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THESIS

**EMERGENCY MANAGEMENT SPAN OF CONTROL:
OPTIMIZING ORGANIZATIONAL STRUCTURES TO
BETTER PREPARE VERMONT FOR THE NEXT MAJOR
OR CATASTROPHIC DISASTER**

by

Ludwig J. Schumacher

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Thesis Advisor:
Second Reader:

Richard Bergin
James Wirtz

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ORGANIZATIONAL STRUCTURES TO BETTER PREPARE VERMONT FOR
THE NEXT MAJOR OR CATASTROPHIC DISASTER**

Ludwig J. Schumacher
Lieutenant Colonel, Vermont National Guard
B.A., University of Connecticut, 1987
J.D., University of Connecticut School of Law, 1990

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December 2008**

Author: Ludwig J. Schumacher

Approved by: Richard Bergin
Thesis Advisor

James Wirtz
Second Reader

Harold A. Trinkunas, Ph.D.
Chairman, Department of National Security Affairs

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ABSTRACT

During a statewide disaster in Vermont, one of the most important actions Vermont Emergency Management should take during the response phase is to maintain awareness of the situation and provide coordinated logistical support. If the State does not understand what is occurring, or is not able to perform resource coordination in support of response efforts across the State, then local and state responses are not coordinated, and actionable federal requests for assistance cannot be articulated. Forty-five states have county emergency management structures between municipal and state structures, which regionalize emergency management within those states. Of the five states without county emergency management structures, Rhode Island has 39 municipalities, Connecticut and Massachusetts have established regional emergency management structures that do not align with counties, New Hampshire has 234 municipalities linked to the state emergency management center, and the State of Vermont has 251 municipal Emergency Management Directors who are linked directly to a single state Emergency Operations Center. This paper examines emergency management span of control nationally, surveys emergency management directors in four New England states, and proposes a regional construct for emergency management in Vermont, to enable effective emergency management during the next man-made or natural disaster.

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LIST OF ACRONYMS AND ABBREVIATIONS

CEM	Comprehensive Emergency Management
CERT	Community Emergency Response Team
DHS	Department of Homeland Security
EMD	Emergency Management Director
ESF	Emergency Support Function
FEMA	Federal Emergency Management Agency
ICS	Incident Command System
LEPC	Local Emergency Planning Committee
NIMS	National Incident Management System
PSD	Public Safety District
RPC	Regional Planning Commission
S-RAAT	State Rapid Assessment and Assistance Team
SERC	State Emergency Response Commission
SOP	Standard Operating Procedure
SSF	State Support Function

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EXECUTIVE SUMMARY

The hard-working and capable members of Vermont Emergency Management inherited an organizational structure which has been, and which will continue to be, effective for events the size and scale of which Vermont has experienced within the past several decades. Vermont does not have county or regional Emergency Operations Centers (EOCs). Therefore, during an emergency, Vermont's 251 municipalities send both situation assessments and requests for resources directly to the state's single EOC. The current organizational structure may not be adequate to address a major or catastrophic disaster. The term "major or catastrophic" is used in Vermont's Emergency Operations Plans as a trigger between different emergency management structures and processes, and it is used synonymously here. Examples of major or catastrophic disasters which occurred in Vermont prior to the establishment of Vermont Emergency Management include the flu epidemic of 1918, flooding in 1927, and the 1938 Hurricane. More recently, there are lessons from Hurricane Katrina related to the failure of emergency management at the local and state levels to maintain situational awareness in order to be able to form actionable requests for assistance. The lesson for Vermont is not about hurricanes or levees, it is a demonstration of the results produced when a state's emergency management functions are overwhelmed.

In 45 states, there are county EOCs that regionalize emergency management functions between the respective state EOCs and municipal EOCs. The five states without county EOCs are all in New England. Of these five states, Connecticut and Massachusetts have established regional EOCs organizationally among the state EOC and municipal EOCs. Rhode Island has 39 municipalities, all linked directly to the single state EOC. The two remaining states, Vermont and New Hampshire, each have over 200 municipalities linked to a single state EOC.

The central question of this thesis is whether the organizational structure of emergency management in Vermont can be optimized to enable more effective emergency management. In order to assemble relevant background facts and information to permit analysis of existing structures and possible futures, span of control literature is reviewed, both generally and as it specifically applies to emergency management structures. Bear in mind that the literal meaning of the phrase “span of control” is misnomer when applied to emergency management functions, in the sense that emergency management organizations support response and recovery efforts of municipal jurisdictions. Emergency management organizations do not command or control response or recovery activities. The term “span of control” therefore is used within this thesis with the same meaning that it is used commonly when emergency management structures are discussed, however inviting it might be to coin in this thesis an as-yet unseen phrase such as “span of coordination”, “span of support” or “span of awareness” with respect to the number of county and/or municipal organizations which connect to a state emergency operations center. Further, the following are also reviewed: emergency management theory; emergency management structures in the five states without county EOCs; the results of a survey of local Emergency Management Directors (EMDs) in Connecticut, Massachusetts, New Hampshire, and Vermont which asked about the training and experience of EMDs, whether EMDs have other public safety duties, and the status of municipal emergency management facilities; and Vermont’s existing emergency management structures, including the plan to establish Regional Coordination Centers (RCCs). RCCs have not yet been implemented, but the intent articulated in the Vermont State Emergency Operations Plan is to stand up RCCs when the state EOC is overwhelmed, enabling the regionalization of emergency management functions (most importantly logistical coordination support during the response phase).

The analysis begins by assessing the role, purpose and impact of strategic leadership, specifically with an eye towards developing a strategic goal of organizational structures which optimize desired emergency management processes in Vermont. The principles of emergency management are summarized, which when interwoven with statutory and fiscal restraints, shape the realm of possible futures with respect to emergency management organizational structures. The author then considers the possible visions for an organizational structure in Vermont that best enables the principles of emergency management, including maintaining the status quo, and concludes that the State of Vermont is best served by standing up four regional EOCs aligned with existing Public Safety Districts (PSDs). The regional EOCs would be the first contact for coordination of state resources whenever local resources are exceeded. The author proposes the regional EOCs be staffed with full-time dedicated emergency management personnel, who become familiar with their jurisdiction, and who represent Vermont Emergency Management through all four phases of emergencies (mitigation, preparedness, response and recovery), not just the response phase. Currently, there are regional emergency management structures in Vermont that perform functions during the mitigation, preparedness and recovery phases of an emergency. In addition to considering funding sources for new structures, the author considers the realignment of existing resources as may be required for the collective good.

State and local governments in Vermont have made positive changes and have dedicated significant resources to increasing emergency management capabilities in Vermont. For example, revisions to Vermont statutes in 2005 gave the Governor the authority to divide the state into PSDs, with emergency management authorities. Similarly, in 2005, the Governor signed an Executive Order mandating the adoption of the National Incident Management System by all municipal and state first responder agencies. This thesis is an opportunity to take a fresh and independent look at the measures introduced and whether there are any improvements that could be made. This thesis recommends

organizational structures that could further improve the effectiveness and resilience of the emergency management systems at local and state levels designed to maintain the security and continuity of emergency management functions during Vermont's next major or catastrophic disaster.

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There are many people to thank for their guidance and encouragement during this challenging yet rewarding process. Participation in this program would not have been possible without unwavering support from Major General Michael D. Dubie, Adjutant General of the State of Vermont. His dedication to preparing the Vermont National Guard for the spectrum of potential domestic operations permeates its 4,000 members. At the Center for Homeland Defense and Security, Naval Postgraduate School, I have found Richard Bergin, Chris Bellavita, and Greta Marlatt each to be the rarest combination of subject matter expertise, teaching skills, and enthusiasm. My sincere thanks for the contributions of the members of Vermont Emergency Management; including Director Barbara Farr, Deputy Director for Operations and Logistics Peter Coffey, and Deputy Director for Preparedness and Planning Ross Nagy. I owe a sincere debt of gratitude to my classmates, both for helping to educate me and for serving as sounding boards for my thesis as I ventured outside my subject matter expertise into theirs, and also for their willingness to use logic and critical thinking to address the spectrum of critical, albeit sometimes emotionally-charged, homeland security issues. None of my many time-consuming quests are ever possible without the constant unshakeable foundation of support from my wife Christina. To my children, I hope this thesis will serve as an example that one can have the honor of engaging dedicated Americans and dreaming big ideas of change, and that it is possible to be part of the dialectic of making our state and nation better. I have received a true gift of knowledge and experience from the Center for Homeland Defense and Security, and it is my strongest intention to repay as much as my abilities permit, through a potentially impactful thesis, the debt I have resulting from the nation's investment in me.

