STRATEGIC FORESIGHT INITIATIVE

OVERVIEW

The world is changing in profound ways. These changes will significantly alter how the emergency management community will do its job in the future and will require creative and collaborative thinking and action. To begin considering future challenges and their potential impacts, FEMA is coordinating a Strategic Foresight Initiative (SFI), the objective of which is straight-forward: to seek to understand how the world around us is changing, and how those changes may affect the future of emergency and disaster management. Our goal is to engage the diverse emergency management community in a collective exploration of issues, trends, and other factors that could impact the future environment, and to support expanded strategic thinking and planning for the future.

Fundamentally, the Strategic Foresight Initiative seeks two outcomes: (1) an emergency management community prepared for whatever challenges the future holds; and (2) a shared sense of direction and urgency, to drive action toward meeting our shared future needs – starting today.

Thinking more broadly, rigorously, and over a longer timeframe will help us:
- Hedge against uncertainty;
- Avoid strategic surprises;
- Promote information sharing across disciplines and organizations;
- Understand what changes could affect emergency and disaster management; and
- Plan so as to more effectively operate in our future environment.

ENGAGEMENT

FEMA has taken steps to create space for collaboration and dialogue on key topics facing emergency and disaster management. We are utilizing various media, including workshops, online collaboration tools, and individual meetings, to facilitate engagement. In April 2010 individuals from a wide cross-section of the emergency management community, select subject matter experts in relevant academic areas, select federal agencies, and other key stakeholders participated in a "scoping workshop." At this event participants began to identify, define, and refine key issues and drivers of change that may impact the future of emergency management.

Beginning in May 2010, participants from many disciplines and fields joined in discussion through focus groups, conference calls, and OMB-Max, an online community collaboration tool. Dialogue has focused on better understanding emerging trends and future directions in key issue areas and their potential impacts on and implications for emergency management.

Throughout 2011, the SFI community has hosted and participated in workshops during which community members discussed the drivers of change and their confluences. In July 2011 nearly 60 emergency management community representatives attended the inaugural SFI Scenario Workshop to explore alternative future operating conditions, their impacts and implications on emergency management, and identify challenges, opportunities, and strategic needs. The workshop results have helped provide an emergent picture of key emergency management field intersections and will help inform eventual community wide strategies.

THE WAY AHEAD

To date, the SFI has focused on understanding who or what could shape the future of emergency management and identifying our strategic needs as we face a complex and uncertain future. While the exact future form of the SFI will evolve, it will involve several key components including:
- Developing useful products (such as annual reports, updated EM driver reports, and trend analyses) to distribute throughout the community;
- Broadening the SFI community to build on existing collaboration;
- Planning actions to meet future needs; and
- Refreshing and expanding the research to explore new and compelling questions and ideas.

CONTACT INFORMATION

The FEMA Office of Policy and Program Analysis (OPPA) is coordinating the Strategic Foresight Initiative. To get involved, please email FEMA-OPPA-SFI@fema.gov, or contact Adolfo "Sonny" Trevino, Strategic Foresight Initiative lead, at adolfo.trevino@fema.gov.

SUMMARY OF STRATEGIC FORESIGHT INITIATIVE DRIVERS
DECEMBER 2011

OVERVIEW

The information below represents the nine SFI Drivers, the collective exploration of issues, trends, and other factors that could impact the future emergency and disaster management environment over the next 15-20 years. A research paper outlining the topic, trends, and potential impacts has been written for each Driver and can be downloaded at:

http://www.fema.gov/about/programs/oppa/strategic_foresight_initiative.shtm

DRIVERS AND TRENDS

Changing role of the individual

- Advances in technology (e.g. smartphones, tablets) empower individuals by broadening access to information and promoting a sharing rather than hierarchical information environment.
- New technologies create new communications challenges; individuals seek confirmation of official information from non-official sources before taking action.
- Possibility of media gaps being created between "connected" and "non-connected" individuals
- Many individuals join "virtual" communities of likeminded persons, dispersed across the globe and may feel more connected to these "virtual" groups than to their national or geographic community.

Climate Change

- Per the U.S. Global Change Research Program (USGCRP) study on the implications of climate change in the United States :
  - Coastal areas will be at risk due to rising sea levels and more intense storms
  - Water resources will be stressed domestically and globally
  - New threats to human health
  - Wildland fire threat will increase and shift to previously unaffected areas
- Aging critical infrastructure and increased urban populations exacerbate climate change challenges.
- Mass migration due to climate issues, increased conflict, and shifts in disease patterns are potential international effects of climate change.

Critical infrastructure

- Much infrastructure in the United States is nearing the end of its structural life cycle and due to age (e.g. bridge collapse, dam burst) can itself pose a threat.
- Transportation, communication, and energy infrastructure are aging and in danger of failing.
- Aged infrastructure can hamper disaster response and recovery efforts by delaying first responders' ability to reach an affected area or the delivery of supplies.

