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*About the Cover: Recovery is an ongoing process. How prepared a community is for a disaster dictates how long it takes to recover. This issue commemorates the 10-year anniversary of Hurricane Katrina, a disaster that has left some communities, like New Orleans, still recovering 10 years later. (Sources: top photo, U.S. Navy/Jeremy L. Grisham; bottom photo, FEMA/Jacinta Quesada)*



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## Editorial Remarks

By Catherine Feinman



As the nation commemorates the 10-year anniversary of Hurricane Katrina, some communities are still recovering from the devastation left in that storm's wake. When referring to hurricanes and other large-scale disasters, response and resilience are common buzzwords. However, a third "R" word is often overlooked: "Recovery." How long the recovery phase of a disaster lasts is often tied directly to the level of preparedness before the disaster occurs.

On this anniversary, the city of New Orleans, Louisiana, is still recovering and has launched the [Katrina 10 Project](#) to share data about its ongoing recovery efforts. Mayor Mitch Landrieu summed up these efforts, "New Orleans has come a long way.... But it is also true that we have got a lot more work to do to tackle some longstanding, generational challenges around crime, education, income inequality and infrastructure.

Gordon Hunter leads this issue of the *DomPrep Journal* with an article that describes the link between preparedness and severity of "chaos." Helping businesses and entire communities get back to normal operations requires having the right tools and maximizing the use of local resources. Effective risk analysis tools, for example, may help improve the resilience of critical infrastructures and reduce the time necessary for communities to recover. Jerry Brashear and Paula Scalingi take a closer look at some of these tools in order to find one that could be the core of a defensible, repeatable, risk/resilience management process.

One way to shorten the recovery time is to make difficult decisions before an incident, including land use and commodities distribution. Charles Perino raises a tough question with no simple answer, "Should we continue to build there?" Whether the answer is yes or no, communities benefit when recovery challenges are identified early. Once challenges are identified, the recovery plan should be exercised, as in the case that Paula Carlson and Thomas Healy described for New York City's commodities distribution plan.

Disaster recovery operations involve all members of a community. Marc Barbieri shares the perspectives of public health agencies, which may have extensive experience even without a recovery plan in place. Whereas Stephen Grainer highlights the importance of involving everyone in a community, even those who may have no plan and no experience.

Next month, the *DomPrep Journal* will release a Special Supplement on a training facility that serves multidiscipline responder communities by providing real-life training opportunities at no or low cost to its students. The Center for Domestic Preparedness in Anniston, Alabama, opened its doors to DomPrep for this exclusive inside look at the campus from the perspectives of students, staff, instructors, and partner agencies/organizations.

# Having the Right Tools to Shorten Periods of Chaos

By Gordon Hunter

*Disaster often lead to chaos, but how long the chaos lasts depends largely on the actions of the affected communities and whether all local resources are being used effectively. The longer it takes businesses to become fully operational, the longer it takes for the community as a whole to recover.*



Recovery following a disaster is a complex, chaotic effort at best. Multiple agencies and levels of government respond to various needs and requests, often with limited or incorrect information, in order to return life to a state of normalcy. One key portion of this return to normal is reestablishment of routine commerce to provide goods and services. As a party of vested interest, the private sector can be a central player in recovery efforts.

## ***Incorporating the Private Sector – The Elephant in the Room***

The Federal Emergency Management Agency (FEMA) has recognized this often overlooked but crucial partnership and incorporated it into the National Disaster Response Framework (NDRF), creating a new Community Support and Capacity Building Recovery [Support Function](#). The goal of this function is to facilitate cooperation between all levels of government and private enterprise to build relationships before a disaster and speed recovery through best practices after disaster strikes. It is unique as the first real codification of the “elephant in the room” that has always lurked in emergency planning – how to incorporate the private sector to make best use of all resources.

This need has not changed and, in fact, has become stronger. Communities, counties, states, tribes, and the federal government need to continue to engage the private sector. There are a great many [success stories](#) where this has been done effectively and created a boosted recovery capability that not only sped up recovery, but saved lives and property beyond what government assets alone could do. Private business needs government support to open roads, provide power, and enable reestablishment of commerce, and government agencies benefit from [lessons](#) from the private sector on supply chains, emergency operations, and community interface.

## ***Taking the First Step – Invite, Talk & Share***

However, the first step in this information exchange seems to be the hardest. Although intentions are present to engage with the private sector, follow-through is often lacking. Local Emergency Planning Councils (LEPC) provide a good starting point. Inviting private sector representatives to observe emergency operations center drills is another, with the added benefit of gaining insight from people focused on efficiency and streamlined operations. Many large businesses run national- and regional-level emergency operations centers of their own, focused on caring for employees, ensuring resources are routed efficiently to areas most in need, and maintaining continuity of operations. Cross-talk between government and business-sector emergency management provides mutual benefits in terms of sharing after-action reviews and best practices as well as making key contacts before a disaster strikes.

There are several starting points for government emergency management officials to reach out to local business leaders. The Chamber of Commerce is a good starting point at the local level. A bit of research also will unearth local business associations and consortiums, and a meeting of industry representatives makes an excellent place to offer a “Disaster 101” briefing and invite participation in the overall effort. Nationwide chains, “big box stores,” and other large businesses can be reached through their corporate offices

with arrangements made to share information. At the federal level, the Departments of Labor, Commerce, and Transportation can facilitate beneficial liaisons.



### ***Gaining Trust & Building Stability***

Gaining the trust of these partners also is a key factor. They are, after all, in the business of making money and have to know that trade information or corporate details will not be made public for their competitors. This is a small price to pay, though, for support from businesses that can feed, clothe, house, employ, and supply hundreds of thousands of people. This support can be essential in making recovery far less chaotic.

It is not hard to make a case for partnership to those whose very livelihoods rest on community stability, but the effort has to begin with government personnel. Business leaders may have thorough continuity and contingency plans for their particular business or sector, but may not know what they can offer to local, tribal, state, and federal disaster response agencies until the question is asked. Once that first call is made, the true effort can begin to the betterment of all involved. Disasters will never be less chaotic or complex to manage, but having more tools available in the recovery toolbox will go a long way to making the periods of chaos shorter.