Ludwig J. Schumacher

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I. INTRODUCTION

It is best to do things systematically...since we are only human, and disorder is our worst enemy.¹

Hesiod

Uncertainty is the only certainty there is.²

John Allen Paulos

A. PROBLEM STATEMENT

In the tension between uncertainty and order, emergency management organizations work to reduce chaos during the response phase of a disaster. The speed at which disaster assessment and resource coordination occurs, and even the ability of emergency management organizations to continue functioning during catastrophic emergencies, are directly tied to the design of the emergency management organizations themselves. Emergency management organizations exist at municipal and often county levels of government, as well as state and federal levels of government. Whether the organizations and their respective connections are optimized or misprioritized determines capabilities such as resiliency, redundancy, and responsiveness. The span of control between levels of emergency management organizations is the number of linkages between Emergency Operations Centers (EOCs) at different levels of government. For example, if a State EOC is linked to 23 county EOCs, then the span of control is 1 to 23. If a county EOC is linked to 17 municipalities within its jurisdiction, then the span of control for the county EOC is 1 to 17. Policymakers can set a strategic vision for a robust, resilient and responsive emergency management structure by periodically evaluating the principles of emergency management in the light of known constraints.

Emergency management is the protection of population and property from the destructive forces of natural and man-made disasters through a comprehensive program of mitigation, preparedness, response, and recovery.³

¹ Charles E. Wilbour, trans., 8th c. B.C., *Works and Days*, 471.

² John Allen Paulos, Professor of mathematics at Temple University, <http://www.math.temple.edu/~paulos/> (accessed August 28, 2008).

³ Federal Emergency Management Agency (FEMA), 2004.

Local and state governments have responsibilities for the performance of emergency management functions. During the response phase of an emergency, emergency management organizations locate in their respective EOCs to perform assessment and resource coordination functions. In addition to municipal and state emergency management structures across the nation, 45 of the 50 states also have county emergency management organizations that link state EOCs, and municipal EOCs within a county.⁴ County emergency management agencies have been praised for their capabilities and accomplishments.⁵ Two of the five states without county EOCs,⁶ Connecticut

⁴ There are significant emergency management capabilities at the county level: 62 percent of U.S. counties have a mobile command unit, two-thirds of counties have conducted an emergency management training exercise within the last year, and 78 percent of counties nationally have established emergency management units separate from the police/sheriff and fire departments. The five states that do not have county emergency management agencies did not participate in this survey. W. Clarke, *Emergency Management in County Government: A National Survey* (Washington, D.C.: National Association of Counties, 2006), v-1.

⁵ America's 3,066 counties vary in geographic shape, size, population and in the services they provide, but the one thing that unites them is that they are responsible for emergency management planning, and very often are the 'first responders' to disasters such as those on September 11. Whether it is a fire, flood or horrific crash, counties across the nation are prepared to respond to virtually any emergency situation. National Association of Counties, *Counties Secure America, A Survey of Emergency Preparedness of the Nation's Counties*, October 2001, 4.

⁶ In the U.S., the absence of county-level EOCs is a specifically New England phenomenon. Of the six New England states, only Maine has county-level EOCs. Maine's 16 County EOCs report directly to the State EOC, with each County EOC having from 12 to 70 towns that report to them. Dale D. Rowley, PE, CEM-ME, CEM, Director Waldo County Emergency Management Agency, Personal correspondence, August 14, 2008. The five other New England states do not have county-level EOCs, and are also the only states in the nation without county-level EOCs. Soil, climate, and space are cited as reasons for regional preferences for facilitating local control by city and town governments and minimizing the intervention of geographically broader governmental structures into municipal affairs: Compared to the South, the settled area in New England was "much less spacious, the climate harsher, and people lived nearer each other. In some localities, in fact, local laws required that no resident be more than a half mile, or a mile, from the center of the village. As a consequence, villages, towns and later cities emerged as more important units of government than counties. The New England states did create counties...But many of the functions performed by counties in the southern region were assumed by city and town governments in the north." National Association of Counties, *History of Government*, http://www.naco.org/Content/NavigationMenu/About_Counties/History_of_County_Government/Default983.htm (accessed August 15, 2008). See also Frank A. Updyke, County Government in New England, *Annals of the American Academy of Political and Social Science*, 47, County Government, May 1913, 26: "While in the Southern states the county soon came to assume large powers in general administration, in the New England states the county developed little beyond the sphere of judicial administration. The local autonomy of the town hindered the development of the powers of the more artificial district of the county."

and Massachusetts, have established regional EOCs that perform emergency management functions between municipal EOCs and the respective state EOC. With respect to the three states in the nation without county EOCs or regional EOCs, Rhode Island has 39 municipal governments with EOCs linked directly to the Rhode Island State EOC, while Vermont and New Hampshire each have over 200 municipal governments which, for the purposes of emergency management functions, under most circumstances are directly linked to a single state EOC.

With roots back to 1949 under civil defense organizational constructs, Vermont Emergency Management in its current form was established in 1989. The hard-working members of Vermont Emergency Management have inherited an organizational structure which has been, and which will continue to be, very effective for the spectrum of emergencies which have occurred in Vermont in recent memory. Nevertheless, this organizational structure has not been tested in a major or catastrophic event,⁷ such as the 1918 pandemic flu, flooding in 1927, or the 1938 New England hurricane that devastated Vermont. The limits and impacts of having too wide a span of control are discussed later in this thesis. A disaster in Vermont affecting all municipalities would result in Vermont's single State EOC attempting to communicate and coordinate directly with 251 municipalities. To address this span of control issue, the current State of Vermont Emergency Operations Plan provides that four Regional Coordination Centers (RCCs) will regionalize emergency management functions in the event of a major or catastrophic disaster. There are advantages and significant disadvantages to this organizational structure. Because the RCC construct has not yet been implemented, this is an opportune time for a comprehensive analysis of the organizational possibilities for emergency management in Vermont.

⁷ The phrase "major or catastrophic event" is used in Vermont's Emergency Operations Plan as a trigger for both required organizational structures and processes, and the term is used with identical meaning in this thesis. See, e.g., Annex VII, Vermont Emergency Management Field Operations Standard Operating Procedure, (April 30, 2005), 3: "For major or catastrophic events, the State Rapid Assessment and Assistance Team will deploy to the impacted Public Safety District."

This thesis explores the possibilities for regionalizing emergency management structures and processes within Vermont, along with an articulated process for change which identifies foundational principles and integrates applicable constraints, including funding. While the thesis considers the State of Vermont, it may be relevant to emergency management in other jurisdictions. It is hoped that policymakers may better appreciate the implications of the organizational transformation of emergency management structures, and that local, regional, and state stakeholders may be motivated to collective efforts.

B. RESEARCH QUESTION

How does Vermont optimize emergency management structures and processes that function effectively during a disaster impacting most or all of the state?

C. SIGNIFICANCE OF RESEARCH

With some variation, we all have a mental picture of how emergency managers heroically respond to a disaster, accomplishing a number of communication and resource coordination tasks simultaneously. The scene is a flurry of activity, with varyingly successful and sometimes unsuccessful efforts. Time-critical decisions are made with assumptions serving as temporary placeholders for facts that cannot be known, or perhaps even as placeholders for facts that can be known, and there may be some delay in addressing lower priority issues. Immediately after a disaster, we see structures and processes which were built through many hours of hard work during periods of relative calm being tested as they enable rapid assessment and resource coordination. The image is central to the American psyche; at least one author has argued that emergency management is regarded as the quintessential public service at all levels of government by its citizens.⁸

⁸ Claire B. Rubin, "Emergency Management: The American Experience, 1900-2005," Slide 15.

