Green Construction Costs and Benefits: Is National Regulation Warranted?

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Buildings have a significant impact on the environment. According to the U.S. Green Building Council (USGBC), in the United States alone, buildings account for 65 percent of electricity consumption; 36 percent of energy use; 30 percent of greenhouse gas (GHG) emissions; 30 percent of raw materials use; 30 percent of waste output (136 million tons annually); and 12 percent of potable water consumption. These environmental impacts result in short-term expenditures (utility costs, materials, and construction costs and disposal fees) as well as long-term costs. Although there is a not consensus on dollar amounts, there is general recognition that the long-term costs of global warming will be astronomical.

With growing public awareness of climate change issues and an absent national climate change policy, several federal agencies and state and local governments have adopted policies and ordinances that encourage and, in some instances, mandate green building for certain commercial and residential buildings to reduce GHG emissions and fight global warming. Although there is no single, standardized definition of green building, the U.S. Environmental Protection Agency (EPA) holds that "(g)reen building is the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's life-cycle from siting to design, construction, operation, maintenance, renovation and deconstruction." www.epa.gov/greenbuilding/pubs/about.htm. Proponents of green building argue that it is a powerful tool for combating climate change because buildings constitute a large segment of the U.S. carbon footprint. Thus, in the long term, green building makes financial sense because reducing GHG emissions will reduce the potential for global warming and its associated costs. However, in the short term, green building increases the costs of construction and sometimes entails paying for certification of "greenness." Thus, although the green building industry is poised to expand in the United States, the immediate financial barriers to green building must be addressed in order for that expansion to occur. State and local governments and regulatory agencies have attempted to offset some of these short-term costs by utilizing incentives adopted as part of regulatory programs. This article surveys the regulatory systems in place now and suggests that implementing changes to the way green buildings are regulated could better offset the increased expense of building green, thereby lowering the long-term costs associated with global warming.

In the broadest terms, already adopted green building programs fall into three categories: requirements that public construction projects be green; incentive programs to encourage voluntary private green development; or mandatory programs requiring green construction for certain types of public and private construction projects. Most often, green building programs have focused on commercial buildings. Recently, however, some local governments have included residential projects within the scope of green building programs. In light of the country's economic distress, the growing recognition of the need to address climate change, and the Obama administration's commitment to making the United States a leader in climate change policy, it is important to consider whether state, local, or federal regulation will be the most effective means of implementing green building policies in the future. This article reviews the current lack of national consensus on green building standards and analyzes the current costs and benefits of green building to identify what issues need to be addressed legislatively to promote green building as part of a broader climate change policy. It then surveys the variety of existing regulations in the United States and analyzes the legal framework in which green building legislation exists to explain why the most effective means of expanding green building initiatives in the United States will probably require a multifaceted legislative approach, including establishment of national standards for the key metrics against which green building performance is measured, federally enforced mandates for reductions in GHGs, as well as continued state and local government regulation and incentivization of green building through modification of state and local taxing, land use, zoning, and building regulations. If adopted, these changes to the regulatory system would balance the financial playing field and, by lowering the effective cost of green building today, would promote wider use of green construction now, ultimately lowering the costs associated with global warming in the future.

Several competing rating systems exist for identifying a building as green. The Leadership in Energy and Environmental Design (LEED) program developed by the nonprofit, nongovernmental USGBC is the most well known of these rating systems. The LEED program evaluates the sustainable