Evolving terrorist threat

- Dispersion of technological and scientific knowledge will increase terrorists' access to high consequence weapons such as biotechnology, nanotechnology, and nuclear weapons.
- Terrorist organizations are adaptive and are constantly learning and improving their tactics and techniques.
- There is an increase in self-radicalization of individuals and small groups.
- Communications technology continues to support recruitment and terrorist messaging.

Global Interdependencies/Globalization

- A shift in economic power from the West to East is a potential challenge to fiscal stability in domestic government budgets and resource availability.
- Possible disruptions in global supply chains could have significant domestic consequences
- Increasing global interdependencies will lead to the United States having a greater role in emergency and disaster management internationally.
- A more global role for American emergency and disaster managers could have major resource and capability implications.

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Government Budgets
- Current State, local, tribal, and Federal budget forecasts are constrained and could lead to challenges sustaining emergency and disaster management resources and capabilities.
- Federalism and the role of State, local, tribal, and Federal governments in emergency and disaster management is a key point of discussion. Many have raised the possibility of an increase in partnerships with the private sector, perhaps including privatizing some emergency and disaster management activities.

Technological innovation and dependency
- Important technological innovations that could dramatically influence emergency and disaster management include:
  - Increasing adoption of mobile technology
  - Medical breakthroughs
  - Improvements in how we model and warn about disasters
  - Implications of biotechnology and nanotechnology on the security environment
- Dependency on technology in our communications, energy, and transportation infrastructure creates a significant vulnerability to cyber attack.

Universal access to and use of information
- The explosion of social media and personal communications technology will continue to increase real-time access and delivery of information.
- The information environment now allows everyone to be both a producer and consumer of information often resulting in "spontaneous reporting" by individuals at incident sites posting video, images and text messages from their smartphones.
- This new information environment, combined with the 24/7 news cycle and the growth of non-traditional news sources such as social media, has created an environment of constant information flow that presents both great opportunities (e.g., crisis mapping of the Haiti Earthquake) and challenges (information overload) for emergency and disaster management.

U.S. Demographic Shifts
- Over the next 15-20 years, the U.S. Census Bureau expects:
  - The overall population will grow by 18%
  - The population will become more culturally and ethnically diverse, with dramatic increases projected in both the Hispanic and Asian populations
  - The percentage of the population over the age of 65 will increase to 18.2 percent by 2025
- Many Americans continue to move to relatively densely populated metropolitan and coastal areas.

STRATEGIC FORESIGHT INITIATIVE INSIGHTS
DECEMBER 2011

The following insights have been derived from extensive research and analysis, dialogue among the emergency management community, and scenario workshops held over the course of 2010 and 2011.

- **The emergency management community will face increasing risk, elevated uncertainty, decreasing predictability, and tremendous complexity** in the form of more incidents, new and unfamiliar threats, more information to analyze (possibly with less time to process), new players and participants, sophisticated technologies, and exceedingly high public expectations. This combination will create a vastly different landscape for operations. It could transform how we conduct risk assessment, and pressure to perform in this environment will be extraordinary.

- **Future resource constraints are seemingly unavoidable.** Whether induced by an increased need for services, a reduced capability or capacity to deliver services, or both, we will be faced with increasingly limited resources. These constraints will push service providers to find creative ways to deal with shortfalls and suggest the need for innovative new surge models, new partnerships, and sustained community efforts to ensure interoperability of personnel, equipment, systems, and functions. Although we have made gains in recent years, more progress must be achieved.

- **Envisioned changes in emergency and disaster management roles and responsibilities will require multi-sector collaboration to meet future demands**. Given resource constraints, new technology adoption and adaptation, and major societal shifts, among other changes, we will have to work in new ways with different players. This evolution will necessitate enabling frameworks to create the space for joint strategy and action across sectors, including the public domain, private sector, and individual communities. In some cases, needed reforms can only be implemented once new and empowering frameworks are in place.

- **Across the nation, disparities in adapting to changes in emergency management resources and responsibilities should be anticipated** and somehow compensated. For example, wealthier states with stronger infrastructure and a better educated population will be better positioned to allocate resources to meet future challenges than those with fewer resources. How can regions or communities with fewer resources be supported?

- **Trust – between the public and government – must be strengthened.** Trust in large institutions, including government, is shifting to social networks. This shift poses real challenges to emergency and disaster managers, especially in the face of changing political expectations and greater public awareness of government limitations. Since trust is so essential to successful outcomes in disasters and emergencies, we must look for opportunities to build and strengthen public trust; frequently the best pathway for doing so lies in public participation.

