National Construction Safety Team (NCST)
Advisory Committee (Committee) Meeting
National Institute of Standards and Technology (NIST)
Gaithersburg, Maryland
December 10, 2012

Meeting Summary

Advisory Committee Members:

Jeremy Isenberg, Chair	AECOM
Ronald J. Coleman	Fireforceone
Paul A. Croce	FM Global (retired)
Susan L. Cutter	University of South Carolina
Carlos Fernandez-Pello	University of California, Berkeley
Jeffrey L. Garrett	CTLGroup
Anne S. Kiremidjian*	Stanford University
R. Shankar Nair	**exp** US Services Inc.
James R. Quiter	Arup
Sarah A. Rice*	The Preview Group, Inc.

NIST Representatives, Guests, and Contractor Support:

Shyam Sunder	Director, Engineering Laboratory (EL) and NCST Designated Federal Officer
Howard Harary	Deputy Director, EL and NCST Alternate Designated Federal Officer
Eric Letvin	Director, Disaster and Failure Studies Program (DFSP)
Marc Levitan	Lead, National Windstorm Impact Reduction Program (NWIRP) R&D
Steve McCabe	Deputy Director, National Earthquake Hazards Reduction Program (NEHRP)
Melissa Lieberman	NIST
Michael Newman	NIST
Anthony Hamins	NIST
Stephen Cauffman	NIST
Nancy McNabb	NIST
Erica Kuligowski	NIST
Frank Lombardo	NIST
Long Phan	NIST
Nelson Bryner	NIST
Fahim Sadek	NIST
Dorianna Andrade	NIST
Tina Faecke	NIST
Michelle Harman	NIST

Matt Heymann	Visitor
Libby Lewis	CNN
Francoise Arsenault	BRI Consulting Group

Committee members in *italic* participated via conference call.
*Committee members not in attendance.

Summary of Discussions

I. Welcome and Opening Remarks

Jeremy Isenberg, Chair of the Committee, welcomed the members. After introductions (bios are available at www.nist.gov/el/disasterstudies/ncst/ncstac_members.cfm), the Chair reviewed the charge to the Committee, as set forth in the Committee charter (www.nist.gov/el/disasterstudies/ncst/ncst_charter.cfm). Isenberg remarked that the Committee is looking forward to hearing about progress on the data repository, the application of the decision criteria to Hurricane Sandy and other disasters, and how the Committee's recommendations for Fiscal Year (FY) 2011 have been addressed by NIST.

Shyam Sunder, Director of the NIST Engineering Laboratory, also welcomed the members. He reported that Patrick Gallagher, Director of NIST, will not be able to join the meeting because of a prior commitment. Dr. Gallagher is very interested in work of Committee and in the results of the Joplin tornado study. NIST expects to have a draft of the Joplin study available for public comment by early summer 2013. At today's meeting, progress on the study will be discussed. The findings and recommendations will be discussed at a Committee meeting next year. Sunder noted that the President's recent Executive Order 13589 to reduce government administrative costs will keep face-to-face meetings to one a year. The next meeting (via teleconference call) has been scheduled for January 11, 2013, from 1:00 p.m. to 3:00 p.m. Eastern Time to discuss and finalize the Committee's FY 2012 report to Congress.

II. NCST Study on the Joplin Tornado

A. Progress Update

Marc Levitan, Lead, National Windstorm Impact Reduction Program (NWIRP) R&D, provided an update on the Joplin tornado study (www.nist.gov/el/disasterstudies/ncst/upload/NCSTAC-Joplin1-Levitan-FINAL.pdf). Two publications have now been completed: the Investigation Plan published in May 2012 and a Progress Report published last month. Data collection is almost complete. NIST is still seeking some data on injuries, design information for some buildings at the St. John's Regional Medical Center, and additional data on fires following the tornado. NIST also is looking for more data related to anecdotal information collected on safety windows installed in the late 1960s at the hospital's behavioral health unit that may have performed better than other windows during the tornado. Levitan noted that a lesson learned on fatality and injury data is the value of partnering with the Centers for Disease Control (CDC) early in the investigation. Next steps will be completion of data collection and research tasks for Objectives 1-4.

A member asked if the trail is now growing cold on data collection. Levitan stated that this may be true for data on fires following the tornado. However, additional data on injuries may be provided by the State of Missouri and some building data (windows) on a building at the St. John's Regional Medical Center may be provided by others. Sunder noted that data collection is a very slow process with these types of investigations. Data collection on the World Trade Center (WTC) investigation took years.