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features of new commercial construction by giving points in six areas: (1) location and siting, (2) water efficiency, (3) energy and atmosphere, (4) materials and resources, (5) indoor environmental quality, and (6) innovation and design. Point ranges determine how "green" a building is. LEED has four certification levels: certified, silver, gold, and platinum. Higher points equal a higher certification level. The certification process includes registering a project with the USGBC, documenting the use of equipment and materials that have been established by the USGBC as "green," and paying fees for review. Examples of the types of systems and materials that are documented in a LEED review for a commercial building include plumbing, insulation, and heating and cooling systems. LEED has promulgated separate rating and certifications systems for renovation projects, commercial interiors, and residential construction. The Green Building Initiative has developed the Green Globes certification to qualify a building as green. Green Globes evaluates a building's use of energy, the indoor environment, emissions and effluents, resources, environmental management, and water use. Earthcraft certifies homes based on criteria related to site planning, energy-efficient building techniques and equipment, resource-efficient design and materials, waste management, indoor air quality, water conservation, and homebuyer education. The federal ENERGY STAR program is a partnership between the U.S. Department of Energy and EPA that rates appliances and buildings for energy efficiency and is intended to assist commercial businesses and new home buyers with making energy-efficient choices. According to the program's Web site, to earn the ENERGY STAR, a home must meet strict guidelines for energy efficiency set by EPA. These homes are at least 15 percent more energy efficient than homes built to the 2004 International Residential Code (IRC) and include additional energy-saving features that typically make them 20–30 percent more efficient than standard homes. In addition to the certifications of LEED, Green Globes, Earthcraft, and ENERGY STAR, several states and local governments, including Minnesota and North Carolina, have created their own standards for green buildings. Some are based on LEED, and others are based on the jurisdiction's building code.

For residential construction, the National Association of Homebuilders and American National Standards Institute (ANSI) promulgated the National Green Building Standard, a residential green construction guideline that competes with the LEED residential certification program. On January 29, 2009, the International Code Council (ICC) adopted the National Green Building Standard, known as ICC-700, as an American National Standard Code. According to the ICC, the new Standard provides guidance for safe and sustainable building practices for residential construction, including both new and renovated single-family to high-rise residential buildings. This is the first and only green standard that is consistent and coordinated with the ICC's family of I-Codes and standards, which is significant because many jurisdictions require compliance with specific ICC building codes in their regulations. Additionally, numerous smaller state and regional organizations have promulgated green building guides for new home construction.

Although each certification and guideline is unique, all of these competing definitions of what constitutes green construction are premised on the concept that by increasing energy efficiency, water conservation, use of recycled materials and improving air quality in buildings, a building becomes green. However, the presence of multiple competing standards has created challenges for the building industry, particularly for developers who are working in multiple jurisdictions with different requirements for certifying green projects. Some commentators have questioned whether these measures are a true measure of greenness, particularly when, for example, under the LEED new home certification process, single-family homes greater than 12,000 square feet are applying for and obtaining green certification on the basis of technological improvements, such as solar pool heaters and other more mundane improvements. These commentators have argued that true "green construction" means less construction overall, reuse of existing space, smaller buildings, multifamily residential projects, urban infill, and location of projects to promote pedestrian access and public transit. It should be noted that the LEED certification process does consider and award points for many of these criteria; however, none of them are prerequisites to obtaining certification, and there are no size limits for single-family homes qualifying for certification under the LEED system. The lack of consensus on what counts as green has been an impediment to the implementation of green building programs nationwide. In at least two states, legislation supporting green building was derailed as a result of a debate over which rating system or standard to require.

Costs and Benefits of Green Building

Advocates for green building argue that in addition to the global environmental benefits of green building relating to reducing GHG emissions, green building also makes economic sense. The green features that are good for the environment are also good for a building owner's budget. Increased energy efficiency and water conservation result in lower utility bills for the completed building. Increased air quality results in fewer sick days and measurable increases in worker productivity. USGBC data supports these assertions. Recently, another study analyzed CoStar real estate data for the U.S. Class A office space market to compare ENERGY STAR-rated commercial buildings to non-ENERGY STAR-rated buildings. The results indicated that during the years 2004–07, ENERGY STAR buildings in the CoStar database had higher occupancy rates, higher direct rental rates, higher sales price per square foot, and, after 2005, lower cap rates than non-ENERGY STAR buildings. However, the CoStar analysis also noted that in the buildings surveyed, going green resulted in an extra 3–6 percent in construction costs, with higher costs associated with higher levels of LEED certification and varying by region.

