

PCA Perspectives:

Setting New Standards For Sustainability In Buildings

By Al Perlman

What makes a building sustainable? To date most of the efforts to define “green” or “sustainable” buildings in the United States have focused primarily on improving energy efficiency and using materials that are either recycled or reusable.

While energy efficiency is a critical aspect of sustainable buildings, there are other factors of equal importance—performance factors such as life safety, property protection, durability and disaster recovery.

Yet, despite their relevance, most sustainability programs have failed to take these performance factors into account. In fact, a lack of clear language about sustainable buildings has hampered efforts by many state and local jurisdictions to certify high-performance buildings.

However, communities can now move forward thanks to the efforts of the Portland Cement Association (PCA), which recently created a sample ordinance, called High Performance Building Code Requirements for Sustainability. The document, which is available free at

the PCA Web site (www.cement.org), can be used by state and local jurisdictions to establish a mandatory, enforceable building code for the construction of sustainable buildings.

PCA's effort is part of an overall push by the association to promote and support the development of sustainable buildings, roads and other infrastructure throughout the United States and Canada. As part of this continuing effort, PCA recently established a research center at the Massachusetts Institute of Technology, called the Concrete Sustainability Hub. PCA supports innovations in sustainability through its annual Cement Industry Energy and Environment and Sustainable Leadership Award programs.

▮ Sustainability: More than Energy Efficiency

The effort by PCA to create a common language for high-performance buildings comes at a time when interest in green and sustainable buildings is gathering tremendous momentum. By next year approximately 10 percent of all commercial

construction starts in the United States are expected to be for high-performance, sustainable buildings, according to figures from the US Green Building Council (USGBC).

The sample ordinance for high-performance buildings successfully goes beyond the traditional issues of energy efficiency, recycling and reuse strategies, which are generally the key driving factors of green construction. PCA believes sustainable buildings should be more durable and disaster resistant than permitted by the minimum building code requirements and that belief is reflected in the sample ordinance.

PCA represents the interests of cement manufacturers in the United States, so it is natural for it to support the construction of buildings that are more durable and disaster resistant. After all, concrete is so widely used as a building material of choice because of its attributes of durability, reduced maintenance and energy performance.

However, PCA argues, it is precisely those requirements—durability, energy efficiency, and disaster resistance—that are most critical in driving the development of green buildings that will be sustainable and efficient over their entire life-cycle.

“Our goal is improving buildings,” says Stephen S. Szoke, director of codes and standards for PCA. “If we can do that we’ll be helping communities. Our ordinance covers all of the energy and sustainability aspects of green buildings that are addressed elsewhere: Things like reducing the energy use of the building; reducing the lighting load; optimizing the use of sustainable building materials.

“We have added in safety and security components,” Szoke adds. “We believe a basic building code for sustainability should include life safety and property protection provisions. Not only does this potentially save lives, but it minimizes the

amount of material disposal caused by repair and replacement through normal operation as well as when disasters occur.”

Szoke and others have pointed to specific disasters to make the case for durability and disaster-resistance as fundamental requirements for sustainable buildings. After Hurricane Katrina, for example, the US Army Corps of Engineers reported that 44 million cubic yards of construction material wound up in landfills, Szoke points out.

“We need to make the buildings better—they must be more durable and disaster resistant,” Szoke says. “Why invest all this money in energy efficiency if the investment can be wiped out in a fire or flood or wind event or other disaster? Are buildings still green if you have to replace them after a disaster or in less than 50 years?”

The Bottom Line: Better Buildings

The sample ordinance put forth by PCA amends and appends the International Code Council International Building Code to address high performance buildings. The ordinance specifically excludes one- and two-family dwellings. It is written in enforceable code language. It is available for download at the PCA Web site and does not require a fee or certification.

Szoke says it will be up to local communities to decide whether to enact the ordinance, but he believes that government buildings, including schools, should absolutely be built to the requirements recommended by PCA. Other facilities that are particularly appropriate include senior residences, assisted living facilities, and multi-family apartments.

“We think these requirements are really critical for buildings that are government-owned or government-funded. It will be up to the local jurisdiction if they

want to take these requirements to the private sector,” Szoke says. “But certainly assisted living and other senior residences should be built to these requirements. And, of course, schools—that’s where people usually go for refuge, to ride out the storm.”

Szoke also points to a huge trend in multi-family apartments, condominiums and assisted-living facilities for senior citizens.

“Most of the current multi-family buildings are designed to the absolute minimum life safety requirements and all too frequently waivers are obtained to build these buildings at less than minimum code,” he says. “For the elderly, response time is slower, their ability to evacuate a building can be hampered. We took an opportunity to address this major issue, identified as a priority by the US Fire Administration, in our document.”

Szoke also points to other considerations for communities.

“If buildings are more durable and long lasting, they will provide communities with a more continuous tax revenue stream,” he says. “They will attract people to relocate and, because they are more disaster resistant, they will require less demands on

emergency responders and community resources.

“Our bottom line is this,” Szoke says. “High-performance buildings are more than just buildings with good energy performance. They should also place a high emphasis on life safety, property protection, security, aesthetics and community issues. That’s why we developed this ordinance, and that’s why we believe it will be widely accepted.”

⋮ **About the Author:**

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The Portland Cement Association, based in Skokie, Ill., represents cement companies in the United States and Canada. It conducts market development, engineering, research, education and public affairs programs. More information on PCA programs is available at www.cement.org.