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*Gordon Hunter is a retired U.S. Air Force major with 24 years of service: 15 on active duty in mission support fields to include security forces, civil engineering, disaster preparedness, explosive ordnance disposal, and Rapid Engineer Deployable Heavy Operational Repair Squadron Engineers (RED HORSE) heavy combat engineering; and nine as the deputy commander of the 8th Weapons of Mass Destruction Civil Support Team in Colorado. He is a graduate of the U.S. Air Force Academy and holds a masters degree in homeland security from the Naval Postgraduate School. He currently is employed by Chenega Applied Solutions as an operations evaluator for the National Guard Bureau CBRN (Chemical, Biological, Radiological, Nuclear) Response Enterprise Standardization Evaluation Assistance Team.*

# Screening Risk Analysis Tools for Resilience of Critical Infrastructure & Regions

By Jerry P. Brashear & Paula Scalingi

*Resilience, a central element in any recovery, is established before potentially disastrous events. Twenty-one federally sponsored risk methods and tools were screened for possible use as the core of a defensible, repeatable risk/resilience management process that would capture the greatest benefits for available budgets. None was fully ready for this role, but several hold promise for further improvement.*



One of the most effective strategies for dealing with disaster is resilience – being able to withstand threats and hazards while continuing to function or, if discontinuity is unavoidable, restoring operations with minimal service outage. Although resilience is observed during and immediately after potentially disastrous events, it is created *before* the events based on assessing risk, planning, and performance assessment. The resilience of communities across the country depends on the resilience of the interdependent lifeline infrastructures that support them – energy, water/wastewater, transportation, communications – and other essential services, as well as local government emergency response and recovery functions. Consequently, decisions by operators, managers, and oversight boards of these infrastructures largely determine the nation’s level of resilience. At the same time, the rigorous regional risk assessment process to enable these decisions is lacking. Developing such an effective process for risk and resilience remains a key goal.

The federal government has issued a number of policies, plans, methods, tools, and incentives to assist in making resilience decisions. Presidential Policy Directives 8 (National Preparedness) and 21 (Critical Infrastructure Security and Resilience) emphasize the central role of critical infrastructure systems, state and local governments, and regional public-private partnerships in advancing the national goals of critical infrastructure security and resilience, especially at the regional scale.

## ***The Business Process Engineering Risk Management Project***

The National Institute of Building Sciences undertook a project for the U.S. Department of Homeland Security Office of Infrastructure Protection to assist in operationalizing the risk and resilience analysis framework outlined in the 2013 National Infrastructure Protection Plan ([NIPP 2013](#)) into a conventional business process – critical infrastructure security and resilience risk management process that could be used at the grassroots level. The project used business process engineering to extend that framework into a workable, scalable, repeatable, defensible, and practical process that lifeline critical infrastructures, local governments, and public-private partnerships can use collaboratively to determine the allocation of constrained resources



for security and resilience. The process, importantly, incorporates assessing risk related to infrastructure interdependencies. This article focuses on one key task of this larger project (the final report of which is available at [NIBS.org](http://NIBS.org)).

### ***Screening Approach***

The key task was a screening of certain federally sponsored methods, processes, and tools for lifelines and other critical infrastructures to determine whether any provided a fully defensible method that could be used or could serve as a point of departure for an improved risk management process. A central criterion for a risk analysis process is *defensibility*. According to the methodological supplement to NIPP 2013, the process “must logically integrate its components, making appropriate use of the professional disciplines relevant to the analysis, as well as free from significant errors or omissions.”

Defensibility is not simply a narrow academic consideration. Risk management has evolved to its current state by demonstrating that certain practices contribute more to maximizing benefits under constraints than any alternative. Any method that could materially distort this decision-making process is likely to result in inefficient and poor choices. This is especially important in making choices about which resilience options to include in budgets and plans – how to allocate scarce resources to yield the greatest net benefits under practical constraints.

To identify candidate tools for use or adaptation for a critical infrastructure security and resilience risk management process, the project team met with federal agencies with lifeline infrastructure responsibility. Only federally sponsored tools were considered because they potentially can be acquired and modified by the federal government, whereas privately developed tools entail additional costs, proprietary rights, and control issues. Altogether, the team identified and screened 21 tools.

### ***Screening Results***

Of the 21 tools, three estimate important elements in risk analysis – for example, economic consequences or future weather – but do not actually estimate risk or benefits. These were set aside. Such tools can materially contribute to risk analyses, but only to complement a true risk tool. Seven more tools were detailed surveys that produce index scores that benchmark an organization against others. Although these tools can identify areas of potential concern and suggest options for improving security and/or resilience, they do not measure risks, expected outages, consequences, or mitigation benefits – information necessary for cost-effective resource allocation decisions. These tools were not further assessed for the project.

The remaining 11 federally sponsored risk tools for lifeline infrastructures, shown in the table, attempt to estimate risk and support risk-mitigation decisions. *Key decisions* (Column A) are the major decisions required for rationally managing resources to achieve the greatest net benefit to both the infrastructure owners and the communities they serve. These decisions require specific *Process outputs* (Column B), which, in turn require systematic, repeatable, defensible estimation of the listed *Constituent Terms* (Column C). Logical consistency of process (not necessarily



identical processes) and directly comparable results are crucial for allocating resources across divisions of large, diverse corporations or governments for analyzing interdependencies among CIs and for aggregating to organizational totals at regional and higher levels for accountability and governance. In addition to the logical consistency of the analytical processes, comparability requires a standardization of the initial set of threat/hazard scenarios (Column D). The “design objectives” row (in red) characterizes the desired process.

The five tools shown in the lower portion of the table estimate elements of the risk equation but rely on *ordinal scales* of measurement (e.g., low-medium-high-very high; green-yellow-red; 1-to-5 or 1-to-10 scales or even finer gradations), so they run a serious risk of distorting resource allocation decision-making. Ordinal scales have neither equal intervals nor a true zero (absence of the quantity) and necessarily have open ended “greater than” categories for consequences and “less than” for threat likelihoods, both of which may vary over hundreds, thousands, even millions of times. These limitations make estimating risk levels and benefits of options mathematically impossible, so these tools cannot support rational resource allocation – although many advocates have tried. Such scales, however, provide evidence of risk-oriented thinking among their users. Such tools might be able to be evolved into effective risk methods by changing the scales used.

The remaining six tools, shown at the top of the table, estimate the terms of the risk equation using *ratio scales* (equal distances between numbers and a true zero – things that can be counted). However, five of the six use conditional risk (assuming the likelihood of unwanted events to be 1.0, or certainty). This unavoidably distorts key decisions, because the likelihood of a terrorist attack on a specific asset or subsystem in a given location is several orders of magnitude smaller than the likelihood of other hazards – for example, weather events. Any of these six tools could readily be upgraded to demonstrate full risk by providing the missing terrorism threat likelihood.