Without question, how emergency management organizations respond will be the difference in lives saved and lives lost. Operational failures resulting in inappropriate or incomplete organizational responses to unexpected or demanding contingencies are ever more likely to be critically disabling.⁹ Organizational challenges are not concerned with the type of event. The likelihood of a specific major or catastrophic disaster may be low, but the likelihood of any major or catastrophic disaster has a significantly greater probability. Further, the considerable event-specific planning conducted to date (e.g. pandemic influenza, the flood of 1927, a repeat of the 1938 east coast hurricane, a radiological event at Vermont's nuclear power plant, a WMD event, or numerous other predicted major or catastrophic disasters) is undermined if there is a single Achilles' heel for any of those scenarios.¹⁰

The Hurricane Katrina response reflects the failure of emergency management structures and processes at local and state levels. The published lessons learned provide a litany of specific failings, including communications,

⁹ Gregory A. Bigley, "The Incident Command System: High-reliability Organizing for Complex and Volatile Task Environments," *Academy of Management Journal* 44 no. 6 (2001): 1281.

¹⁰ Not only is it an Achilles' heel for each scenario, but it is an Achilles' heel for all emergency management target capabilities for each scenario. An effective SEOC directly enables the Emergency Operations Center Management capability on DHS's Target Capability List (TCL). Further, during a large scale event, an effective SEOC organizational structure enables success of twenty (20) capabilities on DHS's TCL. The absence of an effective span of control for the SEOC would result in the failure of effective response for any of the following (if major or catastrophic): Onsite Incident Management, Critical Resource Logistics and Distribution, Volunteer Management, Responder Safety and Health, Public Safety and Security Response, Animal Health Emergency Support, Environmental Health and Vector Control, Explosive Device Response Operations, Firefighting Operations/Support, WMD/Hazardous Materials Response and Decontamination, Citizen Protection: Evacuation and/or In-Place Protection, Isolation and Quarantine, Urban Search & Rescue, Emergency Public Information and Warning, Triage and Pre-Hospital Treatment, Medical Surge, Medical Supplies Management and Distribution, Mass Prophylaxis, Mass Care (Sheltering, Feeding, and Related Services), or Fatality Management.

situational assessment and awareness, and many others,¹¹ all subcomponents of the larger umbrella of emergency management. In the absence of effective emergency management at local and state levels, neither local governments nor the State of Louisiana were able to form actionable requests for assistance. The author participated in conference calls where the question “What do you need?” was answered with “Send everything you’ve got!” while watching events unfold seemingly in slow motion on days two, three and four following hurricane landfall.¹² Some describe this as a failure of government at the local and state levels; regardless, lead elected officials are held responsible for the performance of their respective emergency management organizations. Even when emergency management coordinates an effective response to a disaster, there are often hard lessons learned that the system was not nearly as robust, capable or resilient as it had appeared on paper in the calm of day or during exercises.¹³

Unlike many other fields where the passage of time yields more capability due to some combination of progress in the related body of knowledge, or significant technology advances, emergency management functions are facing increasingly severe challenges. Despite progress in emergency management

¹¹ For example, the U.S. House of Representatives’ select bipartisan committee to investigate Hurricane Katrina identified how the “near total failure of regional communications degraded situational awareness and exacerbated problems with agency coordination, command and control, logistics, and search and rescue operations.” The Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, *A Failure of Initiative*, 165. According to the Hurricane Katrina Lessons Learned report released by the White House, “[t]he final structural flaw in our current system for national preparedness is the weakness of our regional planning and coordination structures.” The White House, *The Federal Response to Hurricane Katrina Lessons Learned*, 53. As will be described later, planning is central to emergency management functions during the preparedness phase. Coordination structures appears to be used here as a synonym for emergency management structures.

¹² National Guard Bureau all-states teleconferences during Hurricane Katrina response. The National Guard had at that time over 450,000 members and associated equipment. The National Guard response to Hurricane Katrina was over 50,000 personnel.

¹³ See, e.g., comments of Joseph F. Bruno, Commissioner of New York City’s Office of Emergency Management: “Clearly, one of the biggest things that we did after 9/11 was the implementation of the city-wide incident management system. No question that when 9/11 hit, and I think the perception was that management of that event needed to be stronger.” A. Dunn, “The Big Seven: Seven Questions for the Country’s Top Emergency Managers,” *Disaster-Resource.Com*, 2006. http://www.disaster-resource.com/articles/06p_032.shtml (accessed October 1, 2007). See also “Consequence Reduction: Response and Recovery,” *Volpe Journal* 2003, 24. (“Redundancy must be built into institutions and physical systems.”)

theory and improvements in emergency management structures, processes, and technologies, disasters have increased both in human and economic costs.¹⁴ Disasters are a growth business. Associated losses are large, and growing, with no end in sight.¹⁵ While increases in emergency management capability may be linear, increases in services required to assist impacted populations appear almost exponential. Our grandparents did not expect to have running water and electricity at all times, and they kept a stock of wood to heat the home, with at least a few weeks of preserves in the basement. The present generation tends to view loss of power or running water as a crisis, and has limited ability to provide for itself for more than a few days. The next generation may be unable to contemplate filling a tub with water to flush the toilet, or take preparedness actions that our grandparents considered elementary. In essence, we are raising a generation of victims: a high-maintenance public with raised expectations for response.¹⁶ Finally, as the pace of change increases in nearly every component of society, the resulting increase in complexity directly impacts the responsiveness of emergency management. With the explosion of available data from the internet, news feeds, internal data sources, and sensors, it has become increasingly difficult to process arriving data and extract actionable information.

¹⁴ Recent trends reflect not only a wide variety of disasters, notable both for their increasing cost and impact on human and animal populations of the planet, but also “the clear emergence of disasters as billion dollar events, with substantial economic and political impacts.” Walter G. Green, III, *The Future of Disasters: Interesting Trends for Interesting Times*, Paper prepared for Worldfuture 2003, 21st Century Opportunities and Challenges, San Francisco, CA, July 18, 2003.

¹⁵ B. W. Blanchard, *Background "Think Piece" for the Emergency Management Roundtable meeting, EMI, March 5-6, 2007 on What is Emergency Management, and What are the Principles of Emergency Management* (Emmitsburg, MD: U.S. Federal Emergency Management Agency, 2007a), 22.

¹⁶ See, e.g., comments of Michael Murphy, MMRS Director Emergency Medical Services Authority Oklahoma City OK: “Prior to Katrina, we didn’t have massive evacuations with people sitting there helpless...As populations get moved, we have created expectations that people can sit back and wait to get cared for, then be reimbursed for their trouble...Our practice is building the expectation that no matter what the malady, someone else is going to take care of it, when a little foresight could have prevented it.” Personal correspondence, September 25, 2008. See also comments of Sherri Hagerhjelm, RN, who assisted evacuees from Hurricane Gustav, at <http://www.ksla.com/Global/story.asp?S=8989550.make> (accessed September 23, 2008).

Unless data is transformed into information, overload compromises the ability of decision makers to make timely and effective decisions with respect to resource coordination efforts.

Some argue that we have improperly focused on planning for specific hazards, at the expense of properly addressing vulnerabilities.¹⁷ Structural deficiencies in emergency management organizations are not a man-made or natural disaster, but nonetheless make us more vulnerable to large-scale events, regardless of the cause or type.¹⁸ A vulnerability analysis, which should include emergency management as one of the several topics beyond the disasters themselves, could help identify key components of that vulnerability, identify issues that create high-impact weaknesses, and compare the relative costs and benefits of remedial measures.¹⁹ The vulnerability analysis may result in some less-probable events being moved up on the hazard list due to the fact that the most common events are usually those for which the jurisdiction is most prepared.²⁰

¹⁷ Steven Bender points out that “it is the vulnerability, stupid!” Comment made during the International Emergency Management Session of the FEMA Higher Education Conference on June 8, 2004. Similarly, Wisner et al., state that “too much emphasis in doing something about disasters is put on the natural hazards themselves.” P. Blaikie, T. Cannon, I. Davis and B. Wisner, *At Risk: Natural Hazards, People’s Vulnerability and Disasters* (Routledge: London, 1994), 4.

