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:

- Avoid "strategic surprises";
- Promote information sharing across disciplines and organizations;
- Understand what changes could affect emergency 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.

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SUMMARY OF STRATEGIC FORESIGHT INITIATIVE DRIVERS
SEPTEMBER 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
SEPTEMBER 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 extraordinary complexity**, in the form of more incidents, new and unfamiliar threats, more information to analyze (but with less time to process), new players and participants, sophisticated technologies, and exceedingly high public expectations. Pressure to perform in this shifting landscape 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. This is an enormous challenge.

- **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.

- **The means and methods for delivering emergency management services will shift.** Resource constraints at all levels will push service providers to find creative ways to deal with shortfalls. This suggests the need for innovative new surge models, new partnerships, and sustained community efforts to assure interoperability of personnel, equipment, systems and functions. Although we have made gains in interoperability in recent years, more progress must be achieved.

- **Trust – between the public and government – must be strengthened.** Public trust is shifting from large institutions 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 ask ourselves how trust can be built and strengthened.

- **The nation's aging and brittle infrastructure represents a persistent and multi-dimensional risk to emergency services with cascading consequences.** It's not simply the risk of the aging asset in question (e.g., a bridge, tunnel, etc.); it's the broader systemic risk created by infrastructure that may be increasingly prone to failure in critical emergency situations. Advanced modeling tools can highlight some of these risks. There is a need for the emergency management community to be active participants in infrastructure replacement and improvement.

- **Population vulnerability may be more prevalent.** Thinking expansively about future populations such as increasing numbers of elderly; possibility of massive numbers of pandemic victims; physically isolated populations (by choice or because of some form of disaster); non-adopters of technology; and large numbers of homeless or destitute people is in our best interest.

- **To effectively serve the public in the future, our community will have to**:
    - Form dynamic partnerships with existing and new partners, including the private sector, non-profits, the education community, and the public, among others;
    - Build and refine essential capabilities such as how we approach strategic thinking, leverage volunteers, and communicate with all stakeholders; and
    - Adopt innovative models and tools to help shape technology and to move beyond current-day techniques and approaches

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: **Develop different or unique emergency and disaster management capabilities due to dynamic and unprecedented shifts in local and regional population characteristics and migratory flows.**

Context: The emergency management community will be faced with complex demographic shifts as the United States' population increases, ages, and becomes more culturally and linguistically diverse. Some of the scenario worlds explored implications of continued population movements to warmer and coastal regions; others considered the opposite: population shifts away from the coasts owing to harsh weather and climate change effects. There will also be changes in the size and nature of invisible, underrepresented, and elusive populations, including the extremely poor; the homeless; those opting to live "off the grid"; disaster refugees; and victims of pandemics.

Strategic Need: **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 and disaster information and knowledge useful and accessible. In some scenarios, advanced tools to collect, analyze and disseminate represent valuable new tools for the 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: **Infuse emergency and disaster 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 emergency and disaster management resources. This means that one way or another, individuals will have to be empowered to take on more responsibility for their own and their family's safety during emergencies. This shift will take place at many levels of civil society. Schools will be critically important channels, especially in creating awareness of new and unfamiliar threats, like pandemics or cyber attacks.

Strategic Need: **Build a vision for the emergency and disaster 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. Current operational strategies and plans may not be applicable in the future. No matter what the future holds, the challenge is great to anticipate emerging challenges, develop appropriate plans and contingencies, and commit to making this mindset integral to emergency and disaster management leadership.

Strategic Need: **Leverage volunteer capabilities across all emergency management phases to mitigate resource scarcity.**

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 and surge models will become important.

INNOVATIVE MODELS AND TOOLS

Strategic Need: **New risk management tools and processes are needed to manage cascading consequences of interactions among infrastructure and all hazards.**

Context: The risks of aging infrastructure were identified in multiple scenario worlds because of budget pressures, political and jurisdictional conflicts, and potential failures to initiate or sustain the long-term investments required. Underinvestment in infrastructure represents a highly interconnected form of risk, with many secondary and tertiary risks to populations during and following emergency situations. As populations shift and as social systems expand and grow more complex, the challenge of understanding the range of consequences related to infrastructure vulnerabilities will grow even greater for the emergency management community.

Strategic Need: **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 pressures would create highly challenging disparities in emergency and disaster management resources relative to needs. Current surge models may not support future needs. In particular, declining federal support will challenge emergency management community authorities to pursue regional and sub-regional solutions.

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Strategic Need: **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 and disaster 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. The SFI scenario groups explored these situations and highlighted obstacles to many other forms of interoperability, especially in the technological realm, to include our hemispheric partners as well.

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

Context: The future may challenge the emergency management community with chronic resource constraints at times of rising demands for 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: **Currently unanticipated vulnerabilities in critical EM supplies – from water to energy to medical products – will require remediation to offset threats to the full scope of EM activities.**

Context: Future availability of important emergency and disaster management supplies cannot be assured. Global and national supply chains may be vulnerable to further degradation of the transportation infrastructure, 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, foreign conflicts, trade embargoes, and other problems may negatively affect access to power and energy.

Strategic Need: **Influence the development of emerging technologies that advance EM capabilities.**

Context: Technology will become a more important element in future emergency and disaster management mission execution, from information management, to communications, to sensing, to transportation and logistics, and much more. This has been true in the recent past; there is every reason to believe this will be the case in the future. We saw this even in the economically constrained scenario worlds. In fact, there's a case to be made that technology will be even more important in tight budget environments. For the emergency management community to realize the potential of technology's contribution to mission execution, it must be an active technology adopter.

DYNAMIC PARTNERSHIPS

Strategic Need: **Empower individuals and communities to play a greater role throughout all phases of disasters.**

Context: For a variety of economic and political reasons explored in the scenarios, federal, state, local, and tribal governments face significant constraints on spending. This means that for many jurisdictions, current emergency and disaster management service delivery approaches may not be sustainable. Further, because individuals and community organizations will play a larger role before, during, and after disasters the emergency management community must adapt and embrace this evolution. New technologies and communications media (e.g., smart phones and social media) will help enable this transition.

Strategic Need: **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 on several key 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 occur.

Strategic Need: **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 situations like WMDs, cyber-attacks, and the potential need for quarantining pandemic victims showing up on US shores. Responding to such threats will require specialized skills, some of which are 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.

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

Context: Partnerships are a key component of the emergency management community's ability to serve the public, especially during actual event surges. With budgets constrained, private sector partnerships will grow increasingly important. Beyond their resource contributions, business leads in many critical technologies and processes (for example, logistics) on which emergency and disaster management focuses.