The exception to using conditional risk is provided by the standard *ANSI/AWWA J100-10: Risk and Resilience Management of Water and Wastewater Systems*, which the American Water Works Association first released in 2010 and is currently updating it to be released as ANSI/AWWA J100-15. Although the earlier version permitted use of ordinal scales (in the form of pre-set ranges) and conditional risk, neither will remain in the updated version because of the shortcomings just described. Both versions provide a “proxy” method for approximating terrorist threat based on the notion of the terrorist selecting a target and attack mode. It is referred to as the “proxy” method because it stands *in lieu* of a true likelihood estimate. The proxy method is a placeholder until an authoritative threat likelihood measure is available. The method adapts a study of actual terrorist attacks conducted by the RAND Corporation and Risk Management Solutions Inc., and local conditions to estimate likelihood.

The six ratio-scale tools use roughly comparable concepts and definitions of conditional risk, vulnerability, and consequences. All six tools measure risk from the perspective of critical infrastructure owners, as opposed to the public (J100-10 does both). Three of the tools apply only to terrorist or malevolent threats, one deals only with natural hazards associated with climate change, and the remaining two – THIRA and J100 (both editions) – use an all-hazards approach. The

similarities are sufficient to conclude that THIRA and J100 could either be converted to a common approach (perhaps with tailored versions to apply to specific sectors) or made comparable enough to analyze regional risk and resilience of interdependent lifelines and other critical infrastructures and to support aggregation to organizational, jurisdictional, regional, state, and national levels.

The last column of the table summarizes each tool’s maturity level based on the model used by the U.S. Department of Defense and other agencies, including elements of the Department of Homeland Security. The scale ranges from 1 (*ad hoc*, beginning, undocumented); through 2 (repeatable); 3 (defined enough to be a standard business process); 4 (managed through quantitative metrics); to 5 (optimizing choices and self-improvement). None of the tools relying on conditional risk can reach level 5 because conditional risk cannot be used to calculate benefits. By defining

and using a crude approximation of terrorist threat likelihood, J100-10, can support constrained optimization, but lacks full, cross-infrastructure collaborative treatment of interdependencies, so it was assigned a 4.5.

***“None of the federally sponsored tools examined meet all the design objectives. However, several are similar and defensible enough to be adapted for rational program choices, accounting for interdependencies, at infrastructure, regional, and higher levels.”***

THIRA is the primary tool for the National Preparedness Program under Presidential Policy Directive 8. All states and the 28 highest risk

metropolitan regions currently participating in the Urban Areas Security Initiative program use THIRA, as required to qualify for FEMA grants. To date, though, its application has been limited to 13 response and selected recovery core capabilities out of the total of 31 defined core capabilities. The 2013 National Infrastructure Protection Plan calls for THIRA to be “employed” for critical infrastructures but, as this analysis suggests, it could distort decisions because it uses conditional risk and broadly specified methods. THIRA would need to be refined in the direction of J100-15 if it is to be effective for resource allocation decisions for critical infrastructure risk management.

J100-10 and J100-15 demonstrably support resource allocation for one of the lifeline infrastructures, having been applied to more than 100 water and wastewater systems, including some of the nation’s largest: Chicago, Illinois; the National Capital Region (three systems); Richmond, Virginia; Long Beach, California; and Minneapolis, Minnesota. It also has been used effectively in electricity and highway systems, emergency communications and dispatch, fire suppression, emergency medical services, and police emergency operations. J100 is the only tool that uses a ratio-scale measure of resilience.

Federally sponsored tools reflect federal concerns and focus on lifeline sectors predominantly operated by local public agencies – specifically water/wastewater, dams, and highways. In sectors that are predominantly operated in the private sector, such as energy and telecommunications, the project team found no comparable, widely used tools. Companies in these sectors use a wide

variety of self-generated and proprietary tools applied by in-house teams or expert consultants, so it will be necessary to explore possible comparability or sharing of tools and/or information region by region. This will require a regional, collaborative approach tailored to the threats and hazards facing the communities in that region and the supporting lifelines and critical infrastructures.

### ***Path Forward on Assessing Infrastructure & Regional Risk***

None of the federally sponsored tools examined meet all the design objectives. However, several are similar and defensible enough to be adapted for rational program choices, accounting for interdependencies, at infrastructure, regional, and higher levels. The project in which this tool screening was part, goes further to describe in detail an integrated infrastructure-region-state-nation risk management process based on a broad synthesis of these tools, first principles of the risk disciplines, and the preferences and constraints of actual decision-makers.

The federal government will need to provide an authoritative means of estimating malevolent threat likelihood for any of the methods to be fully effective. Interdependencies analysis will require protocols for cross-organization information sharing/protection enabled by regional public-private collaboration. Innovative, “bottom-up” implementation of fully defensible methods may allow more complete integration with other, ongoing business processes – for example, asset management, continuity planning, development planning, and budgeting – to encourage risk/resilience management to become as routine as budgeting.

Finally, any new or synthesized approach should be launched with the commitment to continue long enough for the process to mature through field experience, systematically reviewed and iteratively enhanced. The project of which this analysis is part advances such a path forward.

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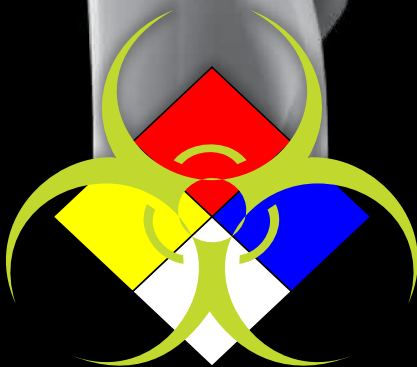
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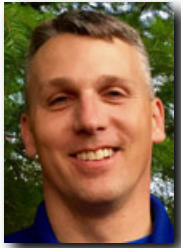
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# Correlation Between Land Use Decisions & Recovery Efforts

*By Charles Perino*

*This research develops a way of answering the question, “Should we continue to build there?” Past catastrophic disasters can help identify the economic, geopolitical, and social factors of each community’s recovery following catastrophic disaster. Equipped with a better understanding of these factors, communities can identify and address future recovery challenges before the next catastrophic event.*



The locus for this research occurred between 2010 and 2014, while serving as the lead planner for the Oregon Office of Emergency Management Cascadia Subduction Zone (CSZ) earthquake and tsunami response planning efforts. Federal Emergency Management Agency Region X led the project, which involved close collaboration with the states of Washington and California, federal response partners, and city and county governments.