¹⁸ McEntire discusses the resulting inability to respond effectively to a disaster in *Principles of Emergency Management: Independent Study* (Emmitsburg, MD: Federal Emergency Management Agency, Emergency Management Institute, 2006), <https://www.hsd.org/homesecc/docs/dhs/nps37-040908-01.pdf&code=14d5f0742cdce84aafe6d2d1d6023d08> (accessed January 2, 2008), 16.

¹⁹ CNA Corporation, *Medical Surge Capacity and Capability: A Management System for Integrating Medical and Health Resources during Large-Scale Emergencies*, August 2004, http://www.cna.org/documents/mscc_aug2004.pdf (accessed September 12, 2008).

²⁰ *Standing Together: An Emergency Planning Guide for America’s Communities*. Oakbrook Terrace, IL: Joint Commission on Accreditation of Healthcare Organizations, 2005, http://www.jointcommission.org/NR/rdonlyres/FE29E7D3-22AA-4DEB-94B2-5E8D507F92D1/0/planning_guide.pdf (accessed January 5, 2008), 19.

In summary, effective emergency management must establish consistent and cohesive coordination between the local, state and federal responses.²¹ The lesson of Hurricane Katrina for Vermont is not about hurricanes or levees. It is that major or catastrophic disasters occur, and the failure of continuity of government may follow from the absence of structures and processes that allow local and state emergency management bodies to have situational awareness, perform resource coordination functions, or to formulate actionable requests for assistance. To paraphrase the Department of Defense's Joint Vision 2010: Our challenge in this new century is a difficult one. Although we must have plans for the known, our challenge is really to prepare for the unknown and the uncertain. That may seem an impossible task, but it is not.

D. METHODOLOGY

This thesis collects and synthesizes information with respect to existing emergency management structures, then proposes a strategic vision for optimizing emergency management within existing constraints. The gap between the two represents an opportunity for change. The author did not approach the subject matter with an organizational theory of emergency management to prove or disprove. The inception of the thesis was the author's general sense that a span of control of 1 to 251 was unmanageable. If one walked into a room and asked 7 people for their lunch orders and they all yelled their requests at the same time, one could come close to resourcing the requests. But if 251 people simultaneously yelled their lunch orders, meeting any of the requests would be difficult or impossible. The author was eager to learn

²¹ "State and local governments must be able to successfully manage small and medium sized disasters on their own, and they must be able to function effectively as part of an intergovernmental team when an event warrants a presidential disaster declaration and federal intervention." Philip A. Odeen, et al., *Review of Actions Taken to Strengthen the Nation's Emergency Management System* (Washington, D.C.: National Academy of Public Administration, 1994), <http://www.napawash.org/Pubs/FEMA-3-1994.pdf> (accessed November 12, 2007), xi. For a good discussion of the position that disasters are not only local, but also regional challenges requiring regional solutions, see: *Regional Emergency Preparedness Compacts: Safeguarding the Nation's Communities* prepared by William R. Dodge with the assistance of Doug Henton and Chi Nguyen, Members of the Alliance for Regional Stewardship National Academy of Public Administration National Association of Regional Councils in March 2002.

how existing or possible structures or processes would enable a state EOC to support 150, 200, or 250 municipalities simultaneously seeking assistance. Further, the author wanted to learn more about how wider spans of control impact the degree to which one is able to manage, in a high-tempo environment where opportunity for failure is high, the impacts of failure are high, and accuracy is essential.

II. SPAN OF CONTROL AND EMERGENCY MANAGEMENT

A. SPAN OF CONTROL

Span of control is a dimension of organizational structure measured by the number of subordinate personnel or organizations that report directly to a given manager.²² Organizational researchers have traditionally recommended that managers have no more than seven or eight people reporting directly to them.²³ Rather than settling on a fixed number of subordinates, many studies assert that the actual management ratio number varies based on factors including industry,

²² The British army general Sir Ian Hamilton is credited with popularizing the concept of span of control in his 1922 book, *The Soul and Body of an Army*. He argued management ratios should be no more than three at the top of an organization and six for line staff. Refining Hamilton's ideas, V.A. Graicunas published an article in the Bulletin of the International Management Institute in 1933, questioning what was then seen as a lack of theoretical basis for limiting span of control. Graicunas asserted that in fact the theoretical evidence was overwhelming, citing research on limited attention spans, which suggested that people could mentally process no more than six digits at a time.

²³ Lyndall F. Urwick, in his 1956 article, "The Manager's Span of Control" published in the *Harvard Business Review*, discussed pressures in the business environment that favored increasing management ratios. These include the general tendency of people to want to report directly to the manager, whoever that might be; a manager's own inclination to build his or her organization; the desire to reduce the costs of management overhead; the positive results gained with a shorter more horizontal organizational structure, such as streamlined decision-making processes and faster response times; and the desire to flatten the organization and drive authority and responsibility downward. Urwick argued, however, that the advantages of more horizontal organizations have to be weighed against the costs of the confusion and indecision associated with management ratios that are too broad. He concluded that the costs of more horizontal organizational structures often outweigh the benefits. Wider spans of control mean more self-management (Davison, Management Span of Control, 23). In the years following Urwick's article, the effective span of control had been typically understood to be a dozen or less (see Power to the Edge, 42), although some argue as low as three to six. See Jon R. Katzenbach and Douglas K. Smith. *The Discipline of Teams: A Mindbook-Workbook for Delivering Small Group Performance* (New York, NY: John Wiley & Sons, Inc., 2001). In 1988, Peter Drucker recommended a ratio of one to seven.

size of an organization, and type of work.²⁴ Within the past several decades, the developing trend in the field favors significantly increased management ratios, also referred to as more horizontal organizational structures.²⁵ Some believe that more horizontal organizations are more effective simply as a matter of fact,²⁶ while other proponents of horizontal organizational structures view new

²⁴ Davison, Management Span of Control, 22. See e.g., The Saratoga Institute Workforce Diagnostic System Benchmarking Reports 2001, reporting a median management ratio of one to 16 in the healthcare sector, but only one to four in information services; and one manager to four employees in companies with 500 or less employees, but one to nine in companies with 2,000 to 5,000 employees. While discussions of span of control often centered on pinpointing the optimal number of subordinates, a number of factors may influence the span of control most appropriate for a given management position. Factors identified as likely altering the span of management include: job complexity, similarity of subordinate jobs, physical proximity of subordinates, abilities of employees, abilities of the manager, and technology. <http://www.referenceforbusiness.com/management/Sc-Str/Span-of-Control.html> (accessed September 15, 2008).

²⁵ Many organizational theorists have argued that organizations that are structured vertically can no longer operate effectively in today's changing environment. In 1992, Frank Ostroff and Douglas Smith presented the framework for the "horizontal organization" in McKinsey & Company's quarterly research journal. In *The Horizontal Organization*, published in February 1999, Frank Ostroff predicts that by 2020, 10 percent of all companies worldwide will have pure horizontal structures, and 80 percent will be hybrids. One of the enduring ideas in organization theory is that bureaucracies severely limit the organizational flexibility needed to cope effectively with complex, ambiguous, and unstable task environments in Bigley at 1281. A growing number of managers are therefore experimenting with new organizational forms that purportedly achieve flexibility and reliability under turbulent conditions (organizational structures identified by several terms, including "hybrid," "network," and "virtual"). In Bigley at 1281 in D'Aveni Ilinitch and Lewin, 1996. For a broader discussion of new and evolving organizational forms, see Child – Organizations Unfettered: Organizational Form in an Information-Intensive Economy.