Green building is considered a growing sector within the construction industry. The McGraw-Hill "Construction

SmartMarket Report on Commercial and Industrial Green Building, Green Trends Driving Market Change" reports that green building projects now constitute more than 5 percent of the construction market and are projected to be 20–25 percent of commercial and institutional building by value or an approximate marketplace of $56–60 billion dollars within five years. In addition, the McGraw-Hill report notes that the market share of the education market is projected to grow to 30 percent within the next five years. Likewise, the "Turner Construction Company 2008 Green Building Market Barometer" reports that 75 percent of the real-estate executives surveyed said that recent developments in the credit markets would not make their companies less likely to construct green buildings. The National Association of Homebuilders reports that there is growing interest in residential green building from consumers as well as greater interest in remodeling homes for greater energy efficiency.

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The financial benefits of green building must be considered, especially in light of an incremental increase in construction costs for green commercial buildings, at least on the commercial side, as noted by the CoStar study. LEED-certified green buildings are a minimum of 1–2 percent more expensive to construct than traditional buildings. Another important consideration in determining the true costs and benefits of green buildings is who reaps the benefits. Many of the touted benefits, such as lower energy costs and higher worker productivity, are reaped by the building users or tenants as opposed to the owners unless leases are structured to avoid that result.

Other variable factors in a cost-benefit analysis for green building include the changing costs of green construction, the administrative and regulatory costs associated with green building programs, and the cost of global warming. Over the last ten years, costs of "green" equipment and building components have decreased. For example, the cost of photovoltaic arrays (solar panel technology) has decreased, and availability has increased since its advent in the 1970s. Proponents of green building argue that the more demand there is for green building products the lower the costs for those products will be as green building becomes even more commonplace, the incrementally higher cost of green building should decrease over time. On the other end of the spectrum, the growing scientific consensus is that global warming over the next century will result in more extreme temperatures, increased likelihood of natural disasters, and reduced availability of potable water in many population centers. Advocates argue that green buildings are designed to address these potential issues through adaptive technologies for temperature control, reduced water demand, and resilient building materials. The economic impact of these factors is hard to quantify on a per-building basis.

Due to the variety of U.S. green building programs, the costs of regulating green building is difficult to quantify. However, an often-cited barrier to adopting local green building programs is the inability, due to workload or existing regulations, of local regulators to review plans and/or approve variances to building codes and regulations to permit green building. Likewise, preexisting zoning and land-use policies are often cited as barriers to implementation of green building programs. When projects are delayed because of these types of regulatory barriers, the cost of developing green building projects increases. Another cost factor in green building is how much the regulating governments will absorb for dedicating personnel and resources to the projects.

The bottom line is, despite the benefits, it simply costs more money to build green. A survey of existing regulations demonstrates that several state and local governments have created voluntary incentive programs to offset some of these costs upfront by reducing taxes, fees, and permitting timeframes.

Green Building Programs Today

To date, green building legislation, whether on the state or local level, has typically followed one of three approaches. The first approach, which has been taken by federal agencies, is to mandate that all public construction projects meet a particular LEED certification level. The second approach is to create financial incentives for private developers to build green, such as tax relief, grants, or expedited permitting. The third approach, which has been met with the most opposition, is to require that all new construction projects that exceed a certain square footage, whether private or public, meet a particular LEED standard.

State and local governments have adopted a variety of green building standards. For example, buildings owned by the cities of San Francisco and Oakland, California, that were constructed after their city's ordinances were adopted must obtain LEED-Silver certification. In New York, public-capital projects valued in excess of $2 million must meet the equivalent of a LEED-Silver or LEED-Certified rating. In Florida, all buildings constructed by the Department of Management Services must be built to LEED standards, and all leases entered into by the agency for state government office space must be located in buildings that meet ENERGY STAR standards. Monroe County, Florida, requires adherence to LEED standards for new county buildings and major renovations of greater than 5,000 gross square feet. Maryland's governor issued an executive order calling for all capital projects greater than 5,000 square feet to earn LEED certification,

and the Maryland legislature adopted a requirement that for state capital projects, a green building standard, such as LEED Silver, be used. Kentucky, Alabama, Arizona, and Alaska require increases in energy efficiency for public buildings. Both Colorado and Connecticut state governments are developing their own sustainable building standards for public buildings.