## ***Avoiding a Dangerous Path***

As the massive impact of a CSZ event was revealed, an ever-present hope or even assumption by planning teams was that a mass evacuation of coastal areas would lessen the burden on response and recovery. Discussions on evacuating the coastal areas occurred by planners in all phases of government, throughout the planning process, most surprisingly from local emergency managers wanting to force (albeit within legal guidelines) residents to abandon their homes, in order to place less of a support burden on the limited resources in these coastal counties.

This line of thought was appealing to many who were struggling to figure out ways of providing logistical support for survivors over the shattered roadways and bridges of the Oregon Coast Range, as depicted in the event scenario parameters. However, this approach was equally appalling to many who saw it as an overreach of state and federal emergency powers and detrimental to long-term recovery.

Basing important recovery planning on the immediate response actions – in this case, abandonment of communities – can be a dangerous concept as those communities look toward recovery. This danger is magnified when recovery decisions exclude the intentions of disaster survivors (or research on what the involvement and intentions of survivors should be) to ensure revival of their devastated lives and communities.

## ***Cascadia Subduction Zone Impacts***

Of the Oregon coastal communities, Seaside has some of the most concentrated vulnerabilities to damage as a result of a CSZ earthquake and tsunami, as determined by the Department of Homeland Security National Infrastructure Simulation and Analysis Center. The event is modeled to generate a 9.0 magnitude earthquake and a resulting tsunami 12-80 feet in height, as described in

the [2013 CSZ Catastrophic Earthquake and Tsunami Response Plan](#). The devastating 2011 Tohoku earthquake and tsunami, being a geologically similar event, provides some insight on the damage the northwestern United States is likely to endure.

According to the CSZ Response Plan, this disaster would create unprecedented damage and potentially thousands of casualties in the northwest. In 2012, the Oregon Seismic Safety Policy Advisory Commission estimated in its [2012 Oregon Resilience Plan](#) that impacts of a CSZ earthquake and resultant tsunami in the northwest could include mass fatalities into the tens of thousands, hundreds of thousands of destroyed or extensively damaged buildings, approximately \$32 billion in economic losses, 27,600 displaced households, and almost one million dump truck loads of debris. Highways and utility infrastructure are particularly vulnerable to widespread ground failure, with timelines of critical infrastructure restoration ranging from three months to three years.

The Oregon Resilience Plan further stated that Seaside has 83 percent of its population and 100 percent of its critical facilities in the tsunami inundation zone. Making matters worse is the topography of the city, which is located less than 17 feet above sea level. If the earthquake indeed occurs as modeled, much of Seaside would simply be leveled and washed away, and many of its residents would be unable to reach high ground 1.5 miles away because of damaged roadways and bridges.

### ***Societal Factors Impacting Recovery***

This study investigated examples of past catastrophic disasters and positive and negative experiences as those communities struggled to return to normal. Based on the case study findings, an analysis was created of the current economic, geopolitical, and social factors in the city of Seaside, Oregon, following a CSZ earthquake and tsunami to identify future recovery challenges.

In addition, the study identified shortcomings in the assumptions of existing response and recovery plans. Through pre-identification of physical, social, and political limitations other communities have faced, proactive land use, response, and recovery planning decisions could be implemented that increase the likelihood that communities can successfully emerge from disaster. The case study communities of L'Aquila, Italy, Watsonville, California, and Valdez, Alaska, following catastrophic earthquakes were selected to attempt to answer the research questions. These communities have all faced significant earthquakes and differing challenges in recovery.

With the incredible challenges associated with catastrophic natural disaster response and recovery, it was important to recognize how factors contribute to the successful rebuilding or abandonment of a devastated city. Using the identified factors in the case study communities, the next step was to determine the impacts of these factors on the recovery of Seaside after a catastrophic 9.0 magnitude CSZ earthquake and tsunami.

### ***Abandoning the Idea of Abandonment***

Abandonment was rejected by community actions in all of the case study communities; even in Valdez, which had to be moved from a devastated and precarious site. Disaster survivors in



those communities, despite their tragic losses, wanted to rebuild, and fought with the government in some cases to stay in their communities. For survivors leaving the community – or denied the opportunity to participate in its reconstruction – psychological and social issues developed, which affected the recovery.

The case studies show that humans have an established sense of place and social connection to their communities, which provides [attachment and satisfaction](#) to their place in the world. To outsiders looking in, this attachment is seen as illogical and costly when it is in direct conflict to catastrophic disasters, such as a CSZ earthquake and tsunami. The case study communities have shown that the sense of place and local citizen's involvement in its reconstruction are key to the recovery of a community and the mental health of its residents. Decisions on the fate of a community – its reconstruction or abandonment – are a local, city block by city block, personal issue. It is not a decision that can be made at a statewide or national level without having serious effects on survivors of the disaster.

The strongest and intertwined trend in the case study communities was the importance of land use planning when planning for, responding to, and recovering from disaster. Based on the case studies and learning from the challenges they faced following disaster, the conclusion of this research is that land use planning is critical to disaster response, resilience, and recovery. For areas subject to disaster, land use planning should be more intimately interwoven before an incident. Emergency management organizations should plan for both development and reconstruction following disaster, with efforts in response and recovery planning.

### ***Oregon's Statewide Planning Goals***

The state of Oregon has a mechanism in place to engage public safety recovery planning through the [19 statewide planning goals](#) developed in 1973 to “express the state’s policies on land use and related topics, such as citizen involvement, housing, and natural resources.” Currently, the only statewide planning goal out of the 19 to address natural disaster is [Goal 7: Areas Subject to Natural Hazard](#), which requires local governments to adopt comprehensive land use plans to “reduce risk to people and property from natural hazards.”

Goal 7 requires local governments to evaluate the risk of natural hazards and limit or mitigate development in those identified areas. Although highly focused on mitigation, floodplain protection, and implementation of the National Flood Insurance Program, Goal 7 does not address recovery from catastrophic disaster nor planning for future effects on the city boundaries and location of a devastated community.

Coordination with emergency management planners and local citizen groups could be important measures to address some of the pre-event land use and recovery planning that the case study communities were forced to address after events. The 19 statewide planning goals have citizen involvement at their core. As such, the holistic, multiuse planning goals designated by the program could allow planning for the future land use realities of a tsunami-impacted community, such as Seaside, easier to manage. Perhaps it is time for a 20th planning goal that addresses public safety and preparedness to bridge the gap between sunny day planning and that occurring after disaster.

