CAMPUS FIRE SAFETY CODE TALK

Campus Fire Safety e-NewZone

BE RESILIENT! BE BRILLIANT!

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Involvement with Campus Safety from almost any angle involves the ability to plan and react to a given situation. Campus police departments must prepare and plan for everything from burglaries, to assaults, to traffic congestion. Campus health care providers must prepare for everything from health and wellness events, to scrapes and bruises to a campus wide illness. Enforcement of relevant building, life safety, and fire codes on campus is no different. The planning process can include review of new construction plans, conducting routine inspections and making sure that campus wide fire safety systems are kept in top working order through formal inspection, testing and maintenance (ITM) programs, commissioning activities or both. When a hazard event does occur, a series of response actions occur – the occupants must react or adjust to the event; first responders arrive to manage and neutralize the potential threat or hazard; and ultimately everything returns back to "normal".

Myriad NFPA Codes and Standards help you manage each of these aspects. From design, construction, response and recovery, an NFPA document is most likely in the background contributing to the safety of all involved. In recent years, purposeful evaluation of these measures has been a priority at the federal level of the US Government. Resiliency – based approaches can be applied to everything from a geographic region or a community, to an individual business, to the welfare of the general population. Presidential Policy Directive 21 (PPD-21*), Critical Infrastructure Security and Resilience* is one such initiative that stresses the importance of these initiatives. PPD-21 is a main guiding document that is being used by federal agencies as well as state and local governments to look at the bigger picture. The private sector has a critical role here as well on two fronts: to develop their own mitigation,

response and recovery efforts; and to provide the tools to help others achieve their resiliency goals through applicable codes and standards.

PPD-21 defines resilience as "the ability to prepare for and adapt to changing conditions and withstand and recover rapidly from disruptions...[it] includes the ability to withstand and recover from deliberate attacks, accidents, or naturally occurring threats or incidents." In simpler terms, resilience can be defined as the ability to withstand a disruption, blunt the impact, recover quickly, and adapt to emerge stronger and often time better prepared than before. The elements of resilience include intentional actions to plan, prepare, prevent, protect, mitigate, respond and recover. In many cases, the recovery effort may be to return to a higher level of performance rather than the same pre-event level. Figure 1 is a depiction of the PPD-21 model and approach. As indicated, the model is intended to provide continuous feedback on what is working and where to make changes.

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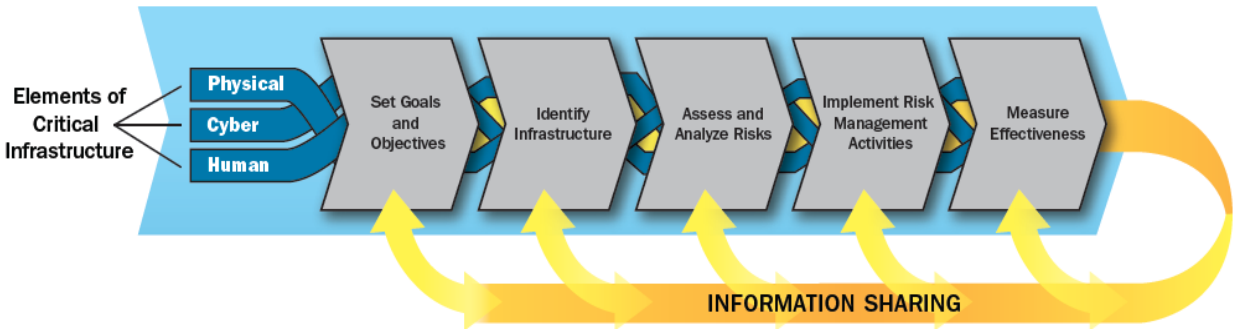

Figure 1. Critical Infrastructure Risk Management Framework

The campus environment is a model for resiliency applications. Building design, fire protection system installation, ongoing ITM programs, conducting drills and providing emergency planning all fit into the resiliency dialogue. More likely than not, a

contingency is in place if a class room building isn't available because of a fire, power failure, or construction project (fill in the hazard or event). A contingency is in place if the campus is closed because of a wildfire, earthquake, or snow storm. As the campus fire marshal or authority having jurisdiction, you are already a resilience contributor to such planning scenarios.

In your daily roles and responsibilities, your job entails some level of planning, preparing, preventing, protecting, mitigating, responding and recovering. I describe these as the realms of resiliency or resilient design and they all have a connection. A basic example is the installation of a standpipe system in a multistory building. In the example below, think of the interdependencies between the standpipe system and other factors that influence how the system will perform. In this example, you can't just look at the hardware, but how well is it being maintained and how well versed and familiar are the "consumers" of the system.