On the federal level, many federal government agencies have adopted LEED requirements for public buildings. These include the General Services Administration, NASA, the National Park Service, the Department of State, the Department of Energy, EPA, and every branch of the military.

The second major category of local and state government regulation related to green building entails creating certain incentives for private development that incorporates green design techniques, including outright grants, tax incentives, expedited permitting, reduced development fees, and density bonuses. In addition, in most states, there is some state, local, or utility program or a combination of programs that offers incentives that can be monetized for green building or energy-efficient equipment or features.

Some state and local governments are offering outright grants to offset the costs of certification and the costs of certain equipment. For example, Costa Mesa, California, established a green building incentive program for private development, effective September 5, 2007, through June 30, 2008, which provided fee waivers for all green installations and fee reductions to cover the cost of LEED certification. The El Paso, Texas, Grant Program provides grants for commercial and multifamily, multistory residential projects earning LEED certification. Grant recipients are required to have obtained a certificate of occupancy and have submitted LEED certification demonstrating that ten of the seventeen available points in the Energy & Atmosphere credit category have been earned. Grants are awarded at increasing intervals based on the level of certification achieved by the building. The maximum grant is $200,000 for LEED Platinum for new construction and $400,000 for LEED Platinum for "multistory existing buildings" that are mixed use and have been at least 50 percent vacant for five years. King County, Washington, established a Green Building Grants Program that offers $15,000–$25,000 in grant funding to building owners who meet a minimum of LEED Silver for new construction or major renovation in the county but outside the City of Seattle. Mecklenberg County, North Carolina, amended the county fee ordinance to include the Green Building Rebate Program, offering permit fee rebates to projects with proof of LEED certification. Rebates increase based on the level of certification achieved: 10 percent reductions for LEED Certified, 15 percent for LEED Silver, 20 percent for LEED Gold, and 25 percent for LEED Platinum. Projects with proof of Green Globes certification are also eligible. In Los Angeles, builders and developers can take advantage of the Los Angeles Department of Water and Power Board Green Building Incentive that offers up to $250,000 in financial incentives to assist a building in becoming more green and meeting LEED standards. In Pennsylvania, grant resources include four state funds, including the $20 million Sustainable Energy Fund targeted to provide grants, loans, and "near-equity" investments in energy-efficiency and renewable-energy projects.

Another frequently used incentive is tax credits for developers and purchasers of green buildings. New Mexico, Oregon, and Maryland offer credits at a state level subject to specific requirements. Virginia has declared energy-efficient buildings to be in a separate class of taxation from other real property and permits local governments to levy equal or lesser taxes on energy-efficient buildings. Virginia code defines energy-efficient buildings as meeting the performance standards of LEED, ENERGY STAR, Green Globes, or EarthCraft and provides a sustainable building tax credit for sustainable buildup. However, the total amount of tax credits awarded under the program is capped at an aggregate amount of $5 million for both commercial buildings and residential buildings. New York offers a green building credit to owners of green buildings, as does Maryland. Las Vegas, Nevada, recently revamped its green building tax credit program to reduce benefits after applications for the credit would have had a more than $450 million impact on revenues. Local governments, including Arlington County, Virginia, give a county property tax credit for a duration of ten consecutive years to any commercial building that achieves LEED-NC Silver certification.

The third incentive approach is to authorize expedited permitting and/or reduced regulatory development fees for green projects. Many jurisdictions offer some combination of fee reductions and expedited permitting. For example, Gainesville, Florida's Green Building Program calls for fast-track permitting for building permits. The District of Columbia created a Green Building Expedited Construction Documents Review Program. Costa Mesa adopted a green building incentive program for private development that encouraged green building practices through various incentives, including priority permitting and fee waivers for all green installations and fee reductions to cover the cost of LEED certification. El Paso County, Texas, provides a fast-track building permit incentive and a 50 percent reduction in the cost of building permit fees for private contractors who use LEED. Issaquah, Washington, has adopted a sustainable building and infrastructure policy. Pursuant to the policy, developers intending to use LEED may receive free professional consultation, and projects achieving LEED certification are placed at the head of the building permit review line. The Hawaii state legislature requires counties to give priority processing for all construction or development permits for projects that achieve LEED Silver or the equivalent. North Carolina permits cities and counties to encourage green building practices in their jurisdictions by reducing permitting fees or providing partial fee rebates for construction projects that achieve LEED certification or certification from other rating systems.