As the state prepares for a CSZ earthquake and tsunami, emergency response, recovery, and mitigation/resilience planners are dealing with multiple issues directly related to either existing or future post-event land use issues. The challenge for Seaside and the state of Oregon is in maximizing the strength of these existing planning program areas and fusing the two disciplines' very different but extremely complimentary missions. This can only help in the recovery of Seaside and other communities throughout Oregon.

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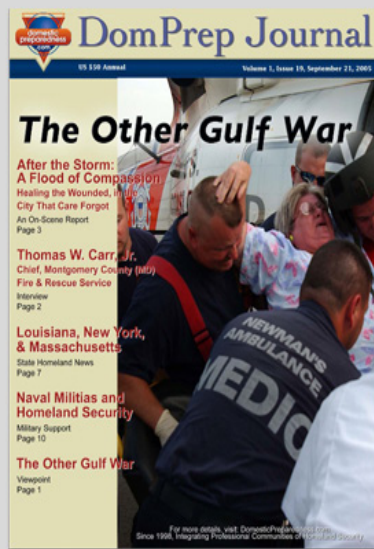
For additional information:

Federal Emergency Management Agency (FEMA) Region X. (2013). *Cascadia Subduction Zone (CSZ) Catastrophic Earthquake and Tsunami Response Plan*. Washington, DC: U.S. Department of Homeland Security.

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Charles Perino has worked in land use and emergency management planning in Oregon for over 13 years. He served as the Oregon Office of Emergency Management lead planner for the Federal Emergency Management Agency (FEMA) Region X Cascadia Subduction Zone planning project. He recently graduated from the Naval Postgraduate School with a master's degree in Homeland Defense and Security in 2014. The full thesis that this article is based on is entitled, [Should We Stay or Should We Go Now? – The physical, economic, geopolitical, social and psychological factors of recovery from catastrophic disaster](#)

# 10 Years Ago at DomPrep

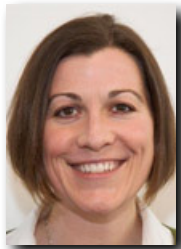


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# New York City's Commodities Distribution & Recovery Planning

By Paula M. Carlson & Thomas F. Healy

*When planning and training for major disasters, communities often place more emphasis on the response rather than the recovery effort. However, it is critical that the recovery effort begins concurrent to the response in order for communities to be more resilient. New York City recognized this need and exercised one of its recovery plans.*



Scenario-based exercise design can be used to support the experiential growth of first responders. Training exercises often are sponsored by one or more of a municipality's response organizations. Personnel from fire, medical, law enforcement, or emergency management, with the inclusion of a healthcare institution, usually run through a mock disaster scenario that aligns with grant-based requirements. When exercises are conducted in a vacuum – that is, unaffected by surrounding environmental influences, such as climate change, socioeconomic demographics, or the full inclusion of the whole community – the benefits of the exercise may not be fully realized. Many organizations exercise emergency response protocols in preference to post-disaster recovery procedures.

Recovery after a major disaster begins at the same time as the response, but often lasts much longer and exhausts more resources. For example, in the aftermath of a large disaster, establishing commodities distribution centers may be necessary. If the community has a plan to accomplish this, there may be little desire to exercise this process. Although the process of distributing food following a large-scale disaster may seem routine, it involves many moving parts and coordination with reduced resource capacity and increased emergency need. Commodity distribution involves the resources of numerous agencies, organizations, community leaders, and elected officials.

## ***Commodity Distribution Points***

Although Superstorm Sandy in 2012 provided a real-life test of commodity distribution in New York City, it did not exercise the current commodity distribution plan. In an event such as a coastal storm, a terrorist attack, long-term power outage, or any event that affects the ability of New York's residents to obtain life-sustaining commodities, the city may opt to open commodity distribution points (CDPs), especially if everyday feeding strategies are incapable of meeting the new needs.

Between December 2014 and July 2015, New York City Emergency Management conducted the Commodities Distribution Point Exercise Series, based on the request from the logistics unit to help train and exercise its new plan. The series consisted of several trainings, discussion-based and functional exercises designed to solidify the training and to identify gaps in the decision-making, set up, and distribution processes of commodities. A planning team comprised agencies

responsible for the activation and running of commodities distribution regularly met following standard Homeland Security Exercise and Evaluation Program guidelines.

This series was different from many other exercises previously held by New York City Emergency Management because the series began with a newly finalized plan, incorporated the training of the plan to staff assigned to work in the CDPs, and focused on recovery following a large-scale incident. In planning this series, there also was a focus on increasing climate change threats, as well as preparing the whole community for resilience following disasters. Many previous exercises focused primarily on response capabilities and plans, and standard operating procedures that were relatively well versed.

*“Recovery after a major disaster begins at the same time as the response, but often lasts much longer and exhausts more resources.”*

A CDP is a location where temporarily unavailable life-sustaining commodities – for example, food and water – are distributed to the public. In New York City, CDPs are opened once one of three activation triggers are met using any of the 59 pre-identified vehicular or pedestrian sites. The triggers are as follows:

- An incident completely prevents or is expected to completely prevent public access to life-sustaining commodities for an estimated 10,000 people or more for at least 48 hours, and maximum utilization of all strategies contained in the Food Access Plan cannot meet the needs of the affected population.
- An incident disrupts or is expected to disrupt normal public access to life-sustaining commodities for an estimated 20,000 people or more for at least 48 hours, and maximum utilization of all strategies contained in the Food Access Plan cannot meet the needs of the affected population.
- An obvious need for non-life-sustaining commodities arises in the population, and this need cannot be met through existing mechanisms in the private and/or public sectors.

The CDP structure is maintained under the direction of the CDP Command Center, with the CDP Program being a component of the larger Citywide Food Access Plan. The CDP plan itself is dynamic in that it requires an elementary understanding of Incident Command System and relies on nontraditional agencies to run both the command structure and CDPs with potentially 29 positions within the system to understand.

### ***Guidance & Coordination for Distribution Points***

The exercise series consisted of two trainings and three exercises. The CDP Command Center and CDP trainings and workshop focused on teaching the primary staff, which would be supplied by New York City Department of Parks and Recreation. In the event of CDP activation, New York City Department of Education, Human Resources Administration, American Red Cross, and/or The Salvation Army also may have a role in supporting the operation.