The Chair asked about lifeline performance data. Levitan stated that NIST work with lifelines is focused on how lifelines relate to the continuity of operations of residential, commercial, and critical buildings. There is limited data on damage to electric power systems and gas and water leaks. The Chair noted that lifeline earthquake engineering is a fairly well developed discipline. It may be helpful to consider this in organizing data on damage to lifelines and the study of vulnerabilities. Sunder remarked that the NCST Act strictly limits the study to building failures. Lifelines can be considered only to the extent that their performance affects buildings. The Chair asked Sunder for his thoughts on whether the limitation is a good idea, i.e., could a technical contribution be made but for this limitation? Sunder replied that legislation was introduced in the House of Representatives in 2010 to broaden the scope of the studies. However, the legislation has not been acted upon by Congress. Until that authority actually changes, the limitation will continue.

A member asked about the overall level of effort for the investigation. Levitan stated that it is a labor intensive effort. About 50 percent of his time is committed to the study. Other team members are committed at a much higher level of effort.

B. Tornado Hazard Characteristics

Frank Lombardo, Investigation Task Leader, presented an update on tornado hazard characteristics associated with the Joplin event (www.nist.gov/el/disasterstudies/ncst/upload/NCSTAC-Joplin2-Lombardo-FINAL.pdf). He reviewed the objectives and tasks, including ongoing work to develop wind speed estimates based on direct wind speed observations and indirect wind speed estimation from EF scale estimation and observed tree fall. The rough draft of his chapter is almost complete and findings are being developed.

The Chair asked if the model being used is a predictive model. Levitan clarified that the Rankine vortex model was being used to estimate the surface wind field that occurred during the tornado. It takes inputs from many different sources. The approach being used is to vary the input parameters to the model within their possible bounds until you match the tree fall pattern that occurred. A member asked if the goal is to obtain information about the damage sustained or the model. Lombardo stated that wind speed time and direction history are one result. Another result is a way to evaluate wind speed independent of the EF scale, which is primarily dependent on analysis of damage to buildings.

Another question related to sensitivities to types of trees, root systems, and other factors. Lombardo reported that he spoke with a tree fall expert and studied previous reports on tree falls. Long Phan added that NIST is trying to go beyond the EF scale for another evaluation methodology. Sunder also commented on the need to quantify the effects of the uncertainties in results. One member remarked that the number of trees studied (about 5,000) should support the

methodology. As a next step, NIST is looking at alternative ways of quantifying the risk posed by tornados. The current codes applicable to conventional buildings do not consider tornado hazards.

A member asked if NIST has talked to the insurers. Some insurers have construction drawings of buildings they insure. Other insurers write their own standards and freely give those to code groups and others. Levitan stated that NIST spoke with FM Global, which insured the St. John's Regional Medical Center. Levitan agreed that the suggestion to contact insurers for drawings is an excellent one.

C. Emergency Communications and Public Response

Erica Kuligowski, Investigation Task Leader, updated the Committee on emergency communications and public response associated with the tornado (www.nist.gov/el/disasterstudies/ncst/upload/NCSTAC-Joplin3-Kuligowski-FINAL.pdf). She discussed NIST interview recruitment strategies, data collected from 165 interviews conducted, sample demographics, and data collected on fatalities and injuries. Kuligowski noted some interesting observations on survivor behavior from the interviews. One observation is that the sirens were perceived by most people as an alert rather than a warning. Another is that most people did not react until danger was actually perceived or they were told to take action.

The Chair asked about the behaviors of the small number of people who took action earlier than others. For example, some people actually canceled plans that day. Others also took action right away, but in areas where they could obtain additional information.

A member asked about potential overlap with the CDC morbidity/mortality report. Kuligowski responded that the same data sets are being used. Data was collected by NIST from the Red Cross, the states, and the CDC. This helps to ensure that NIST is not double counting.

Another member commented that fatality data in disasters is not trustworthy. Kuligowski stated that NIST is plotting only the location of the injury since deaths may have occurred somewhere else from the injury location.

D. Structural Response

Long Phan, Investigation Task Leader, updated the members on the performance of buildings, designated safe areas, and lifelines (www.nist.gov/el/disasterstudies/ncst/upload/NCSTAC-Joplin3-Kuligowski-FINAL.pdf). Tasks 3.1 through 3.5 are nearly complete (additional design information on some buildings at the St. John's Regional Medical Center is being sought), as are tasks 4.1 through 4.6 (additional data on fires following the tornado is being sought). The rough draft of his chapter is almost complete and findings are being developed.

