective manner.

One barrier to energy efficiency is the perception that green costs a lot of green, especially in terms of initial first costs. However, studies and anecdotal evidence have shown that for many energy efficient features, the pay back is relatively short – and in fact the fiscal benefits to society as a whole outweigh the costs. A December 2007 report by McKinsey and Company, *Reducing Greenhouse Gas Emissions: How Much at What Cost*⁷, found that improving efficiency in new and existing buildings offers the greatest potential for reducing carbon emissions at the lowest cost. Specifically, the study found that “energy efficiency improvements in residential and commercial buildings (including the appliances inside) make up the largest cluster of negative-cost abatement opportunities.” Over the life-cycle of the building, energy efficiency improvements generate positive economic returns through reduced energy costs. Essentially, making buildings more energy efficient is a cost-effective way to achieve major reductions in GHG emissions and reducing our nation's dependence on foreign oil while enhancing economic growth.

The McKinsey report notes that if the most cost-effective building *energy efficiency* investments were encouraged through policy changes, it is reasonable to project a 710 megaton reduction in GHG emissions below the otherwise projected scenario *by 2030*.⁸ These efficiency improvements can be achieved through lighting retrofits; improved heating, ventilation, air conditioning systems; building envelopes, and building control systems. It is clear that if we want to achieve significant reductions in greenhouse gas emissions, pursuing energy efficiency is a vital endeavor.

More Needs to Be Done

While it is clear that our country has made major strides towards improving the energy efficiency of our nation's buildings, there is far more that can be done. This is especially true in the residential sector, where both educating homeowners about energy efficient retrofits and providing them ready access to the capital needed to make them has been elusive. Congress can play a major role in improving residential energy efficiency by passing the Green Resources for Energy Efficient Neighborhoods (GREEN) Act (HR 6078). This legislation, introduced by Rep. Ed Perlmutter (D-CO), provides incentives to lenders and financial institutions to provide lower interest loans and other benefits to consumers, who build, buy or remodel their homes to improve their energy efficiency.

I would add that Congress can also spur energy efficiency in the built environment – right now – by extending several energy efficiency and renewable energy tax incentives that have expired or are about to expire at the end of this year. These incentives, which cover

residential and commercial buildings, help address the initial costs that have deterred many owners from making energy efficiency improvements. Legislation to extend these incentives has been stuck on Capitol Hill all year; the AIA calls on Congress to make sure they are extended before adjournment.

The fact of the matter, however, is that in many cases, states and localities have stopped waiting for the federal government to act and are taking steps to improve the energy efficiency of their building stocks. Recent studies by the AIA have shown that the number of U.S. cities that have adopted green building programs has increased by more than 400 percent since 2003, and the number of counties that have adopted green building programs has increased by nearly 400 percent as well. But the critical importance of buildings to the national climate change equation means that the federal government must act, too.

As this committee has explored the climate change issue through white papers and hearings, one theme has remained constant – any legislation addressing climate change must result in significant greenhouse gas reductions with minimal economic disruption.

To this end, the AIA strongly supports policies that incentivize the design, construction and renovation of energy efficient buildings. When the Senate debated the Lieberman-Warner America's Climate Security Act (S.2191) last month, the substitute amendment drafted by Environment and Public Works Chairwoman Boxer included provisions that would have provided approximately \$51 billion from 2012 to 2050 to building owners for new or renovated energy efficient buildings. An amendment that was to be offered by

Senators Feinstein, Snowe and Collins would have complemented this language with a proposal developed by the AIA and other groups to promote smart growth and the renovation of older and historic buildings as further means to reduce the carbon footprint of the built environment. We hope that any legislation developed by this committee also will seek ways to provide incentives to green the built environment.