ELEMENT	NFPA CRITERIA	NOTES	RESILIENT DESIGN
Standpipe System Installation	NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*	Provides overall design and installation criteria	Protecting, Mitigating
Water Supply for System	NFPA 24, *Standard for the Installation of Private Fire Service Mains and Their Appurtenances*	Helps to provide reliable supply for the system- water is available when demand is needed.	Preparing, Protecting Mitigating
ITM For	NFPA 25,	Helps keep reliability of	Preventing,

System	*Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*	system and related (interdependent) systems at a high level.	Mitigating
Response To a Fire	NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*	First responders have been properly equipped and trained, building has been preplanned.	Planning, Responding, Recovery

One of the main goals of resilient design is to not only have a plan, but to carefully weigh each part of the resilient design approach and make sure the pieces are connected. If the first responders for my example above have paramount training and familiarity with standpipe system operations yet the system has not been designed or maintained properly and it doesn't work, that part of their training doesn't help the situation. In reality, this is what AHJs have been doing, and it is what the different NFPA codes and standards are based on. The difference is, we are moving towards this approach with a more formalized and purposeful view of the dependencies.

At NFPA, our involvement with resilient design principles relates directly to our codes and standards. By establishing goals and objectives in our documents, and then integrating risk based, performance based or prescriptive based solutions to achieve those goals, we have a model that closely resembles the framework depicted in Figure

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1. Our challenge then is to see specifically where and how the almost 300 codes and standards fit into that equation.

In December of 2014, the Fire Protection Research Foundation (FPRF) released a report entitled "Disaster Resiliency and NFPA Codes and Standards." The approach in this report was to inventory the codes and standards and determine where the various documents fit into the overall resiliency effort. Nearly all of the NFPA codes and standards touch upon the principles of resilience, without explicitly using the term.

The report captures the type of resilient based ideas that more closely resemble an administrative versus engineering feature with some further breakdowns as shown in Figure 2.

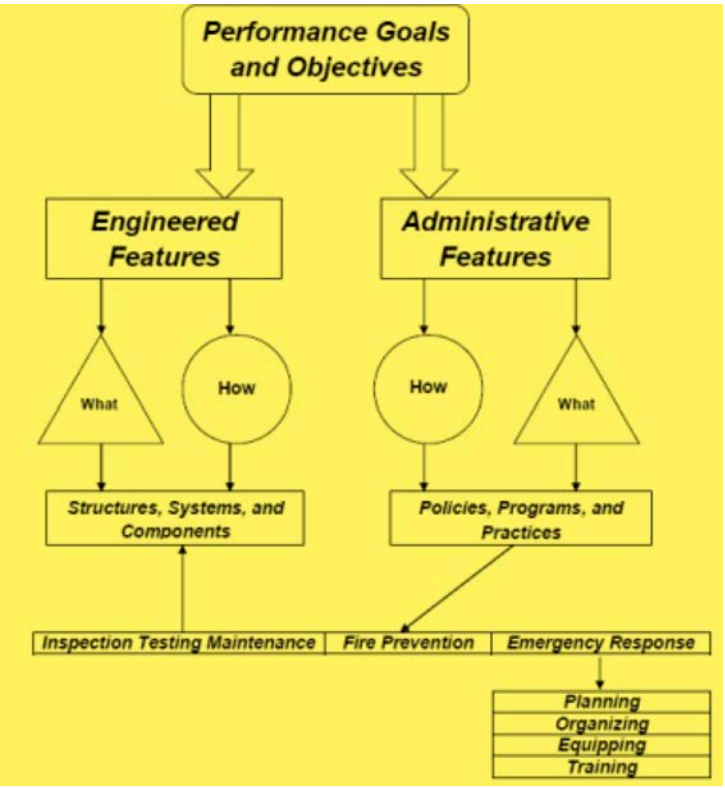

Figure 2. NFPA Codes and Standards Mapping for Resilience

In this mapping exercise, the overarching goal/objective (usually based on the specific document) was established and then identified as relating to one or more of the resiliency components such as mitigation (engineering), policy/planning (administrative), or response (preparedness). Further refinements relating to planning, organizing, equipping and training were then added for certain codes and standards.

A related challenge in resilient design concepts is to think beyond the traditional or normal hazards. How does an event upstream from my campus (municipal water supply is knocked out by a flood at the treatment plant many miles from the campus) impact our emergency plans and systems? While past experience and loss history is important, resilient design will, in some cases, require a review of the low frequency/high impact events that could occur. Some risk managers and catastrophe (CAT) modelers are looking to “measure unpredictability”-that is, thinking about an event that has never occurred-until it does occur.

A very recent example of this is the rain event in South Carolina. According to the National Weather Service; 27 inches of rain fell in one town in a 4 day period; 11 trillion gallons of water had fallen in North and South Carolina in that same period; every person in South Carolina had the equivalent of 1.2 million gallons of water from the storms. How robust were the planning and response efforts in this region, including at the impacted colleges and universities, for such an unpredictable, low frequency, high impact storm event? And more importantly, how could anyone anticipate this type of event-it never occurred before.

Our next step in this process is to embark on a broad effort to educate our membership, NFPA Technical Committees and our stakeholders on how to think more broadly about resilient design concepts. Regardless if they are at work on their daily

job, at an NFPA committee meeting or really anytime they are in the mood to ponder the “what if” scenarios, we want everyone one to be giving intentional thought to these concepts.

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