A member asked if there was an assessment of buildings rendered unsafe because of the loss of lifelines. Phan stated that St. John's Regional Medical Center had no battery powered lights for evacuation because it was thought that other power sources made the lights unnecessary.

Another member asked if the evaluation of building damage from wind used the same model for tree fall. Phan replied that the damage area was corroborated with near wind field estimates from the treefall analysis. Levitan noted the discussions in recent literature that uplift pressure

coefficients for roofs in tornadoes should be higher than for other strong wind events due to the upward flow near the center of the tornado. This issue was discussed at a recent meeting of the American Society of Civil Engineers (ASCE) Wind Load Subcommittee of the ASCE 7 Standard Committee. The consensus at that meeting was to delay addressing this topic as the data is preliminary. He added that there are other tornado simulators coming online soon so more data should be available in the next several years.

The Chair commented that the damage to the north and south sides of the Walmart building was very crisp. He asked if any conclusions can be drawn from that. Phan responded that the south side of the building was exposed to a much higher wind speed and was seriously damaged. The north side was not seriously damaged. The north side performed better than expected given the wind speed, which was higher than the design level.

III. Disaster and Failure Studies Program Update

Eric Letvin provided an update on the work of the Disaster and Failure Studies Program over the last year (www.nist.gov/el/disasterstudies/ncst/upload/Letvin_DFS-Program-Update-FINAL.pdf). One highlight directly resulting from the Program studies is a new proposed hazard scale (the Wildland Urban Interface (WUI) Hazard Scale) for wildland fires developed with the U.S. Forest Service (USFS). The NIST report on the work is available at www.nist.gov/manuscript-publication-search.cfm?pub_id=910443 and the news release summarizing the hazard scale is available at http://www.nist.gov/el/fire_research/wildland-fire-hazard-scale-120512.cfm.

Letvin reviewed recent disasters and the criteria scores assigned to the disasters by NIST: tornado outbreaks in February and March 2012; the Waldo Canyon wildfire; a warehouse collapse in Cheverly, Maryland; the mid-Atlantic Derecho storm; a parking garage collapse in Miami; Hurricane Sandy; and the Tamweel Tower fire in Dubai. Hurricane Sandy and the mid-Atlantic Derecho received the highest scores, both 3.3. With regard to Hurricane Sandy, many findings and recommendations from NIST's Hurricane Katrina and Rita Study (see http://www.nist.gov/public_affairs/releases/hurricane_report060906.cfm) are applicable to Sandy. NIST determined that a technical investigation to determine causes was not necessary. The decision was made not to conduct a technical investigation at this time because of the similarities between Hurricanes Sandy and Katrina. NIST staff is currently participating with the Federal Emergency Management Agency (FEMA) on its Mitigation Assessment Team (MAT). A FEMA MAT report on Hurricane Sandy is scheduled to be published in September 2013.

Letvin discussed recent significant code changes resulting from the Dallas Cowboys practice facility collapse (http://www.nist.gov/el/disasterstudies/dallas_012610.cfm) and code change activities based the Charleston sofa superstore fire (http://www.nist.gov/el/fire_research/20110315_charleston.cfm) ; the development by NIST of a Standard Operating Procedure (SOP) to document its procedures for conducting disaster and failure studies; and the award by NIST of a 5-year contract in 2012 for technical support in conducting its studies and for its data repository and Advisory Committee work. Task order 1 under the contract is to incorporate Joplin data into the repository..

A member asked if NIST is working with the National Fire Protection Association (NFPA). Letvin stated that some work is continuing with the NFPA on code compliance and the missing link between adoption and enforcement.

IV. Disaster and Failure Events Data Repository

Letvin presented an update on the NIST data repository for disaster and failure events, (www.nist.gov/el/disasterstudies/ncst/upload/DataRepositoryNCSTv5.pdf).

Letvin reviewed the three phases of the repository development. The website for Phase 1, the WTC dataset, was publicly released in August 2011. The website includes more than 94,000 videos and photos, computer simulations, and a complete set of technical reports. Phase 2 is the HUB Technology Pilot: the Chile Dataset. The Chile earthquake was selected for Phase 2 because it served a dual purpose as a repository and as support to the National Earthquake Hazards Reduction Program (NEHRP) work with the George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES). Milestones for Phase 2 include installation of the HUB software at NIST in September 2012; delivery of a final design document to NIST last month; and initial release of the Chile dataset on the NIST website in 2013.