Second, the AIA strongly supports provisions that encourage the development of stronger energy efficiency building codes. Last year, we supported provisions in the House version of the energy bill (H.R. 6) that would have set energy efficiency targets for both the International Energy Conservation Code (for residential buildings) and ASHRAE 90.1 (for commercial buildings) and would have directed the Energy Department to propose amendments to those codes to reach such targets if they failed to do so. This language is vital for states that want building codes that save more energy than what is developed through the consensus-based processes that the ICC and ASHRAE utilize. The Alliance to Save Energy estimates that if this provision became federal law and all states implemented the advanced codes, by 2030, the U.S. would reduce overall energy use by five percent and reduce carbon emissions by about 100 million tons.⁹

There are some who have claimed that this provision would in essence establish a “national building code.” This could not be further from the truth. In fact, the AIA and other supporters of this provision, such as the Alliance to Save Energy and the North American Insulation Manufacturers’ Association (NAIMA), worked diligently with the ICC and ASHRAE to address their concerns about the provision and ensure that it does

not undermine the consensus-based code development process – a process that the AIA strongly backs. While this provision was approved by the full House, it was dropped from the final bill. A similar provision was in S.2191, the Lieberman-Warner climate change bill, and we hope that it would be included in any climate change bill this subcommittee develops.

Principles for Climate Change

As you work to develop legislation addressing the threat of climate change, we strongly encourage you to consider the following principles, which we believe would result in significant GHG reductions and would do so without causing major disruptions to the economy or increasing energy costs for Americans:

1. **Climate change legislation should provide incentives to states, localities, energy providers and energy consumers to make buildings more energy efficient.**

These incentives should be tied to measurable targets for energy reduction, such as Energy Star or energy building codes like ASHRAE 90.1 and the IECC, and should measure actual performance, not simply design intent.

2. **Climate change legislation should address energy use among existing buildings, not simply new buildings.** Incentives for energy efficient retrofits of existing buildings in the commercial, residential and institutional sectors – including historic properties - will help homeowners, building owners and managers reduce energy

usage and avoid the energy costs of processing, manufacturing and transporting new building materials.

3. **Climate change legislation should encourage building in high density areas near public transportation.** Reducing vehicle miles traveled by siting green buildings close to mass transit provides a double benefit to the environment by reducing the carbon emissions from both the buildings themselves and from the transportation needed to move to and from them.

4. **Climate change legislation should provide incentives for state and local governments to reduce energy usage in public buildings.** The Energy Independence and Security Act of 2007 requires the federal government to meet aggressive targets for reducing fossil fuel-based energy use in new and significantly renovated federal buildings (Sec. 422). Incentives should be provided to state and local governments that institute similar requirements for their buildings.

5. **Climate change legislation should promote the research and development of energy efficient building technologies.** Funds should be made available for the design and development of high-efficiency HVAC, lighting and window systems and energy-saving building shell technologies and materials, including insulation.

6. **Climate change legislation should provide incentives for states and communities to develop and institute community planning processes and**

solutions that reduce vehicle miles traveled (VMT). Community planning that balances economic growth with sustainable development can reduce VMT, helping contribute to reductions in greenhouse gases.

Finally, the American public believes the time is now to reduce energy usage and reduce the impacts of climate change. The Tarrance Group and Lake Research Partners recently conducted a nationwide poll of voters and found that 74 percent of those polled agreed that “the government should take the lead in promoting real estate development that conserves our natural resources.” In addition, 71 percent of voters agreed that “the government should immediately put into effect new energy policies that drastically reduce greenhouse gas emissions.” The American public supports conserving our precious resources, and believes that it is in the best interests of our nation and the world to reduce our reliance on fossil fuel produced energy and move towards a sustainable future.

Climate change legislation presents an unprecedented opportunity to make significant and lasting reductions in GHG emissions from the built environment. We look forward to working with you to ensure that any climate change legislation to emerge from this committee encourages greater energy efficiency in our nation’s buildings.

We encourage Congress to consider our proposals, and I welcome any questions. Thank you, Mr. Chairman, and members of the subcommittee.

¹ <http://buildingsdatabook.eere.energy.gov/docs/1.1.1.pdf>

² <http://buildingsdatabook.eere.energy.gov/docs/3.1.1.pdf>

³ <http://buildingsdatabook.eere.energy.gov/docs/3.1.1.pdf>

⁴ http://www.eia.doe.gov/oiaf/ieo/pdf/ieoreftab_1.pdf

⁵ <http://www.architecture2030.com>

⁶ <http://www.aiatopen.org/hpb/>

⁷ http://www.mckinsey.com/clientservice/ccsi/pdf/Greenhouse_Gas_Emissions_Executive_Summary.pdf

⁸ http://www.mckinsey.com/clientservice/ccsi/pdf/Greenhouse_Gas_Emissions_Executive_Summary.pdf

⁹ <http://www.ase.org/content/article/detail/4096>