Density bonuses are another incentive that is frequently offered to permit increased size or numbers of units or the amount of commercial square footage permitted in a particular zoning district. Similar to bonuses granted in economic development incentive packages, this type of incentive can increase profitability for a developer if the increase in density results in

additional marketable product and the market supports the sale of denser product. As demonstrated in the following examples, many of these density bonuses are only available in designated parts of a community, reflecting intent the community's intent to redevelop a particular area. Acton, Ohio, revised its land development code to allow for a density bonus for buildings achieving LEED certification in the East Acton Village District. Arlington County, Virginia, allows density bonuses for commercial projects and private developments earning LEED Silver certification. To qualify for the bonus, all site-plan applications must include a LEED scorecard and have a LEED accredited professional on the project team. However, projects are not required to obtain certification. All projects in Arlington contribute to a green building fund for countywide education and outreach activities. Contributions are refunded if projects earn LEED certification. Bar Harbor, Maine, amended its code to award a single, additional market-rate dwelling-unit density bonus for construction projects, provided all dwelling units meet LEED standards. This bonus is only available to projects within a Planned Unit Development. The Pittsburgh Code grants a density bonus of an additional 20 percent floor area ratio and an additional variance of 20 percent of the permitted height for all projects that earn LEED for New Construction or LEED for Core and Shell certification. The bonus is available in all nonresidential zoning districts.

Through its Green Points Program, Boulder, Colorado, has become one of the few cities to mandate green building in the residential context.

The purpose of incentive regulations is to offset some of the financial barriers to green building. Although no comprehensive analysis of the effectiveness of the various incentives has been conducted, it appears that the challenge for governments utilizing incentives to facilitate voluntary green building is adequately matching the perceived value of the incentive to the perceived increase in cost associated with green building. As discussed below, mismatches on incentives and perceived cost have hampered the effectiveness of certain incentive programs.

Many of these incentive-based laws have been adopted since 2003, and, as reflected in the construction industry surveys referenced earlier, appear to have increased awareness of sustainable development opportunities. In most cases, with the notable exception of Las Vegas, Nevada, they have not, however, brought about the large numbers of green construction projects that they were designed to encourage. In certain cases, the programs were underfunded or underpublicized. In other cases, the incentives were targeted for areas that were not marketable for redevelopment. Consequently, some cities are considering alternatives to voluntary programs as a means of increasing green building projects within their jurisdiction.

Mandated green construction for private developments represents a final and most controversial category of green building regulation. Several large cities have adopted mandatory requirements for green buildings. Proponents of these policies advocate they are appropriate to due growing climate-change concerns and sustainable development being more accepted and, in fact, supported by the general public. Furthermore, the cost of green building materials has dropped significantly in the last five years, and more developers, architects, planners, and government officials are familiar with and have the expertise necessary to implement green building techniques. However, this type of regulation has been successfully challenged in Albuquerque, New Mexico, by heating and air conditioning industry groups who alleged that the policies unfairly disadvantaged vendors and suppliers of nongreen building materials.

Notwithstanding the opposition, Boston, Washington, D.C., Los Angeles, and San Francisco have enacted such laws. Most of the laws apply solely to large commercial buildings. The largest city to embrace green building mandates is Boston. In the summer of 2007, the city amended its zoning ordinance to require that all private construction over 50,000 square feet meet minimum LEED criteria. San Francisco's code is arguably the most comprehensive. The standards apply to newly constructed commercial buildings over 5,000 square feet, new residential buildings taller than 75 feet, and building renovations that involve more than 25,000 square feet. In each case, structures are subject to a specific level of certification under LEED standards or other widely accepted green building ratings systems. San Francisco also imposes fees, including impervious surface fees, to offset the impacts of construction on the environment.