- **Individuals, families, neighborhoods, communities, and the private sector will likely play an increasingly active role in meeting emergency management needs.** The public's ability and desire to self-organize will grow as the role of the individual, access to information, and technology evolve. Concurrently, the government will face fiscal pressures and other resource constraints. This confluence will challenge traditional emergency and disaster management roles, present prospects for structural reform, and offer opportunities to engage and empower and communities as active partners in the emergency and disaster management process.

- **Consider new and evolving at-risk populations in all phases of emergency and disaster management.** As the U.S. demographics shift we will have to plan to serve increasing numbers of elderly and limited and non-English speaking citizens; the possibility of massive numbers of pandemic victims as a result of urbanization and climate change; physically isolated populations (by choice or because of some form of disaster); technology have-nots; migratory populations inside and outside our borders; and large numbers of homeless or destitute people, among others. It will be crucial to engage these communities as future challenges impact our community's resources and capabilities.

- **Promoting a global mindset will help emergency and disaster managers evolve.** Beyond U.S. experiences, there is a large and growing body of *global* best practices that we need to learn from as well. As the world becomes more globally connected and as we rely on global supply chains that can create hidden vulnerabilities that affect U.S. emergency operations, learning and implementing global best practices will be essential. Contingency planning that considers future trends and drivers will be prudent.

STRATEGIC FORESIGHT INITIATIVE STRATEGIC NEEDS

The following strategic needs statements are the result of a 4-day workshop during which participants explored five separate alternative futures. The statements and context below represent what the emergency management community would need to be successful in all five alternative futures. They are divided into three categories: (1) *Essential Capabilities*; (2) *Innovative Models and Tools*; and (3) *Dynamic Partnerships*.

ESSENTIAL CAPABILITIES

Strategic Need: **We need different or unique emergency & disaster management capabilities because of dynamic and unprecedented shifts in local and regional population characteristics and migratory flows.**

Context: Emergency managers will be faced with complex demographics shifts as the United States' population increases, ages, and becomes more culturally and linguistically diverse. New challenges will arise from migrations within the US, possibly because of environmental and climate changes. There will also be changes in the size and nature of elusive populations, including the extremely poor; the homeless; those volunteering to live "off the grid"; refugees from disasters and victims of pandemics.

*Strategic Need***: We need to practice omni-directional knowledge sharing to include all relevant forums including sensitive and classified, networks and technologies to remain relevant in complex information and media environments.**

Context: The proliferation of information from all sources (including private sector and social media) intensifies the need to make emergency management information and knowledge useful and accessible. Advanced tools to collect, analyze and disseminate information represent potentially valuable new tools for emergency managers. As information flows grow more distributed, the connectivity of networks will be significantly more important than any single hierarchical solution. The public's role as an information source will be vital.

*Strategic Need***: We need to infuse emergency management principles and life skills across the entire educational experience to empower individuals to assume more responsibility.**

Context: Future operating environments may well be characterized by significant decline in resources for emergency and disaster management. Such fiscal constraints could tempt emergency and disaster managers to pull back from community engagement, which would widen the gap that already exists. Instead, it will be important to use the fiscal environment as an opportunity to reinvent and innovate. Schools will be critically important channels, especially in creating awareness of new and unfamiliar threats such as pandemics or cyber attacks.

*Strategic Need***: We need to build a vision for the emergency management of the future and a culture that embraces forward thinking to anticipate emerging challenges and develop appropriate plans and contingencies.**

Context: The SFI scenarios depict increasingly complex, rapidly changing worlds – even for economically troubled and less technologically vibrant scenarios. Since current operational strategies and plans may not be applicable in the future, the emergency management community will have to deliberately explore future issues as it prepares for the challenges that face our community.

*Strategic Need***: We need to leverage volunteer capabilities across all emergency and disaster management phases.**

Context: Emergency and disaster management resources, especially personnel, are apt to be stretched in future operating environments marked by tight budgets and/or more frequent national emergencies. In some cases, skill gaps may grow pronounced, and alternative staffing models will become important. How might we further incorporate volunteers into our operating models? What limitations must we understand to mitigate undue risk exposure? Further, as it is already used to mobilize communities, how can we use technology to inform and organize volunteers?

INNOVATIVE MODELS AND TOOLS

Strategic Need: **We need new risk management tools and processes to manage cascading consequences of interactions among infrastructure and all hazards.**

Context: Current risk management tools and processes already are outdated. Risk management models do not account for climate change impacts we are experiencing today. If climate change is exacerbated, we will be even further behind the curve, and our response and recovery operations will suffer. The risks of aging infrastructure due to budget pressures, political and jurisdictional conflicts, and potential failures to initiate or sustain the long-term investments required also will challenge us in the future. Aging infrastructure also represents a highly interconnected form of risk, with many secondary and tertiary risks to populations during and following emergency situations.