²⁶ "The number of layers is a function of the span of control. As the span of control decreases, the number of layers that are needed (for an organization of the same size) increases. In such hierarchies, information needs to flow up and down the chain of command. This is true of policy information, plans, orders, and information about the battlespace (both reports about the enemy and reports about friendly forces). The more layers, the longer this takes and the higher the probability of an error or distortion." Power to the Edge, 43 in "The Manager's Span of Control," ed. L. F. Urwick (Cambridge, MA: Harvard Business Press. May-June 1958). See also Power to the Edge, 215-216. A traditional hierarchy has a topology that largely restricts interactions among members of the organization to direct superior/subordinate interactions and whose number of levels is determined by the limits of Industrial Age notions of span of control (maximum of five to seven). Its approach to command and control is characterized by centralized planning, decomposition of tasks, and control processes that largely rely on deconfliction. Hierarchies spawn stovepipes, which are vertical, tightly coupled component organizations that are optimized for a narrowly focused objective.

technology as the enabler of more horizontal organizations.²⁷ When evaluating emergency management organizational structures, in addition to the discussion of span of control found in general organizational theory, any general or specific span of control guidance found in the National Incident Management System (NIMS) must be also be considered since emergency management structures must comply with NIMS.

1. Span of Control under NIMS

On February 28, 2003, the President issued Homeland Security Presidential Directive (HSPD)-5, *Management of Domestic Incidents*, which directs the Secretary of Homeland Security to develop and administer a national system to increase emergency responders' ability to prepare for, prevent, respond to, and recover from domestic incidents.²⁸ In response, the Department of Homeland Security (DHS) developed NIMS as a single, comprehensive approach to domestic incident management.²⁹ Central to the implementation of NIMS, the Incident Command System (ICS) is "a management system designed to enable effective and efficient domestic incident management by integrating a

²⁷ See e.g., "Virtual environments," describing an application of telepresence technology to the incident management domain that will enable a virtual incident command center with effective communication between first responders in the field and remotely located command personnel. See also descriptions of new paradigms being developed through technological advances, as noted in *Power to the Edge*: "One can view the history of mankind as a journey of empowerment, conspicuously marked at critical junctures by the synergic combination of a particular technological advance and an innovative social adaptation that together eliminate a debilitating constraint... *Power to the edge* is a result of technological advances that will, in the coming decade, eliminate the constraint of bandwidth, free us from the need to know a lot in order to share a lot, unfetter us from the requirement to be synchronous in time and space, and remove the last remaining technical barriers to information sharing and collaboration," xiii.

²⁸ This document does not present the details of NIMS itself. Rather, it addresses NIMS guidance on span of control.

²⁹ NIMS is a nationwide approach to domestic incident management that is applicable at all jurisdictional levels and across functional disciplines. FEMA Emergency Management Institute Independent Study course (IS-1) "Emergency Manager: An Orientation to the Position," <http://training.fema.gov/EMIWeb/IS/is1.asp5> (accessed July 1, 2008), 2.3. HSPD-5 requires the adoption of the NIMS by state, tribal and local response organizations as a condition for federal grants and contracts. As a result, responders throughout the nation are currently working to implement NIMS.

combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure, designed to enable effective and efficient domestic incident management.”³⁰

Under NIMS, span of control is defined as “the number of individuals a supervisor is responsible for, usually expressed as the ratio of supervisors to individuals.”³¹ A manageable span of control enables supervisors to supervise subordinates, as well manage resources under their supervision.³² NIMS provides that span of control considerations are influenced by the type of incident, nature of the task, hazards and safety factors, and distances between personnel and resources.³³ An appropriate span of control for any supervisor is defined as between three and seven subordinates,³⁴ optimally not exceeding five.³⁵ There may be exceptions, usually in lower-risk assignments or where resources work in close proximity to each other.³⁶ When reporting elements fall outside this range, organizational restructuring is normally the recommended

³⁰ “Emergency Manager: An Orientation to the Position.”; Department of Homeland Security, *National Incident Management System*, March 2004, 7. ICS is normally structured to facilitate activities in five major functional areas: command, operations, planning, logistics, and finance and administration. See also Bigley, *The ICS: High Reliability*: “The incident command system (ICS) is a particular approach to assemble and control of the highly reliable temporary organizations employed by many public safety professionals to manage diverse resources at emergency scenes,” 1281. For a discussion of ICS as a hierarchical framework which effectively manages a network of agencies, see Moynihan, *Leveraging Collaborative Networks in Infrequent Emergency Situations*. “NIMS is divided into three sections, the Incident Command System (ICS), the Multi-agency Coordination System, and the Public Information System.” A. Fagan, C. Moore, and H. Warren, *Conceptual Model of Emergency Management in the 21st Century* (Suffolk, VA: Evidence Based Research, 2005), <https://www.hsdl.org/homesecc/docs/dtic/ADA463863.pdf&code=0cbc7a245f0e458d31fd8c5387bc3821> (accessed July 1, 2007), 3. This thesis does not address the Multi-agency Coordination System (MACS) as a possible solution for emergency management organizational structures, since MACS is a strategic definition of an end-state rather than an operational description of structures or processes to achieve an end-state.

³¹ ICS 100, Student Manual, Glossary, 12.

³² *Ibid.*, 3-46.

³³ *Ibid.*, 3-28. See also A. I. Anderson, D. Compton and T. Mason, “Managing in a Dangerous World-The National Incident Management System,” *Engineering Management Journal* 16 (2004): 3-9, 5-6.

³⁴ ICS 100, Student Manual, Glossary, 12.

³⁵ *Ibid.*, 3-29.

³⁶ ICS 700, 5.

course of action.³⁷ Examples of supervisory levels that can be added to help manage the span of control include dividing the organizational construct geographically (divisions) or functionally (groups), or by creating branches when the number of geographical or functional structures exceeds the span of control.³⁸

2. The Span of Control Considerations Identified in NIMS are Incomplete

In addition to the NIMS guidance that span of control considerations are influenced by type of incident, nature of the task, and distances between personnel and resources,³⁹ there are several additional factors which directly impact span of control. For example, the additional points listed below are examples of how the NIMS guidance for span of control considerations are incomplete:

- (1) **SIZE.** The size of the organization is known to impact the effectiveness of span of control, with smaller organizations being able to implement more horizontal structures.⁴⁰
- (2) **DIVERSITY.** The diversity of the membership of the organization impacts the effectiveness of a given span of control. A group of 30 law enforcement officers brought together to establish incident command under NIMS can probably implement a more horizontal span of control than 10 firefighters, 10 emergency medical personnel, and 10 law enforcement personnel.⁴¹

³⁷ ICS 700, 5.

³⁸ ICS 100, 5-8.

³⁹ Ibid., 3-28.

⁴⁰ See Moynihan, *What Makes Hierarchical Networks Succeed? Evidence from Hurricane Katrina*, which concludes that the impact of Katrina called for a response network of such size and diversity that it was inherently difficult to coordinate.

⁴¹ ICS Case Studies, 15. "Network theory and crisis management literature both suggest that large, diverse networks have difficulty resolving basic issues of coordination compared to smaller and more homogeneous networks," in Provan and Milward, 2001, 418.

- (3) FAMILIARITY. The familiarity of organizational personnel with each other directly impacts the breadth of the permissible span of control. Those that have trained together, regardless of functional expertise, can sustain a more horizontal span of control.⁴²
- (4) EXPANDING EVENT / ORGANIZATION. A rapidly expanding emergency management organization may be impossible to fully coordinate.⁴³

3. The Possible Futures of NIMS Span of Control

Beyond supplementing NIMS span of control considerations, some suggest NIMS and ICS organizational constructs and processes, including span

⁴² ICS Case Studies, 15. "Participants bring to the network the perspective of their home agency and their profession or training, which may clash with the perspectives of other network members. This creates a form of uncertainty about how members will behave and interact with one another. Joop Koppenjan and Hans-Erik Klijn, *Managing Uncertainties in Networks: A Network Approach to Problem Solving and Decision Making* (New York: Routledge, 2004). Bigley and Roberts (2001, 1290) note the difficulty of building shared mental models among members from different geographic and social locations who have experienced "different stimuli, learning idiosyncratic 'facts' as they construct situational meanings and mental models." See also ICS Case Studies, 16: "Coordination difficulties followed when responders incorporated unfamiliar agencies."