The CDP Command Center functional exercise allowed the staff responsible for strategic and tactical guidance to coordinate the deployment of resources to the CDPs under simulated conditions. The full-scale exercise then allowed the CDP managers and staff to mobilize, receive, set up, and distribute commodities at two CDP sites – one in Brooklyn and one in Queens. Personnel from Department of Parks and Recreation and Community Emergency Response Teams (CERT) who were not actively participating in the CDP acted as community residents during the

exercise. They were provided with pre-scripted injects to simulate language barriers, dietary concerns (Kosher, Halal, gluten-free), and accessibility issues that required adaptability and decision-making skills.



Point of distribution in Rockaway, NY, following Hurricane Sandy. Source: Jocelyn Augustino/FEMA (2012).

The exercise series identified several strengths and improvement items in the CDP plan, training, and exercise design. More importantly, this exercise series solidified the importance of adhering to a planning cycle when it comes to planning, training, and exercising new and nontraditionally exercised plans.

### ***Lessons Learned to Expedite Recovery***

Overall, exercise participants appreciated the value of the training, but noted in their hotwash comments that the training was held too far in advance of the exercise. In actuality, the event that precipitates the set-up of a CDP could occur at any time. For example, if the training is conducted in the spring and New York City's coastal storm season is in late summer through fall, there is a real-life gap between training and execution. It is recommended that, along with annual pre-season training, additional opportunities for training are offered for staff based on the needs of the individuals and convenience of the agencies.

Additionally, personnel who are tasked with running CDPs are typically not response-based in their daily jobs; therefore, the Incident Command System may not be universally familiar to them. Because of the plan's reliance on a traditional command structure, personnel should have a rudimentary understanding of the CDP organizational framework prior to activation. This improved knowledge and understanding of the Incident Command System helps the Department of Parks and Recreation integrate with other city agencies in any event or incident notwithstanding a CDP event.

Because the roles for CDP staff are outside the usual scope of work for the agency personnel assigned, staff often commented on the usefulness of the job action sheets, vests, and other site set-up tools provided in the administrative kits. In this exercise, the administrative kits were the last to be unloaded from the delivery trucks, which delayed set-up. Early accessibility to these tools and information would have expedited the process and the start of distribution.

### ***Best Practices for & Value of Exercising Recovery***

Prior to the CDP full-scale exercise, the CDP Command Center functional exercise allowed the staff to coordinate support of the CDPs in a low-stress environment. Department of Parks and Recreation managerial staff assigned to work in the CDP Command Center were then able to attend the full-scale exercise and observe the hands-on mechanics of site operation. This provided a greater understanding of the coordination required to successfully meet the needs of the community during the recovery phase following a disaster.

Also, by including CDP-specific agencies and New York City Emergency Management logistics staff in the creation of both the training and the planning of the exercise series, individualized objectives were formed throughout the exercise process consistent with the newly formed plan. The incorporation of exercise-related training proved to be a valuable integration of personnel and process that contributed not only to the success of the exercise and to the development of the plan, but also trained staff prior to the start of coastal storm season. The series also proved the value of nonresponse-based exercises by demonstrating the complexity of a CDP operation as well as the need for staff to understand the plan and its ability to adapt to community.

The CDP series highlighted the value of exercising the recovery phase of emergency management. Recognizing the importance of recovery-based scenarios as part of a comprehensive exercise program improves the preparedness and resilience of emergency management and whole community following a large-scale disaster. The exercise series led to the training of CDP staff, helped to identify gaps in the plan, and highlighted best practices in reference to understanding the diverse needs of the community following any disaster. Finally, participants were able to successfully establish a management structure and execute the functions of a pedestrian model CDP to distribute food at two sites simultaneously, an overall objective of the exercise series.

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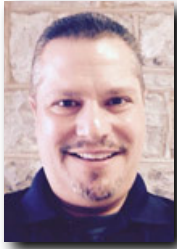


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# Planning for Recovery: The Public Health Perspective

By Marc Barbieri

*Public health agencies at all levels have extensive experience recovering from disasters, mostly without the benefit of a pre-disaster recovery plan. Established guidance from a number of federal agencies coupled with an inclusive planning process can help public health agencies ensure that they and the critical services they provide are resilient after a disaster.*



As the coordinating agencies for [Emergency Support Function 8](#) (ESF-8) (Public Health and Medical Services), many state and local public health agencies have fought to determine their role in planning for recovery. With the variety of governmental and nongovernmental partners that generally support ESF-8, planning for recovery can be a daunting process. As a result, there is a vast range in the level of preparedness for recovery among health departments across the nation.

A Disaster Recovery Focus Group, convened by the National Association of County and City Health Officials, recently delved into the many ways in which local public health agencies across the country are tackling recovery planning. Although many have a good deal of real-world experience recovering from major disasters, a large number did so without the benefit of a detailed pre-disaster recovery plan. With the variety of guidance available, though, there is no shortage of information to help prepare for recovery.

## ***Recovery Planning 101***

Since its release in September 2011, the [National Disaster Recovery Framework \(NDRF\)](#) has sought to “promote effective recovery, particularly for those incidents that are large-scale or catastrophic” by defining principles, roles, and responsibilities, coordinating structures, and guidance for pre- and post-disaster recovery planning. The Centers for Disease Control and Prevention (CDC) [Public Health Preparedness Capability 2: Community Recovery](#) describes how public health emergency managers at all levels should collaborate with their partners to facilitate the rebuilding of public health systems after a disaster. This CDC capability also provides guidance on how best to ensure the provision of critical public health and medical services in the community.

Recovery for healthcare systems, a critical component of the local public health and healthcare infrastructure, is guided by the Office of the Assistant Secretary for Preparedness and Response’s (ASPR) Hospital Preparedness Program (HPP) in its version of [Capability 2: Healthcare System Recovery](#). ASPR developed additional [Healthcare COOP \(Continuity of Operations\) and Recovery Planning](#) guidance in January 2015.

## ***Planning Together for Recovery***

In many jurisdictions, recovery planning is guided by, and performed under, the auspices of the local emergency management agency. By being locally driven, the importance of



developing a pre-disaster recovery plan rises and, ideally, encourages emergency management agencies to use the existing guidance documents and develop comprehensive and inclusive plans. Local agencies can better link the pre-disaster recovery plan to the jurisdiction's emergency operations plan, a document that is most-often maintained by the local emergency management agency. The emergency operations plans in most local jurisdictions are used to manage their responses to major emergencies, which facilitates a more seamless transition from response to recovery operations.