Through its Green Points Program, Boulder, Colorado, has become one of the few cities to mandate green building in the residential context. The program requires some combination of recycled materials (e.g., fiber concrete, reclaimed lumber, or recycled roofing materials), green insulation products, energy-efficient windows, radiant floor heating, or other sustainable products in private residential-addition and remodeling projects larger than 500 square feet.

A few smaller towns and cities have also imposed mandatory requirements. The town of Babylon, New York, requires LEED certification for any new construction of commercial buildings, office buildings, industrial buildings, multiple residence, or senior-citizen multiple residence that exceeds 4,000 square feet. The town refunds the certification fees paid to USGBC by the developer when certification is achieved. Portland, Oregon, adopted a mandatory green building program for commercial new construction in January 2009, which provides that buildings that meet the standard will qualify for a waiver of a city GHG emissions fee; all other new commercial construction will have to pay a fee for the projected GHG emissions resulting from operating the nongreen building for fifteen to thirty years. The program was originally proposed

in 2008 to include new residential construction; however, after substantial controversy, it was scaled back and, instead of charging a fee, Portland will track the number of green residential projects constructed. If the targeted number of units has not been built by 2012, the city will consider imposing a fee on nongreen residential construction.

Legal Challenges to Green Building Regulations

The local and state government programs described in this article have been adopted within the context of the existing laws governing land use zoning and public health. It is important to note that while 911 mayors have signed onto the U.S. Mayors Climate Protection Agreement, only approximately seventy-five communities have adopted green building initiatives of any sort. To put this in context, there are 38,967 municipalities in the United States.

There are many possible reasons why more local governments that have committed to climate change initiatives have not addressed green building and why thousands more have addressed neither climate change nor green building. Local government officials have resisted changes based on new, unfamiliar technologies and approaches to construction. Revisions to existing laws, such as incorporating green building technologies or performance standards, often require wholesale restructuring of land-use and building codes, which have historically relied on prescriptive rules instead of flexible standards. The work to complete the revisions is time consuming, and enforcing flexible standards is more complex and time consuming than enforcing traditional codes. Typically underfunded and understaffed, local land-use departments may not have the manpower or resources to address green building innovations.

Traditional zoning and design codes further two broad purposes: protecting and enhancing property values and protecting public health, safety, and welfare. Land development and zoning codes also represent something of a historical consensus on community aesthetic standards. Green building technologies, many of which are new, have not been tested or anticipated in zoning and building codes. Consequently, many of the technologies and equipment do not comply with code standards. Perhaps the most frequently disputed and common sustainable technology barred by zoning laws and building codes is solar panels. In the 1970s solar panels were extremely bulky, utilizing metal frames that were highly visible. Solar panels are now thinner and can be incorporated into building and roof design to decrease visibility without compromising performance. Despite these changes, zoning codes, homeowners' covenants and restrictions, and historic preservation policies often prohibit their installation or restrict it in a manner that prohibits functionality. In historic building renovations, builders have been prohibited from changing windows to energy-efficient models because until recently there were limited design options for replicating the original windows' materials, casing, sash width, muntin profile, or color. Landscaping requirements can also conflict with green building techniques. Codes that specify permissible plant and tree palettes frequently do not permit xeriscaping or hardscaping to reduce irrigation water demand. Zoning ordinances frequently also omit newer technologies such as windmills, freestanding solar panels, turbines, fuel cells, and water collectors/cisterns in lists of permitted and prohibited uses, leaving applicants unclear as to whether the technology can be utilized in a project. A related problem is that zoning boards often have no code-based standards to evaluate applications for zoning relief. Instead, the boards engage in ad hoc inquiries leading to inconsistent results, which are often highly influenced by the presence or absence of "not in my backyard" voices opposing the uses.