⁴³ ICS Case Studies, 19. Concludes that a quickly expanding network can become impossible to fully coordinate because as a crisis takes on a larger scale, more responders are needed, and as the crisis creates more tasks, a greater variety of capacities are required. For example, the Katrina network was so diverse that there was a failure to fully comprehend which actors were actually part of the network, what skills they offered, and how to use these capacities (In House Report 2006, 02).

of control, should undergo significant and fundamental change.⁴⁴ For the purposes of this analysis, the validity of existing NIMS and ICS organizational constructs and processes is assumed, and any proposals for emergency management organizational change offered by the author will endeavor to comply with current NIMS and ICS guidance.

B. EMERGENCY MANAGEMENT

1. Introduction

Emergency management is defined by the National Response Framework as “the coordination and integration of all activities necessary to build, sustain, and improve the capability to prepare for, protect against, respond to, recover from, or mitigate against threatened or actual natural disasters, acts of terrorism,

⁴⁴ According to Moynihan, “DHS has promoted the ICS approach as applicable to all types of crises. This is a contestable proposition, and even a cursory examination of different types of crises suggests contingencies that will affect the efficacy of hierarchical networks.” Moynihan, *What Makes Hierarchical Organizations Succeed?* 3. Similarly, Anderson states that manageable span of control under NIMS is a prime area for the application of principles of organizational behavior; moreover “enterprise mapping and design techniques could be used to develop an optimal organization for response to emergencies.” Anderson, *Managing in a Dangerous World*, 6. See also recent CHDS theses: “Hurricane Katrina Highlighted Serious Deficiencies in America’s National Approach to Emergency Management...When Viewing Our National Response from the Perspective of Network Theory and Knowledge Management, Specific Gaps are Identified in Doctrine, Organizational Composition and Technological Capability. An Agenda for Change to the National Response Plan and National Incident Management System Should Integrate the Strengths of the Network Design and Address the Critical Role that Knowledge Plays in Shaping Response Efforts at All Levels.” Barry A. Compagnoni, *The National Response System: The Need to Leverage Networks and Knowledge*, CHDS Thesis, March 2006. Also, “The March 1, 2004 release of the National Incident Management System (NIMS) mandated the use of Unified Command and Incident Management Teams (IMTs) for multi-agency, multi-jurisdictional incidents...The current curriculum teaches technical skills and ICS role responsibilities, and omits skills needed to build healthy team dynamics. Training for IMTs needs to include more than technical skills (“What to do”), and that Department of Homeland Security (DHS) should expand the curriculum to include team dynamics (“How to do it”). Further, DHS need not “re-invent the wheel” when looking for sources of team dynamic theory, but need only look to and adapt the experience of business and academia. Over the past 20-25 years a variety of inter-organizational networks and Work Teams have been studied and field tested.” Douglas R. Templeton, *Assessing the Utility of Work Team Theory in a Unified Command Environment at Catastrophic Incidents*, CHDS Thesis, March 2005.

or other manmade disasters.”⁴⁵ Numerous well-written summaries describe the history of emergency management in the United States.⁴⁶

Emergencies are most commonly divided into four phases: recovery, mitigation, preparedness, and response.⁴⁷ The recovery phase follows the response phase of a disaster; the recovery phase includes activities necessary to

⁴⁵ National Response Framework, 5. The definition in the NRF in large part reflects the 1978 definition from the NGA: “Emergency Management is the coordinated and collaborative integration of all relevant stakeholders into the four phases of emergency management (mitigation, preparedness, response and recovery) related to natural, technological, and intentional hazards. National Governors' Association, *Comprehensive Emergency Management: A Governor's Guide* (Washington, D.C.: National Governors' Association, 1979), <http://www.training.fema.gov/EMIWeb/edu/docs/Comprehensive%20EM%20-%20NGA.doc> (accessed November 12, 2007). See also DHS, *Lexicon*, October 23, 2007, 9, defining emergency management as: The coordination and integration of all activities necessary to build, sustain and improve the capabilities to prepare for, respond to, recover from, or mitigate against threatened or actual disasters or emergencies, regardless of cause. Extended Definition: emergency management activities in response to an incident are a component of overall incident management and are aligned with parallel response processes associated with prevention and protection. Further, IS-775, EOC Management and Operations, Course Summary, <http://training.fema.gov/EMILMS/IS775/indexMenu.htm> (accessed September 2, 2008) states: The EOC provides a central location from which government at any level can provide interagency coordination and executive decisionmaking in support of the incident response. The EOC does not command or control the on-scene response. The EOC carries out the coordination function through information collection and evaluation, priority setting, and resource management. Decisionmaking at the EOC affects the incident response as well as the public response. The decisions made at the EOC are not tactical decisions, however. Tactical decisions are made by the Incident Commander and the Command Staff at the incident scene, 1 of 43. FEMA, *Emergency Management, 2-8* states: “Organized *analysis, planning, decision-making, and assignment of available resources* to mitigate, prepare for, respond to, and recover from the effects of all hazards...Coordinate resources from all sectors, ensure that participants operate together effectively, advising and informing the chief elected official.” There is not complete consensus on the principles of emergency management; for a good discussion see e.g.: B. W. Blanchard, *Background "Think Piece" for the Emergency Management Roundtable Meeting, EMI, March 5-6, 2007 on What is Emergency Management, and What Are the Principles of Emergency Management* (Emmitsburg, MD: U.S. Federal Emergency Management Agency, 2007a). Another definition, which pertains only to the public sector, can be found in the "Post-Katrina Emergency Management Reform Act of 2006" (Title VI of H.R. 5441) (now Public Law 109-295) wherein emergency management is defined as "...the governmental function that coordinates and integrates all activities necessary to build, sustain, and improve the capability to prepare for, protect against, respond to, recover from or mitigate against threatened or actual natural disasters, acts of terrorism or other man-made disasters" in *Background Think Piece - What is Emergency Management*, 3, footnote 3.

⁴⁶ For a crisp historical summary, see “Conceptual Model,” 1-4, *Tracing Emergency Management from its Civil Defense Roots to Post-9/11 Constructs*. See also Blanchard, *American Civil Defense 1945 - 1984: The Evolution of Programs and Policies Volume 2 Number 2* (Emmitsburg, Maryland, 1985. See also M. Hite, National Research Council, “A Summary to the Disasters Roundtable,” *The Emergency Manager of the Future Summary of a Workshop June 13, 2003, Washington, D.C., 2003*, <http://books.naedu/books/NI000431/html/index.html> (accessed June 11, 2007), 5-6.

⁴⁷ First done in 1978 NGA report.

restore the jurisdiction to normal.⁴⁸ Following recovery, the next phase is mitigation. In its *Guide for All-hazard Emergency Operations Planning*, the Federal Emergency Management Agency (FEMA) provides that “mitigation actions involve lasting, often permanent, reduction of exposure to, probability of, or potential loss from hazard events.”⁴⁹ Preparedness includes the development of plans, conducting exercises, and pre-event resource coordination which enables jurisdictions to face emergency threats that have not been mitigated.⁵⁰ To accomplish these goals, preparedness involves 10 basic functions.⁵¹

According to FEMA, response begins when an emergency event is imminent or immediately after the event occurs.⁵² The response phase is divided into five stages, with numerous specific emergency management sub-elements

⁴⁸ FEMA Emergency Manager, 6-1. Recovery activities are classified as short-term and long-term.