In addition, the use of ESFs and the integration of the Recovery Support Functions (RSFs) into the local pre-disaster recovery plan are best achieved through a collaborative planning process at the local level. Such collaboration ensures that the ESF coordinating and supporting agencies can be incorporated into the planning process for the pre-disaster recovery plan. The natural alignment of ESFs and RSFs is much easier to achieve when approached longitudinally. In other words, logical choices about who should be responsible for the various RSFs can be informed by who leads the closely related ESF. Since the transition from response to recovery can be a blurred line, with overlap inevitable, it is invaluable to effective recovery planning to understand the parallel nature of these efforts.



### ***One Jurisdiction's Experience***

In late 2009, Fairfax County, Virginia, which is part of the National Capital Region, became one of the first jurisdictions in the nation to embark on a pre-disaster recovery planning effort. A steering committee – representing governmental and nongovernmental stakeholders, including local elected officials and chambers of commerce – guided the project, which was overseen by the Fairfax County Office of Emergency Management (OEM) and supported by Witt Associates. The multiyear process resulted in a robust [plan](#) and a series of validation exercises that involved literally hundreds of stakeholders.

Fairfax modified the structure outlined in the NDRF by: (a) changing RSFs to recovery groups and using a branch structure to bring together analogous recovery groups; as well as (b) expanding the list of recovery groups to make the plan more robust and locally flavored. This modification has the Fairfax County Health Department – the [county ESF-8 lead](#) – coordinating

two recovery groups and supporting five others. The creation of a recovery group to address the unique challenges of recovering from a biological or radiological incident – co-led by the fire and rescue and health departments – was one positive outcome of modifying the federal guidance. The other was the creation of a health and medical recovery group that focuses

***CDC's Public Health Preparedness Capability 2: Community Recovery describes how public health emergency managers should collaborate with partners to rebuild the public health system and ensure the provision of critical public health and medical services to the community after a disaster.***

specifically on the complicated process of ensuring post-disaster public health service delivery, including the mobilization of service and information centers in affected communities.

The plan introduced the concept of a recovery agency – a temporary organization charged with recovery – accountable to an appointed recovery coordinator and recovery policy board. The

composition of this recovery agency is dictated by the type of disaster and its impact on the county. The entire recovery organization reports to the county executive and the county board of supervisors, thus ensuring transparency and accountability.

The plan describes the process for how the response-phase incident command structure will transition to the recovery-phase organization, including the incorporation of recovery-phase command and general staff members into the response-phase organization to help ensure continuity and a more seamless transfer of command. It also allows for the gradual demobilization of response-phase leadership not being utilized in the recovery agency by allowing them to train the incoming recovery agency leadership before transitioning out of the response.

Further validation, including an upcoming operations-based exercise, and a subsequent review and revision of the plan based on the after-action review process, will help Fairfax County become better prepared to recover from disasters. Although the county has not had to operationalize recovery on a large-scale, several smaller-scale incidents – especially the 2012 Derecho storm, which impacted a number of healthcare facilities – provided a real-world opportunity for ESF-8 to collaborate in the response and recovery phase. These opportunities led to successful outcomes and additional planning to ensure that all ESF-8 partners are prepared to recover from emergencies large and small.

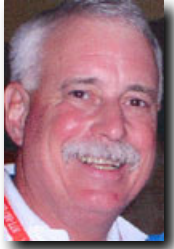
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*Marc Barbieri has served as the emergency management coordinator for the Fairfax County Health Department since 2009, overseeing the agency's emergency management program. Prior to that, he served close to 20 years in public safety, public health, and emergency management in New York City. He has a master's degree in public health, and is both a Certified Emergency Manager (CEM) and a Virginia Professional Emergency Manager (VPEM).*

# Setting & Maintaining Realistic Recovery Expectations

*By Stephen Grainer*

*There are many challenges as well as numerous nuances associated with disaster recovery operations that must be addressed by all levels of governmental, nongovernmental, and private sector agencies and organizations in order to ensure ongoing attention to all facets of the recovery effort, effectively building a resilient community.*



**M**anaging post-disaster recovery operations is a complex, interconnected, and fragile process. Failure to balance many moving parts can result in failure and lack of resilience. Managing involves pre-incident preparedness and planning, post-incident response operations, longer-term reconstitution and restoration, and mitigation. These elements are all interdependent for creating a successful “recovery posture,” or resilience. Furthermore, in order to successfully navigate all phases of a disaster cycle, government agencies are now being driven to incorporate nongovernmental organization and private sector involvement. In fact, many of the key components of successful disaster recovery either reside with or are largely dependent on private sector authority or responsibility.

The opening statement in the Executive Summary of the Federal Emergency Management Agency’s (FEMA) *National Disaster Recovery Framework* (published in September 2011) stated, “Experience with recent disaster recovery efforts highlight the need for additional guidance, structure and support to improve how we as a Nation address recovery challenges.” There are many challenges as well as numerous nuances associated with disaster recovery operations. Disaster recovery managers at all levels of government as well as nongovernmental and private sector organizations must address these challenges and nuances collaboratively, both immediately and in the long term. There are two primary challenges for developing and managing an effective and successful disaster recovery effort: setting time frames and managing expectations.

## ***Challenge One: Setting Time Frames***

Perhaps the most pressing challenge for managing disaster recovery operations is setting and meeting time frames for conducting (and completing) recovery activities. Inherent in this challenge is setting realistic time frames that reflect the circumstances. It is both unwise and unreasonable to assume that recovery operations can be accomplished in a predetermined period of time. Yet, most expectations are expressed in terms of times or dates. For example, it would be extremely difficult to forecast or project restoration of power to an area in which significant environmental damage, as well as structural damage exists. Downed trees, tangled overhead wires, debris on roadways, and the typical disarray following many scenarios require insightful assessments and subsequent decisions. These decisions relate to objectives that are developed using the SMART template.

S-M-A-R-T is an acronym that captures the essential elements of a “good” objective as follows:

- “S” connotes “Specific”: The objective statement must clearly denote an intended outcome.
- “M” stands for “Measureable”: There must be a clear way to determine if, and to what extent, the success in meeting the objective can be measured.
- “A” reflects the need for “Action” involved in the activities undertaken. The objective must state what actions will be undertaken.
- “R” refers to the objective being “Realistic,” rather than a preferred outcome.
- “T” stands for “Time Sensitivity.” In other words, the objective should include some indication of when the activity can realistically be accomplished.

The primary operational issues confronting disaster recovery managers are challenges associated with interrelated needs – situations in which several actions must be accomplished in concert with each other, consecutively or concurrently. For example, it may be necessary to clear debris-strewn roads before power utility services could begin restoring operations, such as re-setting power poles and restringing cable. However, in many operational undertakings, a safety guideline for debris removal crews is to avoid working in any areas with downed overhead wires. Consequently, to restore power, debris must be removed, but such services cannot be performed until the power utility company neutralizes any potential power sources or verifies that the downed lines are not and cannot be energized.

