



**National Association of State Fire Marshals
Green Buildings and Fire Safety
Advisory Working Group Meeting
December 16, 2009
Meeting Notes**

Attendees:

Chief Ben Barksdale, International Association of Fire Chiefs
Karen Deppa, National Association of State Fire Marshals
Roy Deppa, Marchica & Deppa, for NASFM
David Fuller, FM Global-Engineering Standards
Anthony Hamins, National Institute of Standards and Technology
Chris Jelenewicz, Society of Fire Protection Engineers
Ed Kirkpatrick, National Association of State Fire Marshals (by phone)
Nick Marchica, Marchica & Deppa, for NASFM
Ron McGraw, International Association of Fire Fighters
Nancy McNabb, National Fire Protection Association
Allison Moore, National Volunteer Fire Council
Lucas Pfannenstiel, Liberty Mutual Property
Daniel Ryan, Underwriters Laboratories
Steven Sawyer, International Fire Marshals Association
Erin Shaffer, Green Building Initiative
Jim Tidwell, Fire Equipment Manufacturers Association
Justin Wiley, International Code Council
Sara Yerkes, International Code Council

The agenda is attached to these meeting notes. Presentations that are available from Working Group members will be made available with these notes.

After attendees' introductions, Roy Deppa gave a presentation on the background and status of NASFM's Green Buildings and Fire Safety project. This was followed by presentations from several Working Group members about their activities and concerns related to green buildings and fire safety.

The **International Code Council (ICC)** is in the process of developing an International Green Construction Code (IgCC) that will be out in the fall of 2011 for the 2012 cycle. It is being developed with the American Society of Testing and Materials (ASTM International) and the American Institute of Architects (AIA). It is being developed by the Sustainable Building Technology Committee (SBTC) as a consensus document that

will apply to new and existing commercial buildings, structures and systems. It is being designed with the leading recognized green rating systems in mind, and is intended to supplement the commercial building code, not replace it, and to be compatible with other ICC model codes. It is being developed in tiers, to keep up with developing technology. It is being designed to be adaptable, adoptable and enforceable (written in mandatory language), and will contain performance, prescriptive and pre-engineered solutions. Background and status are available at the website <http://www.iccsafe.org/cs/IGCC/Pages/default.aspx>.

There will be a public comment period on the draft IgCC that begins in March 2010, with a hearing to review the public comments in August in Chicago. Sara Yerkes said that the ICC would appreciate having a unified set of public comments from the fire service.

The National Green Building Standard, known as ICC-700, was developed with the National Association of Home Builders. It applies to 1- and 2-family residences up to 3 stories (same as the International Residential Code). More information about ICC-700 can be found at <http://www.nahbgreen.org/Guidelines/ansistandard.aspx>. The ICC can provide information on where ICC-700 is being used and adopted by home builders around the country.

FM Global is addressing unintended consequences related to a number of green building technologies to identify possible hazards and solutions. The FM standards process in 2010 will include several green-related standards, including waste fuel fires, plastics in construction, and green roofs. Among the areas of concern are the following:

- the use of flammable plastics in skylights
- hazards related to wind power (for which FM Global is developing a standard)
- photovoltaic panels, which produce huge currents that have to be isolated and carefully shut down in emergencies
- direct fluid heating, which is another aspect of solar heating that may involve flammable liquids
- the use of flammable lubrication oils
- vegetated roofs
- roofs that incorporate large amounts of recycled materials, such as polystyrene, which is lightweight, a good insulator, inexpensive and very flammable
- wall insulation systems that contain combustible insulation with a noncombustible exterior (which primarily have fire problems during construction)
- water conservation and reduction; encroaching restriction on water consumption can change sprinkler design and affect sprinkler inspection, testing and maintenance
- pollution control and air quality; for example, restrictions on diesel engines may result in reduced test times, or engines may not be brought up to pressure quickly enough, or be tested often enough
- alternative fuels, such as hazards associated with a hydrogen-powered fork truck in a warehouse, the long-term stability of biodiesel fuels, and the flammability of alternative refrigerants such as propane and butane.

In partnership with the Home Fire Sprinkler Coalition, FM Global is working on quantifying the benefits of sprinklers by measuring the impacts of sprinklered vs. nonsprinklered fires, including comparing air pollution, water pollution, emissions, etc. A full report is expected to come out in March 2010, but a preliminary report is available at <http://nfpa.typepad.com/firesprinklerinitiative/are-sprinklers-green/>.

FM Global is also working on changing the way wall and ceiling panels are tested, providing less expensive intermediate tests to encourage more manufacturer participation in the approval process.

The FM Global Research Technical Report, “The Influence of Risk Factors on Sustainable Development,” is available for downloading at www.fmglobal.com/assets/pdf/P09104a.pdf.

