

# Implementing a High Performance Lower Manhattan



New York City has a tremendous opportunity to lead the world in pioneering “high performance” or “green” commercial, residential and public buildings by emulating and surpassing recent successes such as the Conde Nast office tower at Four Times Square and the Solaire residential building in Battery Park City. By design, high performance green buildings improve air and water quality, conserve energy, minimize negative impacts on the environment, provide healthier indoor air quality and more pleasant experiences for users through a variety of methods including site selection, choice of building materials, and the design process. However as one architect of green buildings notes, “Green building shouldn’t just lower energy costs and keep us from inhaling poisons, it should make our lives better by putting us in contact with nature.” Indeed, green buildings can improve users’ quality of life by reducing the barriers between the indoor and the natural environment, allowing people to see the weather and the world outside, open their windows and feel the breeze. They are a key component in promoting environmental sustainability through the built environment.

## **Making the Case for High Performance Green Building Design**

The environmental rationale for high performance green building design is compelling. According to the United States Green Building Council (USGBC), the member-driven organization that designs and administers the industry-standard Leadership in Energy and Environmental Design (LEED) guidelines, commercial and residential buildings account for over half of electricity use in the United States, produce one third of total greenhouse gas emissions, and consume twelve percent of the country’s potable water supply. By implementing high performance green building design, we can reduce the impact of buildings on the environment while providing healthier and more pleasant living, working, or learning conditions for their occupants.

Healthier and more pleasant conditions inside green buildings are a big part of their appeal. With poor indoor air quality cited by the US EPA as one of the top five environmental health risks today, air quality in the workplace is increasingly taken into account for its impact on workers’ health and productivity. Recent studies have documented that increased ventilation, better temperature and lighting control, and increased day lighting is correlated to increased worker productivity by reducing absenteeism and illness. In commercial green buildings, the productivity gains of workers translate to significant financial savings to their employers – one of the primary reasons that high performance green buildings make not only health and environmental sense, but also financial sense.

Yet perceptual hurdles about the upfront costs of high performance green buildings continue to limit their broad acceptance. In the public sector, budgetary procedures that separate construction and operating costs fail to account for savings accrued from green buildings over the course of their lifecycles. Aiming to quantify these savings, a 2003 study commissioned by the California Sustainable Building Taskforce was the first of its kind to present a comprehensive cost benefit analysis of LEED certified green buildings.<sup>1</sup> A review of thirty-three LEED registered projects over a projected twenty-year lifecycle found that high performance green buildings typically require a 2% or less premium of total construction costs but result in savings of ten times the initial premium. Or, green buildings in the study cost \$2-3 more per square foot but rendered an average savings over conventional buildings of \$50 to \$66 per square foot over twenty years, discounted to present dollars and depending on the level of LEED certification achieved. The study stressed that greater savings could be achieved with earlier planning for green building design.

## **A “Green Ground Zero”**

Early in the rebuilding of Lower Manhattan the public heartily embraced the goal of rebuilding the World Trade Center site and Lower Manhattan as a model of high performance green building design and environmental sustainability. The high profile of the World Trade Center redevelopment provides an opportunity both to send a socially and environmentally responsible message to the world and to test and demonstrate the cutting edge of environmentally sustainable architecture. At “Listening to the City,” participants strongly voiced the message that the World Trade Center should set a world-wide example for high performance green building design, a concept that was reinforced by the Lower Manhattan Development Corporation’s (LMDC) “Principles and

Revised Blueprint for the Future of Lower Manhattan.” With broad public support for this goal established, the challenge shifts to overcoming perceived financial hurdles and institutional resistance.

In the last year, evolving plans for the World Trade Center site have begun to address high performance and sustainable objectives. Preliminary architectural renderings for the Freedom Tower released in December 2003 incorporated an integrated wind farm atop the building that would provide 20% of the building’s energy needs. In January 2004, the Draft Sustainable Design Guidelines for the World Trade Center site were released by the LMDC as part of the World Trade Center Draft Generic Environmental Impact Statement (DGEIS) and revised for the Final GEIS in April. These guidelines are distinguished by their focus on the large-scale and urban nature of the project, described as its “urban environmental quality.” They promote a “whole system” approach to designing the World Trade Center site, provide a range of options for satisfying different LEED and New York State Executive Order 111 objectives, and promote the integration of building shell design and tenant spaces. When followed at their minimum required level, the project will achieve LEED certification and exceed the New York State Energy Conservation Construction Code by 20%. When followed to the fullest recommended extent of the guidelines, the development should achieve a LEED Silver rating.

The Lower Manhattan rebuilding process will also aim to minimize the harmful environmental impacts of multiple construction projects occurring at once by a set of agreements adopted by the multiple public agencies overseeing the rebuilding called Environmental Performance Commitments (EPCs). The EPCs aim to reduce particulate matter emissions, noise and vibration during construction projects by the required use of ultra low sulfur diesel (ULSD) fuel and best available retrofit technology on heavy duty construction equipment, vehicles and generators on the construction sites of Lower Manhattan projects. While the EPCs should be strengthened to extend the ULSD fuel regulations to mobile sources of pollution (trucks, for example) moving to and from the construction sites in addition to onsite equipment, they represent a step in the right direction for reducing construction-generated air pollution and should be adopted for all construction projects in New York City moving forward.

### **Linking Economic Development with High Performance Design**

Since New York City’s pioneering work in 1999 with the creation of the High Performance Building Guidelines by the Department of Design and Construction, the public sector has increasingly taken the lead in implementing high performance buildings and infrastructure, from Battery Park City to the MTA and the Queens Botanical Garden. Mayor Bloomberg’s Energy Task Force recently urged the city to be the forerunner in creating high performance buildings and infrastructure in order to reduce energy demands and lesson the needs for additional power plants, which are most often sighted in the city’s poorest neighborhoods. And Intro 111 currently before the City Council calls for future municipal construction projects to adhere to a LEED Silver standard. Furthermore, the Governor’s Executive Order 111 and the various programs offered by the New York State Energy Research and Development Agency have challenged New Yorkers to create a bold energy future.

As we learned from the High Performance Building Report – sponsored by the Center for Environmental and Economic Performance – the city stands to benefit greatly in terms of economic development, environmental protection, and social equity by incorporating sustainable design into all building work. For instance, this effort spearheaded by government, business, economic development officials, unions, environmentalists, planners, and others shows that high performance design can help New York City maintain a thriving manufacturing sector. We have the talent and the capacity to become a global design and manufacturing center for the high performance building market, and we must capitalize on our proximity and help manufacturers transition from the old to the new. A significant public sector investment in sustainable design in Lower Manhattan, both at public policy and program development levels, can help facilitate this process.

In implementing sustainable designs at Ground Zero, we also must ensure that workers are properly trained in the new technologies. Building and retrofitting high performance buildings, and producing the products that support this economic sector can lead to a century of good jobs for our city’s workers. It is clear that our city depends on a highly-skilled labor force, and worker training, re-training, and education with respect to sustainable design and building operations in Lower Manhattan can help fuel the market.

**This policy brief was written by Regional Plan Association and Urban Agenda.**

(Footnotes)

<sup>1</sup> Kats, Gregory. “The Cost and Benefits of Green Buildings: A Report to California’s Sustainable Building Task Force.” Capital E. October 2003. [http://eetd.lbl.gov/Emills/PUBS/PDF/Green\\_Buildings.pdf](http://eetd.lbl.gov/Emills/PUBS/PDF/Green_Buildings.pdf)