This challenge may be further complicated if overhead lines include cable television and/or other communication wires. Highway, forestry, and other work crews that may be involved in debris removal are typically prohibited, by policy and/or standard operating guidelines (SOGs), from their operations until the various utilities have verified that their lines are not energized. In fact, as a maximum precaution, many SOGs stipulate that the cables must be removed prior to debris removal operations.

Thus, simply “restoring power” in a given area is complicated, so the time allotted for operational performance must reflect the time necessary to perform much more than setting poles and restringing wires. For example, clearing a roadway may entail using resources from the highway department, power utility company, cable television provider, and/or local telephone service provider. Based on lessons learned from major disaster response and recovery operations in the past decade, task forces may include multiple agencies conducting operations following an incident.

The key to making this single undertaking manageable rests with extensive advanced planning. The planning process should identify: (a) the potential for power disruptions; (b) the areas where there is a greater likelihood for power outages; and (c) an outage’s potential physical consequences. Most power utilities today have established predetermined priorities for power restoration. This “pre-incident triage” enables those responsible for emergency or recovery management to determine where the greatest efforts should be directed. In fact, as many jurisdictions are learning, pre-incident triage may also facilitate preventive or mitigative actions – for example, if a particular area is especially susceptible to downed power lines.

Two potential mitigation measures may be available: (a) clear trees sufficiently so that, under most circumstances, they would not affect power lines; or (b) install underground power services. These decisions must be agreeable to the affected communities, which include the general public. Not only must power utility companies have the resources, they also must be willing to undertake the mitigating method based on costs and other factors. However, the local government must concur with the proposed solution and facilitate the actions recommended by enacting legislative authorities when needed. Finally, consumers must be willing to accept potentially higher utility costs and/or potential inconveniences to support the steps recommended. Even when an idea seems simplistic on the surface, the interrelationships needed to support any changes and improvements may present implementation challenges.

### ***Challenge Two: Managing Expectations***

The second challenge to successful recovery management rests with managing expectations, which is multifaceted. First, recovery managers including incident managers, emergency managers, and others involved in operational roles must be both optimistic and pessimistic. As optimists, they must recognize and promote the notion that improvements will take place, however incremental that may be from time to time. As pessimists, they must recognize that the potential impediments are as numerous as the options for action and be mentally prepared for delays or setbacks. Consequently, recovery managers must balance their expectations with reality and avoid excessive optimism or pessimism internally. Sometimes old adages such as, “It is what it is,” or, “Just deal with it,” are the only ways to keep moving forward during recovery operations.

Second, it is extremely important that government at all levels (local, tribal, state, and federal) and private sector partners must work collaboratively *before* an incident to identify and share their expectations to minimize conflicting objectives and goals. It is far more productive to identify potential areas of conflict during non-emergent conditions and resolve disconnects than it is to attempt resolution under the stress or duress of a disaster scenario. Failure to identify and seek resolution inevitably leads to public conflicts that further complicate efforts.

Finally, it is vitally important for all parties to manage the expectations of the public. Giving false hope – or failing to provide realistic information about the recovery operations – to communities experiencing significant disruptions almost always breeds distrust and even contempt. During pre-disaster planning efforts, government and private sector (utility) representatives should confer – preferably in person – and develop mutual, reciprocal, and realistic expectations. Failure to set this baseline could result in misconceptions and “dis-understanding” (disregarding the importance of coming to an understanding). The net result of effective pre-disaster concurrence between government agencies and private sector partners should be an accurate and effective message for the public. The message should be generated before an incident occurs, and then conveyed regularly to the citizens.

### ***Efforts Needed Now***

Greater efforts are needed to manage public expectations, which can be informed in two ways. First, emphasizing that preparedness is necessary for recovery; as another old adage says, “Failing

to plan is the same as planning to fail.” Recovery is not solely a government responsibility, nor is it a private sector (utility) obligation. Indeed, both have integral roles, but the third leg of a successful recovery effort rests with the citizens who must share responsibility for taking care of themselves to the extent possible and, when within their capabilities, support recovery efforts.

Second, the general public (citizens) must be educated on the critical importance of being actively involved in aspects of post-disaster recovery activities, which can support and contribute to recovery at the individual and family levels. This highlights the importance of an ambitious – even aggressive – public affairs or public information campaign, which can and should be shared by government agencies and private sector partners equally to establish realistic expectations for all.

The national campaign to “Make A Plan, and Build a Kit” is a valuable starting point and should be shared equally by the public and private sectors. Conveying this message to the public frequently and through multiple media outlets would improve its effect. It should not be solely relegated to public service announcements posted by an emergency management agency. The public expects to be reminded during September as part of FEMA’s “National Preparedness Month” or, through efforts such as Virginia’s annual hurricane awareness campaign in May – before the hurricane season, which begins in June. For many, though, these campaigns or messages have simply become reminders that Christmas is three months away or there is only one month until the Independence Day celebration.

Regular and recurring efforts can focus on initiatives that citizens can take to better prepare for a worst-case scenario. Coordinated and collaborative public awareness and information campaigns that are consistent, reinforced, and shared by all partners and stakeholders are needed to better manage citizens’ expectations when disaster strikes. It is preferable to say, “We’re telling you now, so we won’t have to say we told you so later,” than to extend messages only during times of duress.

Consequently, managing recovery operations is a complex, interconnected process. Effective and successful disaster recovery management is dependent on numerous moving parts, all of which must integrate and function as one larger machine when circumstances dictate. None of the many pieces can be treated as a discreet component, but they also cannot be overlooked or minimized. In order to maintain the “big picture” for success, two efforts must always be incorporated: setting and meeting realistic time frames for operations under challenging and often uncertain conditions; and managing expectations internally and with the public. Effective recovery management begins long before a disaster, continues through response, requires ongoing attention to all facets during the recovery effort, and ultimately builds more resilient communities.

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*Stephen Grainer is the chief of IMS programs for the Virginia Department of Fire Programs (VDFP). He has served in Virginia fire and emergency services and emergency management coordination programs since 1972 – in assignments ranging from firefighter to chief officer. He also has been a curriculum developer, content evaluator, and instructor, and currently is developing and managing the VDFP programs needed to enable emergency responders and others to meet the National Incident Management System compliance requirements established by the federal government. From 2010 to 2012, he served as president of the All-Hazards Incident Management Teams Association.*

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