

Hazard Analysis – Using Cascading Impacts to Define Worst-Case Scenario

In conducting a hazard analysis, it is essential that we provide context to the identified hazards. As CPG 201 states, “This context will help identify capability targets later in the <planning> process.” It defines the reason why we are planning, shapes many of our planning assumptions, and provides scope and direction to our planning efforts. When conducting a hazard analysis, we obtain information from a variety of sources including historical data and community stakeholders. In attempting to provide context to each identified hazard, we may look to these sources for information on severity of past incidents. Certainly, however, we want to attempt to determine how bad an incident could be – i.e. what are the maximum effects that could realistically be suffered from an incident? This measure of severity could be defined as a *credible worst-case scenario*. Not only then should our plan reflect how we would deal with this credible worst-case scenario, but it also helps us to be better prepared for incidents of a more probable severity and complexity.

It is important to keep in mind that a credible worst-case scenario is NOT necessarily a catastrophic incident. A catastrophic incident is defined in the National Response Framework as “Any natural or manmade incident, including terrorism, which results in an extraordinary level of mass casualties, damage, or disruption severely affecting the population, infrastructure, environment, economy, national morale, and/or government functions.” The United States Coast Guard’s Catastrophic Incident Annex further defines a catastrophic incident as “...result(ing) in sustained national impacts over a prolonged period of time; almost immediately exceeds resources normally available to State, local, tribal, and private-sector authorities in the impacted area; and significantly interrupts governmental operations and emergency services to such an extent that national security could be threatened. All catastrophic incidents are Incidents of National Significance. These factors drive the urgency for coordinated national planning to ensure accelerated Federal/national assistance.” US DHS’ Regional Catastrophic Preparedness Grant Program (RCPGP) encourages grantees to focus planning efforts using a ‘meta-scenario’. By these definitions, a catastrophic incident is certainly well beyond the scope of planning for most areas.

In scoping a credible worst-case scenario, we should consider not only the initial incident itself, but also the cascading impacts as a result of that incident. Planning for cascading impacts is what provides the most texture to our planning efforts and defines the need for expanding our base comprehensive emergency management plan with a variety of annexes to address those needs. This is an area where CPG 201 does not provide a great deal of guidance. A scenario of a severe yet realistic, source incident, inclusive of cascading impacts, provides a sound foundation for planning. Such an approach will ensure a deeper view of hazard analysis, a more realistic vulnerability assessment, and a better determination of how comprehensive your planning efforts need to be.