⁴⁹ Ibid., 3-1, 3-2 - 3-13. Mitigation begins with hazards identification and vulnerability analyses, followed by the appropriate application of mitigation tools such as codes and ordinances, structural measures, financial measures, information, land use planning and mapping and inspections.

⁵⁰ Ibid., 2-16 - 2-20.

⁵¹ Function 1: Mobilizing Emergency Personnel and Resources; Functions 2 and 3: Warning the Public and Taking Protective Action; Function 4: Caring for Victims; Function 5: Assessing the Damage; Function 6: Restoring Essential Public Services; Function 7: Informing the Public; Function 8: Record Keeping; Function 9: Planning for Recovery; Function 10: Coordinating Emergency Management Activities. Ibid. A significant component of preparedness is the development of plans, conducting exercises, and pre-event resource coordination which enables jurisdictions to face emergency threats that have not been mitigated. Ibid., 4-1. These include administrative plans, mitigation plans, long-term recovery plans, and standard operating procedures. Ibid., 4-3. More recent planning guidance can be found in FEMA's Comprehensive Preparedness Guide (CPG) 101, *Producing Emergency Plans, A Guide for All-Hazard Emergency Operations Planning for State, Territorial, Local and Tribal Governments*, Interim Version 1.0, August 1, 2008.

⁵² FEMA Emergency Management, 3.12.

within each stage.⁵³ The emergency manager during the response phase must ensure effective activation of the EOC, which includes alerting EOC personnel; activating communications equipment and support facilities; starting the message flow system; the use of logs, maps, and status boards; preparing a shift schedule; announcing of briefing schedules; providing staff necessities; controlling access to the EOC; developing and implementing a media plan; and assessing and reporting damage.⁵⁴ That is not to say that the only emergency management actions during an incident are response activities. In fact, emergency management actions during an incident, while centered on response, also include mitigation, preparedness, and recovery.⁵⁵ Nevertheless, resource coordination is the key function of emergency management not only during the response phase of an incident, but at all times.⁵⁶ When viewed from this perspective, it is possible to divide emergency management activities into two:

⁵³ FEMA Emergency Management, 3.12-3.13, 5-2. The five stages of response to an emergency or disaster are (1) Alerting and notification, (2) Warning, (3) Protecting the citizens and property, (4) Providing for the public welfare, and (5) Restoration. See also: Response encompasses the activities that address the short-term, direct effects of an incident. Response also includes the execution of EOPs and of incident mitigation activities designed to limit the loss of life, personal injury, property damage, and unfavorable outcomes. As indicated by the situation, response activities include applying intelligence and other information to lessen the effects or consequences of an incident; increasing security operations; continuing investigations into the nature and source of the threat; ongoing public health and agricultural surveillance and testing processes, immunizations, isolation, or quarantine; specific law enforcement operations aimed at preempting, interdicting, or disrupting illegal activity, and apprehending actual perpetrators and bringing them to justice; restoring critical infrastructure (e.g., utilities); ensuring continuity of critical services (e.g., law enforcement, public works). In other words, response involves putting preparedness plans into action.

⁵⁴ Ibid., 5-8 - 5-24.

⁵⁵ Ibid., 3.2.

⁵⁶ Ibid., 3.9. The key function of EOC personnel is to ensure that those who are located at the scene have the resources (i.e., personnel, tools, and equipment) they need for the response. See also the *State of Vermont Emergency Operations Plan, Basic Plan*, 39: "State-level emergency response coordination is the primary function of Vermont Emergency Management."

those core situational awareness and resource coordination activities that are performed during emergencies, and those program activities that continue on a day-to-day basis.⁵⁷

Several authors propose new organizational paradigms for the emergency management structures of the future.⁵⁸ For example, researchers R.O. Sendzimir and J. Weichselgartner have identified a paradox which calls into question existing tools and techniques for disaster management, considering that supposed improvements in knowledge and technique have not stemmed or reversed upward trends in increased disaster loss statistics.⁵⁹ Although it would be tempting to argue for new and as yet untested emergency management

⁵⁷ FEMA Emergency Management, 3.1.; FEMA Emergency Management, 7.1. Another classification of emergency management activities is to divide them into three groups, pre-incident activities, incident activities and post-incident activities: An emergency management program examines potential emergencies and disasters based on the risks posed by likely hazards; develops and implements programs aimed toward reducing the impact of these events on the community, prepares for those risks that cannot be eliminated; and prescribes the actions required to deal with the consequences of actual events and to recover from those events. The NRP addresses threats and incidents by coordinating: Pre-incident activities, such as information sharing, threat identification, planning, and readiness exercises. Incident activities that include lifesaving missions and critical infrastructure support protections. Post-incident activities that help people and communities recover and rebuild for a safer future.

⁵⁸ R. O. Schneider, *A Strategic Overview of the "New" Emergency Management* (Emmitsburg, MD: Emergency Management Institute, 2003), <https://www.hsdl.org/homesec/docs/dhs/nps23-091207-15.pdf&code=70bcfc56b253866451292e4bb3d7f298> (accessed January 5, 2008). Ibid., 2, "Important national security concerns aside, the emergency management profession is presently confronted with the challenge to manage new realities. The analysis presented herein will maintain that this requires expanding the role of the emergency management function beyond its traditional scope."

⁵⁹ J. Sendzimir and J. Weichselgartner, "Enhancing Short-Term Response with Large-Scale Perspectives" (paper presented at the Toward an International Model System - A Public Entity Risk Institute Symposium, Fairfax, VA, 2003), <https://www.hsdl.org/homesec/docs/nonprof/nps11-121603-44.pdf&code=8f12968e2c3183ab2491d649f2c61fa1> (accessed January 5, 2008). We recommend to broaden the focus of emergency management such that we simultaneously increase capacity of emergency response while working between crises to increase the resilience and adaptability of society to disturbances and hazards. This requires integrating management and development policy over the short-, medium-, and long-term, as well as generation and adoption of paradigms that reflect our emerging understanding of processes operating at a variety of temporal and spatial scales. New ideas and techniques require improved inter-disciplinary communication and cooperative research frameworks such as Integrated Assessment and/or Adaptive Management.

organizational paradigms to keep pace with a rapidly changing world,⁶⁰ this thesis assumes the validity of the established emergency management organizational theory, and develops courses of action which endeavor to optimize the core functions for emergency management organizational structures, including span of control, performed during the response phase of an emergency.

2. Emergency Management Organizational Structures and NIMS

Emergency management agencies have organizational structures designed to accomplish response functions. An EOC is the physical location for the coordination of information and resources to support the incident.⁶¹ The Emergency Management Director (EMD) oversees EOC structures and

⁶⁰ See e.g., David A. McEntire, "The Status of Emergency Management Theory: Issues, Barriers, and Recommendations for Improved Scholarship" (paper presented at the FEMA Higher Education Conference, June 8, 2004, Emmitsburg, MD, 2004). "A massive transformation is taking place in emergency management right now. For good or for bad, the September 11, 2001 terrorist attacks on the United States have resulted in a significant reformulation of the purpose and nature of emergency management....The demands placed on emergency managers have risen." See also Richard Andrews, "Emergency Management 2005: New Structures & New Challenges" (paper presented to InfaGard 2005 National Conference); Richard Sylves, "Why Revolutionary Change is Needed in Emergency Management" (paper presented at the 8th Annual Emergency Management Higher Education Conference, June 7-9, 2005); Moore Fagan and Warren, "Conceptual Model of Emergency Management in the 21st Century" (paper presented at the 10th International Command and Control Research and Technology Symposium).