The **National Institute of Standards and Technology** (NIST) Building and Fire Research Laboratory is the lead federal agency on the National Science Council’s Building Technology Subcommittee, which is defining the scope and direction of the federal research and development agenda. NIST’s programs include efforts in support of net-zero energy buildings; reduced flammability of sustainable infrastructure materials and building contents, including replacements for halogen-based flame retardants; guidelines to support the safer use of hydrogen in residential and commercial applications; guidelines for improved fire ground operations and tactics, such as hose stream effectiveness, using science-based principles; and benefit-cost performance of residential fire sprinklers.

NIST is working on a Natural Disaster Failure Database (Earth, Wind, Fire, Water) that deals with issues such as structural failure, evacuation, and emergency response, to capture “lessons learned” from disasters in which buildings failed from natural disasters. The database is expected to be up and running in about a year.

Earlier in 2009, NIST called 60 “thought leaders” to participate in a roadmapping exercise to identify future problems in fire safety in the United States. Fire prevention and green concepts were not raised as potential conflicts, but probably should be incorporated into NIST’s roadmap.

Underwriters Laboratories is researching the fire performance of lightweight/engineered building construction, which is encouraged in green buildings because it uses fewer materials. Another area of research at UL is the impact of energy-efficient windows on structural fire dynamics, and whether photovoltaic arrays impact the fire rating of the roof installed underneath. **UL Environment** is a new UL subsidiary that was set up to provide independent green claims validation, product certification, training, advisory services and standards development. It offers a multi-tiered rating system for products, including building materials. It does not assess the safety of green materials, but rather independently validates the environmental claims made by manufacturers.

The **Society of Fire Protection Engineers (SFPE)** is working on a position statement that says that fire protection systems are important and need to be tested; more environmentally friendly alternatives need to be considered; and anything that affects the design of buildings also affects the practice of engineering.

The **International Fire Marshals Association (IFMA)**, together with the **National Fire Protection Association (NFPA)** and the **Fire Protection Research Foundation**, are working on best practices for photovoltaic solar panels and emergency responders on electric vehicles (including fueling, charging and storage). NFPA is also looking at broadening its proposed Hydrogen Technologies Code, NFPA 2, to a multi-fuels approach.

NFPA is also looking at electrical code issues related to SmartGrid technology, for example, what happens when power is being put back into the grid and someone is working outside or a firefighter is responding to an incident there. There are currently multiple points where shut-off of the system must occur, but for safety reasons, there should be one shut-off point for everything.

The **International Association of Fire Fighters (IAFF)** wants education on all “green” systems for first responders, including how to respond when something bad happens (and something bad always happens). The training needs to be brought into the firehouse to make it accessible to all firefighters. The key for responder safety is standardization; the Emergency Response Guide currently contains volumes of information for every hybrid vehicle.

The **Fire Equipment Manufacturers Association (FEMA)** is interested in knowing about the emerging fire hazards related to green building technology so that its members can design equipment to protect against those hazards.

The **International Association of Fire Chiefs (IAFC)** agrees that standardization is key, because lack of standardization can lead to unintended consequences for emergency responders. The more products that are listed or marked by acceptable independent third-party organizations, the better, so that code officials not need to make those determinations on their own. Information dissemination should include details of others’ experiences with green building/fire safety issues. Also, there needs to be a means established similar to a guide book/data base that describes those hazards associated with “green” building components that are involved or potentially involved in firefighting operations.

The **National Volunteer Fire Council (NVFC)** echoes the points raised by the IAFF and emphasizes that time is a commodity for volunteers. Anything that can be done to make the information as simple and accessible as possible would be welcome.

Liberty Mutual Property is internally researching green commercial properties to verify that green materials being used are performing as well as or better than the materials they

are replacing. Sprinklers and other fire safety measures should become more prominent within the green building rating systems. As more features become prerequisites within the green rating systems, fire protection measures need to become more prominent and earn points toward a green rating.

Though David Conover of the **Pacific Northwest National Laboratory**, the **Department of Energy**'s representative to the Advisory Working Group, was unable to attend the meeting, he sent some thoughts that he invited Karen Deppa to share with the meeting participants: "I do have a general comment regarding 'green' and fire safety. I think most all would agree fire safety, structural, egress, venting of combustion products, etc., are all primary concerns to protect the public safety, health and welfare. Codes can also address issues such as energy, water conservation, etc., as can public awareness and incentives. The key in my mind is to make sure that in addressing the latter that one is not directed into compromising the former. In addition as updating the former one needs to make sure that the latter are not directly or indirectly precluded unless it can be clearly shown it does compromise public safety. A key consideration in addressing this is conformity assessment (testing, certification of products and designs, etc.). Many new technologies and designs that can address sustainability issues need to be appropriately evaluated to ensure that they will not compromise health and safety – and when they are so evaluated then codes and standards should ensure they can be readily specified and installed. That is a very broad statement but I think you get the intent."

