NIST Response to the 2012 National Construction Safety Team Advisory Committee (NCSTAC) Recommendations

Recommendation	Response
1. As in 2011, the Committee enthusiastically endorses NIST's plan to develop a database of information on structural performance during earthquakes, fires, windstorms, and other extreme events.	• NIST believes that establishing the database that the Committee endorses is very important to our overall success of the Disaster and Failure Studies Program. • NIST has decided to hire three new staff members to support data requirements within the EL - one of these projects includes the Disaster and Failure Studies and Data Events Repository. One of the duties of <u>each</u> of these three staff members will be to support the Repository.
2. The Committee urges NIST staff to use its communication skills as well as its technical prowess to advise less sophisticated audiences regarding the appropriate use of maximum wind speed and other parameters arising from NIST investigations such as the Joplin tornado. Modeling based on such parameters is central to the interpretation of damage from such investigations and, if used by someone other than NIST investigators, must take into account the inevitable approximations and uncertainties.	• NIST welcomes and fully supports the Committee's recommendation regarding our wind speed expertise • Based in part on the Committee's suggestions last year, we revised the chapter on tree-fall modeling in our Joplin investigation report to make it more understandable to multiple audiences beyond those involved in modeling work. • The lead investigator on this work, Dr. Frank Lombardo, is preparing articles for publications that are aimed at wind experts and has had early discussions about potentially developing a training tool so that National Weather Service employees who are tasked with rating tornado damage will be able to readily use the tree-fall model. • Our goal is to see the tree-fall approach used widely – and appropriately – in practice to complement assessments based on the Enhanced Fujita (EF) scale.

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3. The Committee urges that data gathering should lead to enhanced public welfare, especially improved life safety and community resilience consistent with that described in the recently published National Research Council report on resilience. Data gathering by National Construction Safety Teams should be expanded to include infrastructure as well as buildings.	• Expanding NIST's formal NCST responsibilities to include infrastructure is of great interest to NIST. • Bill (HR 2132) pending in the House would combine many Federal responsibilities relating to earthquake hazards, wind, and fires.
4. The Committee recommends that NIST advance the social science element of the Joplin tornado investigation, and of investigations of other events affecting broad geographical areas, such as Superstorm Sandy, to better understand how human behavior contributed to the casualties. To the extent that improved self-protective actions would reduce casualties, it is recommended that NIST undertake or become a prime contributor to a program of science-based public information and education.	• NIST increasingly has recognized the importance of incorporating social science into its failure investigations and studies, which is consistent with the Committee's recommendations. • NIST's investigation in Joplin prominently included and integrated human behavioral considerations and findings. This yielded a much richer understanding of how building failures *and* human behavior impacted the pattern, location, and cause of casualties. • NIST has been working for the past several years on a DHS-funded project to improve the information that building managers and emergency personnel provide to the public in times of disasters. • NIST researchers also are producing two guidance documents for the General Services Administration (GSA). • In conclusion, NIST is fully in sync with and appreciate your recommendations in this area. We will keep you updated as our work progresses.

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5. The Committee recommends that more events should be investigated. The decision-making criteria, leading to scoring on a five-point scale, appear to be appropriate. Due to resource limitations, NIST can only investigate a limited number of events. However, valuable data are being lost due to these limitations. In this regard, the Committee strongly endorses NIST's decision to participate in the FEMA investigation of Super Storm Sandy.	• We have recently revised our decision criteria to consider six very fundamental companion questions to the formal quantitative criteria. NIST will share the revised criteria with the Committee tomorrow morning. • The revision to the criteria effectively de-emphasizes the formal scoring, which we think is a good thing. • These decisions about what events call for NIST to investigate will never be easy and will require a lot of thought. We believe that we now have more appropriate criteria for making decisions.
6. The Committee recommends that NIST collect data on fires following all disasters driven by natural events. The National Fire Incident Reporting System (NFIRS) is intended to capture fire data but in fact leaves gaps in the data. NIST staff, trained in mass-disaster data collection and armed with simple collection and recording systems that can capture geospatial data, could greatly enhance the usefulness of NFIRS.	• NIST agrees with the spirit of your recommendation, and with your observation that systematically collecting data from fires caused by natural events would be very beneficial. • NFIRS is managed by the U.S. Fire Administration, and they said that they already are overloaded with priority requests to improve NFIRS and they lack the ability to respond to the requests now considering their limited resources. • NIST has been working on a specialized Wildland Urban Interface (WUI) data collection system for several years as a proof of concept which could be expanded to non WUI-fire disasters. Our goal would be to (1) pilot this technology in a limited way on a select number of investigations to test its effectiveness and (2) link the data to the Disaster and Failure Events Repository.