*Strategic Need***: We need to employ alternative surge models to meet the challenging confluences of social, technological, environmental, economic, and political factors and conditions.**

Context: Acute and possibly chronic fiscal pressure could create highly challenging deficits in emergency and disaster management resources relative to needs. Emergency managers could see reduced funding at all levels, and possible offsetting factors, like technology, could be an important force multiplier in some situations. All of this suggests the need for new approaches and models for marshalling resources to deal with possibility of more frequent and more complex emergency situations.

*Strategic Need***: We need to establish flexible frameworks that optimize emergency management inter-operabilities across all boundaries because increasing jurisdictional and technological complexities make it critical.**

Context: The future operating environment challenges individual emergency management entities to accomplish more with less of its own resources. This underlines the importance of resources-sharing arrangements across jurisdictions, especially during emergency situations. In 2011, doctors and nurses cannot cross state lines to help in emergencies. This is often the case with security and law enforcement personnel as well. Obstacles to many other forms of interoperability, especially in the technological realm, to include our hemispheric partners, will be magnified without reform in this area.

*Strategic Need***: We need to plan and coordinate around shared interests and interdependencies to exercise the entire range of emergency management capabilities.**

Context: The future may challenge our community with chronic resource constraints at times of rising demands for emergency and disaster management services. Current regional approaches are limited. Planners need to be motivated and empowered to look beyond short-term concerns and narrow stovepipes and recognize opportunities for collaboration around shared interests.

*Strategic Need***: We need to remediate hidden vulnerabilities in critical supplies – from water to energy to medical products – to offset threats to the full scope of emergency and disaster management activities.**

Context: Future availability of important emergency and disaster supplies cannot be assured. Global and national supply chains, some of which have limited capacity to begin with, may be vulnerable to infrastructure degradation, interruptions in foreign trade, cyber attacks, and structural changes in warehousing and logistics. Water, especially, in drought-stricken areas of the country, may not be available in sufficient amounts to fully support emergency and disaster management missions. Climate change may negatively affect access to power and energy; so may man-made problems, such as foreign conflicts and trade embargoes.

*Strategic Need***: We need to influence the development of emerging technologies that advance EM capabilities.**

Context: Technology will become a more important element in future emergency and disaster mission execution, from information management, to communications, to sensing, to transportation and logistics, and much more. In fact, there is a case to be made that technology will be even more important in tight budget environments. This argues not just for proactive technology adoption but actually getting out ahead and influencing the development of products that have emergency and disaster management applications.

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DYNAMIC PARTNERSHIPS

Strategic Need: **We need to empower individuals, neighborhoods and communities to play a greater role throughout all phases of disasters.**

Context: There are real shifts in how people are processing information and where they will produce and consume it in the future. Additionally, there are shifts in the nature of trust as it moves from organizations to networks. Along with these changes, the SFI scenarios depict a range of US economic futures with spending constraints – especially over the next decade – as a repeated theme. Inevitably this will mean changes in how government services are delivered before, during and after an emergency or disaster event. Understanding how to empower communities and individuals in new and different ways will challenge our current public engagement approaches and expectations.

Strategic Need: **We need to proactively engage business in all emergency and disaster management phases AND solicit its contribution to policy development due to the critical nature of private sector capabilities.**

Context: With budgets constrained, private sector partnerships will grow increasingly important. Beyond their resource contributions, business leads in many critical technologies and processes, such as data management and logistics, all of which will continue to be critical to emergency and disaster management mission performance. Further, the business community needs to be involved not just at the time of the crisis, but early on, in the critical planning and policy stages, in order to fully meet the potential of its partnership role.

Strategic Need: **We need to intensify disaster-response collaboration and planning with Canada and Mexico, recognizing scope for both national and local actions.**

Context: Emergencies and disasters do not respect national boundaries. A number of the SFI scenarios anticipated the need for significantly closer US collaboration with Canada and Mexico around several shared emergency and disaster management interest areas, including immigration, border security, drought and water management, disease surveillance, trade and commerce, and critical infrastructure. The scenarios made a strong case for anticipatory action to ensure the highest levels of cooperation are in place before actual emergencies or disasters occur.

Strategic Need: **We need to foster increased collaboration to ensure appropriate use of the military, to provide specialized capabilities or to augment capacity in complex, overwhelming disaster incidents.**

Context: The SFI scenario discussions covered a range of complex emergency and disaster situations including WMDs, cyber-attacks, and the potential need for quarantining pandemic victims showing up on US shores. Responding to such threats will require scale, as well as specialized skills, some of which are within the purview of US armed forces. If the US reduces its global military footprint, the armed forces may be more available for domestic mission, including emergency and disaster management.