Letvin also described the work planned to incorporate data from the Joplin tornado into the repository and the different levels of access to the repository. He reported that NIST plans to make significant progress this year on the Phase 3 Implementation Plan. Hurricane Sandy data collection also will be a focus.

The Chair asked if the Joplin building drawings are paper copies of images (they are). He stated that newer buildings would increasingly have Building Information Models (BIM) data as opposed to hard copy drawings, and that being able to handle files of this type would be a big help to researchers for transforming them into computational models. The repository should include basic routines for doing this.

A member asked how decisions are made on what to include in the database. Letvin stated that NIST is working on the protocols for these determinations. Another member asked if NIST anticipates challenges with the search and retrieve functions. Letvin responded that challenges are definitely anticipated. Not all of the data that is submitted to NIST will be tagged in a way that it is searchable. NIST may work with its partners to address this when developing the data management plan.

A member commented that NIST has not mentioned the Occupational Safety and Health Administration (OSHA). He advised NIST to reach out to OSHA because their staff is frequently the first on site at disasters. NIST responded that they frequently work with OSHA during disaster and failure studies, especially with structural fires.

V. NIST Response to the FY 2011 Advisory Committee Report

Sunder remarked that the recommendations of the Committee in the FY 2011 report, for the most part, are very valuable. He noted that a few of the recommendations cannot be acted upon by NIST because of the financial environment. NIST, similar to other agencies, is still awaiting appropriations for this year. NIST will continue to look for ways to strengthen the Program, which is leveraged through its other disaster-focused programs. He added that NIST will

continue to seek funding for the data repository, as it did in the budget initiative a few years ago. Sunder then discussed each of the Committee recommendations and the NIST response.

Recommendation #1
The decision making criteria are generally supported, and the algorithm appears to lead to pertinent investigations and proper resource allocation. However:
a. The Panel recognizes that investigations must, as a primary goal, serve code improvement efforts, the fundamental responsibility of the Teams.
NIST Response: The investigations conducted by NIST must achieve the purpose of the NCST Act, which is to improve the safety and structural integrity of buildings in the United States.
In addition, the criteria should also recognize that the investigations are scientific in nature and may increase the body of scientific knowledge.
NIST Response: The need for NIST's involvement and expertise is already considered in the decision criteria. NIST's mission expertise in advancing measurement science through scientific and engineering research may increase the body of knowledge.

b. An additional criterion should be considered to account for events with non-apparent or unfamiliar hazards, perhaps stressing the absence of a prior similar event or the novelty of a particular event, which would both cover unusual events and be applied objectively to terrorist events**.**
NIST Response: The current decision criteria allow for these considerations. NIST is clarifying the implementation guidance for the decision criteria.

c. Investigations should be launched immediately; a 72-hour delay was deemed too long for some incidents. It was recommended to remove bureaucratic obstacles to rapid response, and to have two or three current staff trained in accident investigation and able to depart within the 48-hour window, with others joining later if appropriate.
NIST Response: NIST is following the NCST Act, which states that "To the maximum extent practicable, the Director shall establish and deploy a Team within 48 hours after such an event." NIST's decision to deploy, which may be in the form of conducting a preliminary reconnaissance or an investigation, is made as expeditiously as possible. The Director of the Disaster and Failure Studies Program coordinates this process.

Recommendation #2
The NCST Act should be broadened to include lifeline incidents. Lifeline incidents should be afforded proper consideration on par with building incidents; hence, a balance between investigation of buildings and infrastructure should be addressed and achieved.
NIST Response: The Administration did not object to legislation that passed the House of Representatives in 2010 (House Resolution 3820) which broadened the scope of the NCST Act to include infrastructure in addition to building failures.