Despite these challenges, the local governments that have successfully implemented green building programs or policies have been able to do so by modifying or replacing zoning and building codes that were an impediment to green building with codes that either specifically permit green technologies or provide administrative vehicles to obtain approval for the technologies. These communities have acted within the context of zoning and land-use jurisprudence, which has, since the U.S. Supreme Court decided *Village of Euclid, Ohio v. Ambler Realty Co.*, 272 U.S. 365 (1926), required adopted zoning ordinances to protect public health, safety, and welfare. Critical to green building ordinances is the causal link between GHG emissions, global climate change, and the threats to public health, safety, and welfare arising therefrom. Findings of public benefit are also essential elements of government-incentive grant programs and expedited permitting policies.

An evolving area of the law concerns federal regulation of GHGs. In *Massachusetts v. EPA*, 127 S.Ct. 1438, 167 L.Ed.2d 248 (2007), the Supreme Court designated carbon dioxide (CO_2) a pollutant under the Clean Air Act definitions to the extent that reports connect the gas to climate change. As such, EPA is required to regulate CO_2 under the Clean Air Act. Categorizing CO_2 as a pollutant makes it easier for local governments to make the causal link between green building regulations and public health, safety, and welfare. However, depending on the shape of federal regulation, some local and state GHG emissions legislation, including green building programs that include impact fees, may be preempted by federal legislation when adopted.

Given this existing regulatory scheme, EPA may once again turn to mandatory local regulations as a means of addressing CO_2 emissions. Such mandatory local ordinances could include anything from green building standards to comprehensive planning requirements that target a reduction in automobile dependence. From a dollars and cents perspective, this increased regulatory burden would transform some of the increased costs associated with green building into the cost of doing business.

Is National Green Building Regulation Called For?

Local and state governments have essentially been functioning as laboratories for green building policy. Green building is being advanced as part of the toolkit for addressing climate change—a

global issue. Thus it has its roots in science-based calculations of reduced GHG emissions and stewardship of natural resources. However, in most cases green building policies affect land use, zoning, and building codes—traditionally in the purview of local governments. Local governments typically have neither the budgets nor the personnel to advance the science of climate change but have devoted resources to understanding the impact of green building practices on local economies and the environment. If the United States is going to become a leader in climate change policy, as promised by President Obama, then more local and state governments need to address barriers in existing land use, zoning, and building codes, which impede implementation of climate change policies, including permitting green building programs. This probably will not happen without federal legislation mandating attainment of GHG emissions reductions by state and local governments. The rationale for this legislation is the same as for many of the other key environmental regulations adopted in the last fifty years, including the Clean Air Act and the Clean Water Act: consistent nationwide standards mandating GHG reductions are necessary to protect public health and safety, and without national regulations, the GHG emissions cannot be managed successfully. The science supporting climate change certainly supports that position, as it is the cumulative impact of GHGs that contributes to climate change.

Federal legislation should also resolve the issue of what constitutes green building by defining key metrics of sustainability: energy-efficiency standards for structures, per-person potable water-use standards, renewable-energy requirements, and additional indoor air-quality requirements. Similar to other environmental laws, the federal standards could then be implemented by state and local governments. Adopting metrics rather than a unified green building standard would preserve the ability of local and state governments to tailor solutions to their jurisdictions. However, developers and others would have clear guidance on the minimum requirements for building green. States should be permitted to adopt more stringent guidelines if necessary to attain required emission reductions.

Federal legislation should also make illegal any provisions contained in regulatory codes or in deed restrictions that prohibit xeriscaping and use of sustainable-energy technologies on solely aesthetic grounds. Although such an act has the potential to impair contracts, it would likely be enforceable if determined to be necessary to address a national environmental crisis.

With these measures in place, all state and local governments would be spurred to action to reduce GHG emissions in their communities to attain federal standards. At the same time, determining the details of how to achieve emissions reductions and enforce the federal metrics of sustainability should be left to state and local governments so that the experts in local conditions can shape the type and design of green building projects, how to balance the competing interests of historic preservation and energy efficiency in building renovation, and which types of incentives, if any, are needed to ensure success. Thus, federal law should not preempt the field entirely and should allow the states and local governments to continue to function as innovators in the regulation of green building. If all of these regulatory changes occur, the financial disincentives to green building will be greatly reduced, and the costs of going green will begin to make sense in the short term as well as the long.