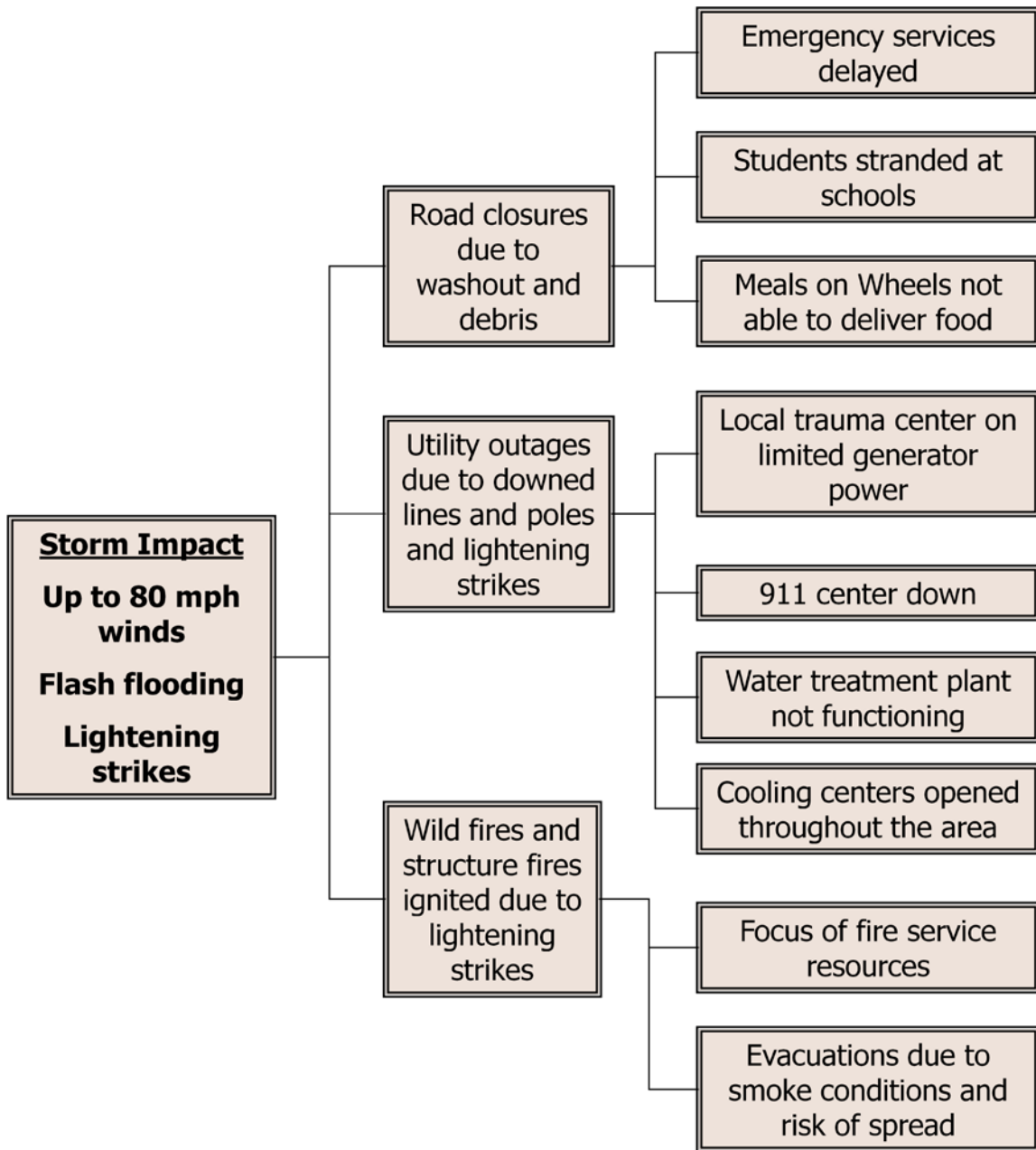
The example of a severe storm can be easily used to illustrate this. Certainly severe storms are near the top of the hazard list for communities across the nation. How can this lend itself to more in-depth planning? Consider the realistic, cascading impacts for at least two tiers or levels of impact – in other words, what are the problems caused by the incident and what additional problems do these create? The recent dericho storms that struck the Mid-Atlantic states were the inspiration for this scenario. Some form of mind mapping or relationship charting, as demonstrated below, is an easy illustrate this and aids in visualizing the relationships between the impacts. You can certainly go deeper than two tiers, and, through your analysis, even begin to interconnect some of these impacts as commonalities are identified.

Charting Cascading Impacts

Initial Incident

First-Tier Impacts

Second-Tier Impacts



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This is a simple exercise that can be performed with any planning group. Those with local disaster experience will easily catch on and provide examples and the impacts don't require a great amount of detail. This speculation will help you identify the impacts of your hazards and the vulnerabilities that need your attention – especially those that can be classified as critical infrastructure or essential services as well as those which you may not have the capabilities to handle. Comprehensive emergency management planning should have you addressing all phases of emergency management. Thus, you should be considering how to lessen or eliminate an impact, how to prepare for its occurrence, how to respond when it does occur (focus on capabilities), and how to recover to normalcy in the aftermath.

It is proven time and again that the incidents we deal with are rarely simple and straight forward, so it makes no sense to plan for simple and straight forward scenarios. We have to consider the complexity of these incidents and the variety of impacts inherent to each. Through accepting this premise and employing the planning assumption of the credible worst-case scenario with a series of cascading impacts, the result will be an improved planning process and plans built on more accurate and realistic assumptions.

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