Recommendation #3
The approach to investigations, as represented by the Joplin, MO tornado investigation, is generally supported. Conduct of investigations is holistic, considering both tangible failures and human factors. The panel encourages the following:
a. Data gathering should identify information that can ultimately be integrated into code provisions based on risk and formal treatment of uncertainty.
NIST Response: One of the primary objectives of the NIST technical investigation into the Joplin tornado is to "identify, as specifically as possible, areas in current building, fire, and emergency communications codes, standards, and practices that warrant revision." NIST promotes, enables, and tracks adoption of recommendations through improved standards, codes, and

practices as well as research and other appropriate actions based on study findings. NIST is committed to this. The Committee should continue to remind NIST of the need to consider risk and uncertainty, if the Committee finds NIST lacking here.

b. Data gathering should support understanding of both building and regional impacts of incidents; codes and recovery are increasingly focused on the resilience of communities.
NIST Response: Data gathering for the Joplin investigation is focused on building performance and the performance of lifelines as it relates to the continuity of operations of residential, commercial, and critical buildings. The investigation is collecting information on the spatial characteristics and consequences of the Joplin tornado in the historical context, and is assessing the tornado at the local, regional, and national levels.

c. Data collection should be performed with the understanding that data will be archived in the data repository; specific attention should be given in the field to filling gaps in the database.
NIST Response: NIST agrees, and is working to fill gaps. NIST's intent is to place as much of the data collected during the Joplin investigation as possible into the publicly-accessible portion of the data repository.

Recommendation #4
The data repository is unanimously encouraged and supported. It is considered an excellent reporting platform and adds scientific credibility to investigations by including georeferenced data, and in electronic form data such as accelerograms and wind velocities. The panel recommends that:
a. NIST should ensure that take database software will be continually supported and updated to the latest standards.
NIST Response: NIST agrees. NIST plans to document and formalize the software requirements in FY 2013..

b. NIST develops criteria to decide which data will be accessible to all and which will be restricted.
NIST Response: NIST's intent is to maximize accessibility of the data in the repository, subject to the following: 1) Obtaining permission from the owner and/or copyright holder for non-NIST data; 2) applying NCST Act exceptions for a) information described by section 552(b) of Title 5, United States Code, or protected from disclosure by any other law of the U.S. and b) information described in section 7(a) of the NCST Act until the report required by section 8 of the Act is issued; 3) protecting disclosure of voluntarily provided safety-related information not directly related to the building failure being investigated and the NIST Director finds that the disclosure of the information would inhibit the voluntary provision of that type of information (see section 7(c) of the Act; 4) protecting information received in the course of an investigation under the NCST Act if the NIST Director finds that the disclosure of that information might jeopardize public safety (see section 7(d) of the Act); 5) applying exemptions provided by the Freedom of Information Act (see http://www.nist.gov/director/foia/index.cfm#exemptions);
6) redacting personally identifiable information and ;7) and other laws and regulations preventing the disclosure of classified information..

c. NIST develops safeguards to verify and maintain the validity of the data in the repository.
NIST Response: NIST will consider this and many other factors when selecting the operating platform. When NIST becomes aware of new information related to data already in the repository, NIST will continue to assess and ensure the validity of the information. NIST has the staff expertise to ensure data integrity.

d. Criteria for including data from non-NIST sources in the database should be clearly defined. NIST/D&FS should not be the vetting body for the quality or appropriateness of data from non-NIST sources. Professional societies having acknowledged stature and expertise may help develop a workable scheme to review and vet outside candidate studies for inclusion.
NIST Response: NIST will develop rigorous criteria for accepting data from non-NIST sources. A factor NIST will consider is the stature of the organization or individuals. For information from non-NIST sources that NIST uses in its investigations, the response provided above in 4(b) will be followed. NIST's highest priority will be to include non-NIST study reports, considering stature and 4(b) above. NIST will be impartial and will not advocate for one organization over another.

Recommendation #5
The process for influencing code modifications, enhancements, and improvements based on data collection should be the subject for future discussion between NIST and the Panel.
a. The Panel encourages the efforts to establish and maintain personal connections between NIST staff and ICC and NFPA committees. Transmission of findings through verbal and written reports is, of course, also supported. The Panel looks forward to more dialogue with NIST to determine if there are other ways to interface with the code process; an example is to initiate dialogue with the users of code provisions who have historically resisted changes.
NIST Response: NIST looks forward to further dialogue with the Committee to better engage with the codes and standards development process in implementing recommendations from NIST investigations. After a report is written, NIST carefully follows up with codes and standards and structures organizations, and NIST is fully engaged with these organizations.

b. Research staff often lack the interest and necessary skills to implement code changes. NIST/EL/D&FS should consider retaining additional staff, or training existing staff, to act as liaison between NIST and the codes and standards bodies.
NIST Response: NIST's programs and staff are fully engaged in the codes and standards development process, particularly with regard to the model code development process, and especially in the area of implementing recommendations from its investigations. The suggestion is excellent..