Conover's note continues, "Also a key issue is building commissioning and ongoing O&M – key to the fire service but also a key to sustainable design and construction. If the building does not perform when occupied and made to continue to perform as intended then we are not getting what was envisioned. Something of importance to both fire safety and sustainable communities that I think could bring them together to help each other in addressing building issues post occupancy."

Areas of Discussion

There was a general consensus by the group that the NASFM project is needed and that it can have a positive impact on responder safety and on the code setting and enforcement activities of local authorities. Several attendees stressed the need for education in dealing with new situations posed by emerging technology. Also noted is the need for maximizing standardization, and the development of alternative technologies often results in less standardization, which can pose hazards to responders. The focus of this discussion was the consensus that education, sharing information, and making information readily available are critically important, and this project addresses those points.

Specifically, the NASFM representatives asked about the group's thoughts on the feasibility of developing an interactive forum so that users can enter data and narrative describing practical experiences, and the group strongly supported the idea and felt confident that people will make use of it and will enter experiences into a bulletin board and/or database format.

The group then discussed issues and paths forward for the NASFM Green Buildings/Fire Safety Project. The following points were discussed:

- The environmental community and green building groups such as the Natural Resources Defense Council, Sierra Club, U.S. Green Building Council and Alliance to Save Energy must be brought into this effort; the website must be equally friendly to them, and must provide a formal and proper outlet for their concerns. Green organizations sometimes view codes as impediments to achieving their goals, but they can be educated to the real purpose of the codes and to the goals of our project. Justin Wiley can help NASFM with entrée to these groups.
- Having an advocacy piece to explain the ways in which fire safety is a green concept may be useful in working with non-fire-service audiences.
- As far as project scope, focusing on residential applications may be more important for emergency responders, while green aspects of commercial buildings are more relevant to code officials.
- Checklists for code enforcement officials are key to helping them know what to look for when inspecting green buildings. Equivalent levels of safety and protection are the goal, and performance is key.
- Fire losses in green-certified buildings or that use green technologies are not being captured; how can we capture such losses?
- The National Fire Fighter Near-Miss Reporting System (<http://www.firefighternearmiss.com/>) is a potential model for the entry of information related to green buildings and fire safety.
- The EPARADE (the Electronic Prevention Advocacy Resources and Data Exchange) Forum in Yahoo Groups, maintained by the U.S. Fire Administration, is potential model for discussion on various topics.
- Adaptive re-use of existing buildings (including renovation of historic/old buildings) is an area that could be covered by this project.
- The project/website needs to develop a methodology for identifying new issues under the scope of green buildings/fire safety.
- There are building-related aspects of alternative fuel vehicles that the website may wish to cover or provide links to, or at least provide a placeholder for future activity. The group discussed concerns about the new diesel engine regeneration features on fire apparatus that have resulted in engines' running more now than they used to.
- Sustaining the project beyond the term of the DHS grant is crucial.

Next Steps:

- Karen Deppa will send notes of the meeting to Working Group members, as well as a description of the project that can be used in publications, on websites and to otherwise spread the news about the project.
- In the coming weeks, the NASFM team will reach out to some current Working Group members for additional insights, as well as potential new Working Group members, especially from the environmental community.
- NASFM expects to have a preliminary website on the project up and running by early February 2010. The Working Group will be asked to comment on the website, suggest content and help spread the word about it to their constituents.
- The NASFM team will be moving forward with guidelines for code enforcers and first responders, and will consult with Working Group members periodically as they are being developed.
- The NASFM team will identify whether and what subcommittees or task groups are necessary and determine the path forward on that.
- The NASFM team will look at holding the next meeting of the Advisory Working Group in the Washington, DC, area in the spring of 2010. It was suggested that holding it around the time of the Congressional Fire Services Dinner, when many out-of-towners will be in DC anyway, is a possibility (though it was acknowledged that many other groups will be holding meetings around that time as well).
- Between meetings, communications with the Advisory Working Group will take place by email and conference call as necessary.



Agenda
NASFM Green Buildings and Fire Safety
Advisory Working Group
Wednesday, December 16, 2009
10 am – 1 pm

Location: Conference Room of the International Code Council
500 New Jersey Avenue, NW, 6th Floor
Washington, DC

1. Welcome and Introductions
2. Background on NASFM Grant, Deliverables, and Preliminary Findings
3. Working Group Member Activities/Concerns re: Green Buildings and Fire Safety
 - a. ICC
 - b. NIST
 - c. FM Global
 - d. UL
 - e. Any other Working Group members may describe their organizations' activities involving green buildings and fire safety, if any, and/or any particular concerns they want to ensure are addressed by NASFM's project.
4. Working Group "open mic" discussion and integration of issues
5. Interactive Clearinghouse/Website Elements and Structure
6. Subcommittees and Assignments
7. Communications Moving Forward

Note: A working lunch will be served.