With regard to recommendation #5, a member asked if there has been a change since last year. Another member commented that the recommendation may not have been fair, and may have reflected the Committee's lack of knowledge of NIST work. Sunder added that NIST also could have done a better job of explaining its work. Nancy McNabb noted that NIST has increased its efforts in this area. Sunder stated that this is part of a long-term effort to strengthen role NIST's role in model code development. All 13 programs in the NIST Lab are required to have a standards strategy. He also noted that NIST investigations and findings are science-based but the recommendations are often based on more than pure science. NIST believes the appropriate place for decision-making lies in the voting process for the codes.

Another member pointed out the changes over the last year affecting the USFS. He commented that fact-based testimony is absolutely necessary. Sunder agreed. For every code change, there are multiple points of view, some reflecting cost considerations and some reflecting safety concerns. As a federal organization, NIST can request significant changes because it is impartial. If NIST determines the changes are beneficial to the Nation, it will request them.

VI. Advisory Committee Discussion of FY 2012 Report to NIST

The Chair stated that the Committee's overall appraisal of the NCST Program is highly favorable. The following recommendations, which are based on the presentations by NIST staff at today's meeting, primarily express the Committee's priorities and its belief that elements of the NCST Program need to be advanced more rapidly.

Recommendation #1

As in 2011, the Committee enthusiastically endorses NIST's plan to develop a database of information on structural performance in earthquakes, fire, wind, and other extreme events. The development of the database should be accelerated. The Committee notes that design drawings of structures that are the subjects of investigations are currently being incorporated into the database of scanned images. In the future, database users will benefit from access to drawings in electronic form, such as that used in commercial Building Information Management/Modeling (BIM) software. The Committee recommends that NIST configure the database to accommodate electronic drawings.

Recommendation #2

The Committee expresses confidence that NIST technical staff is aware of approximations and uncertainties in modeling approaches, such as maximum wind speed and other parameters of the Rankine vortex model for tornado wind speed distribution. The Committee urges NIST staff to exercise care to inform less sophisticated audiences of the sensitivity of modeling outcomes to parameter uncertainties and recommendations that follow from assumptions. Such warnings will, in turn, alert less sophisticated users to the need for caution in interpreting the results of analyses that may be significantly influenced by assumptions and approximations. The Committee suggests that uncertainties may be addressed in statements covering fitness for use.

Recommendation #3

Data gathering should lead to enhanced public welfare, as well as to improved life safety and community resilience. Data gathering by NCS Teams should therefore be expanded to include infrastructure as well as buildings. It is anticipated that some facilities, such as hospitals and public safety buildings, and infrastructure elements, such as water and power distribution, may deserve designs to resist higher intensities of extreme events than other facilities. Such prioritization is accepted in earthquake-prone areas, a fact that may be helpful in prioritizing building and infrastructure use types for the broader range of hazards investigated by NCS Teams.

Recommendation #4

NIST should advance the social science element of the Joplin tornado investigation to understand the extent to which behavior contributed to casualties. To the extent that modified behavior would reduce casualties, it is recommended that NIST undertake or become a prime contributor to a program of science-based public information and education regarding how behavior can be modified to mitigate casualties in low frequency, high impact events such as tornados.

Recommendation #5
More events should be investigated. The decision-making criteria, leading to scoring on a 4-point scale, appear to be appropriate. However, valuable data are being lost because events with moderately high priority in the range 3-3.5 are not being investigated.

Recommendation #6
The Committee urges NIST to continue its vital role as an impartial provider of factual, science-based information for the code development process.

Recommendation #7
Ronald Coleman will develop a recommendation addressing the fire hazard.

VII. Public Comments
There were no public comments.

VIII. Final Comments and Next Meeting
The members discussed the schedule and process for reviewing the report on the Joplin tornado. The plan is for the Committee to review the report in March (tentatively in a closed-door meeting). The next milestone will be the release of the report for public comment.

The next Committee meeting will be held via conference call on January 11, 2013, from 1:00 p.m. to 3:00 p.m. ET. The purpose of this meeting will be to complete the Committee's annual report to NIST. NIST will ensure that the Web connection for the January 11 meeting will work for those using Apple systems.

IX. Adjournment
The Chair thanked the members and adjourned the meeting at 4:25 p.m.