⁶¹ FEMA Emergency Management, 6.14. The EOC does not provide on-scene management but manages the overall event through five key functions: 1. Direction and control (broad guidance, not tactical—tactical direction and control rests with the Incident Commander at the scene). 2. Situation assessment. 3. Coordination. 4. Priority setting. 5. Resource management. See also Anderson, *Managing in a Dangerous World*, 6-7. The EOC establishes "a central location from which government, at any level, can provide interagency coordination and executive decision making for managing a major response and recovery effort while providing other essential services simultaneously." Anderson, 7, in Compton, 2004. Given that emergency management does not control in the sense of on-scene management and the primacy of coordination for emergency management functions, rather than using the prevalent phrase "span of control," with respect to the analysis of emergency management organizational structures the author of this paper was tempted to coin a new phrase "span of coordination." The phrase "span of coordination" is not currently found in the 1220-page document "Guide to Emergency Management and Related Terms, Definitions, Concepts, Acronyms, Organizations, Programs, Guidance, Executive Orders & Legislation, A Tutorial on Emergency Management, Broadly Defined, Past and Present, © 2007 B. Wayne Blanchard, B. Wayne Blanchard, Ph.D., CEM, June 18, 2008.

processes, in accordance with NIMS.⁶² As recently as February 2006, FEMA's guidance was that the ICS organizational construct of Operations, Plans, Logistics, and Administration/Finance integrates emergency management functions.⁶³ Presumably, under this guidance, the four mandatory sections are scaleable to the incident, with the emergency management organizational structure retaining the ability to grow by functions, divisions, or branches. However, FEMA IS-775, dated August 2008, states the following: "NIMS requires all jurisdictions to adopt ICS as its incident management system. NIMS does **not** require EOCs to adopt ICS as their organizational structure. An EOC should be organized to facilitate effective operations," (emphasis in original).⁶⁴ The EOC is charged with maintaining a manageable span of control, which can be defined as "the number of individuals or resources that one supervisor can manage effectively during an incident."⁶⁵

The National Response Framework and most state Emergency Operations Plans apply a functional approach that groups capabilities into Emergency Support Functions (ESFs) to provide the planning, support,

⁶² See e.g., the New Mexico Emergency Operations Plan (2007), Main Plan, 9: "The EOC Director, assigned by the State Director of Homeland Security and Emergency Management, is responsible for the Direction, Control, and Coordination of the New Mexico EOC. The EOC Director states the general control objectives and oversees EOC operations in support of the incident response. The EOC Director normally delegates functional responsibilities to command and general staff to maintain an effective span of control in achieving the objectives." Vermont Emergency Management uses "the federally recognized National Incident Management System (NIMS) for command and control." *Vermont Emergency Management 2007 Annual Report*, 1.

⁶³ The functions of an EOC are operations, planning, logistics, and finance and administration. FEMA Emergency Management, 3.9. See also the State of Vermont Emergency Operations Plan, (April 30, 2005), which complies with this FEMA guidance by identifying Operations, Planning, Logistics, and Finance/Admin under the title "State of Vermont – EOC Incident Coordination Team – ICS Organization."

⁶⁴ *Ibid.*, 9-13 of 43. IS-775, 9 of 43. IS-775 states that there are typically four ways to organize EOCs: (1) By major management activities, (2) Around ICS (with Operations, Planning, Logistics, and Finance/Administrations functions), (3) by ESFs organized into Operations, Planning, Logistics, and Finance/Administration areas; or (4) as a Multiagency Coordination Group.

⁶⁵ *Ibid.*, 12. FEMA Emergency Management, 6.9. See also JFO - Joint Field Office Activation and Operations: Interagency Integrated Standard Operating Procedure - Version 8.3, Interim Approval April 2006. The Joint Field Office (JFO) coordinates federal resources, and the Standard Operating Procedure states that "the JFO organization adapts to both the magnitude and complexity of the situation at hand and incorporates NIMS principles regarding span of control and organizational structure."

resources, program implementation, and emergency services that are most likely to be needed during an emergency.⁶⁶ Nominally there are 15 ESFs, but these do not report to a single ESF supervisor. Rather, ESFs are functionally organized to enable the EOC's ICS-organized operations, planning, logistics, and administration/finance personnel to coordinate directly to provide assistance. In this sense, having 15 ESFs in a single EOC is not necessarily incompatible with the NIMS span of control guidance of three to seven subordinates for a single supervisor.⁶⁷

3. Central Role of the State EOC

All disasters are local, but state EOCs are the pivotal and critical coordination node during any major or catastrophic response. Consistent with the Tenth Amendment of the U.S. Constitution, states maintain many rights and functions independent of the Federal government. Among these rights is the authority to manage domestic incidents within a state, with portions of that authority delegated to municipalities. Governors are responsible for the public safety and welfare of the people within their state, and state emergency management organizations are normally charged by the state legislature and/or Governor to coordinate all emergency management organizations (local, state and federal) within a state. In describing state Emergency Operations Plans, FEMA states that:

The State Emergency Operations Plan establishes the framework within which local Emergency Operations Plans are created and through which the Federal government becomes involved in response and recovery operations. As such, the State government

⁶⁶ FEMA Emergency Management 4.7, 4.11. Similarly, for the State of Vermont, State Support Functions (SSFs) provide “a modular structure to energize the precise components that can best address the requirements of the incident. *State of Vermont Emergency Operations Plan, Basic Plan*, April 30, 2005, 34.

⁶⁷ The author was not able to find in the literature a statement that 15 ESFs are compatible with the NIMS span of control guidance, but all of the ICS guidance ascribes to both 15 ESFs and the NIMS 3 to 7 span of control guidance. See also FEMA Emergency Management, 4.7, which states that ESFs “apply NIMS concepts.”

acts as the coordinating entity to ensure that all levels of government are able to respond to safeguard the well-being of its citizens.⁶⁸

Although command is retained at the local level, state EOCs are the hub of local, state and federal emergency response coordination. All requests for state or federal resources must be processed through the state.⁶⁹ When incidents exceed the capabilities of local responders, state EOCs serve as the link between those who need assistance and those who can assist. The state EOC coordinates with local governments to meet their emergency needs, assesses available state and federal resources, and helps the local government apply for, acquire, and use those resources effectively.⁷⁰ Between municipal EOCs and the state EOC, most states have established county emergency management structures.

C. THE 45 STATES WITH COUNTY EMERGENCY MANAGEMENT STRUCTURES

In the United States, 45 states have county emergency management organizations.⁷¹ States EOCs may be the single focal point integrating the local, state, and federal response efforts, but some have described counties as the

⁶⁸ FEMA Emergency Management, 3.6.

⁶⁹ Ibid., 3.8. The Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 USC 5121, et seq., as amended by the Disaster Mitigation Act of 2000, Pub L. No. 106-390, 114 Stat. 1552 (2000) (the Stafford Act) defines an emergency that can result in Federal assistance: *“Emergency’ means any occasion or instance for which, in the determination of the President, Federal assistance is needed to supplement State and local efforts and capabilities to save lives and to protect property and public health and safety, or to lessen or avert the threat of a catastrophe in any part of the United States.”* Emphasis added.

⁷⁰ Ibid., FEMA Emergency Management, 4.2. Further, the State EOC “provides direct guidance and assistance to its local jurisdictions through program development, and it channels Federal guidance and assistance to the local level. In a disaster, the State office helps coordinate and integrate resources and apply them to local needs.”

⁷¹ Forty-eight of the fifty states have operational county governments. Alaska and Louisiana call their county-type governments’ boroughs and parishes, respectively. Connecticut and Rhode Island are divided into geographic regions called counties, but they do not have functioning governments, as defined by the Census Bureau. National Association of Counties, http://www.naco.org/Content/NavigationMenu/About_Counties/County_Government/A_Brief_Overview_of_County_Government.htm (accessed September 7, 2008).

“backbone” of emergency management in our nation.⁷² Of the 45 states with county emergency management structures, several states have created one or more additional levels of regionalized state emergency management structures with assigned geographic responsibilities, with a specified number of county EOCs within each region. For example, California subdivided the Governor’s State Office of Emergency Services into three Regions (Inland, Southern, and Coastal), with each Region assigned a number of subordinate Operational Areas. California’s Operational Areas are drawn on county lines and include all political subdivisions of or within the county (e.g. cities, special districts, municipalities, counties).⁷³ Florida has 67 counties, divided into seven regions.⁷⁴ Indiana has 92 county EOCs, placed in 10 districts which span the state.⁷⁵ Pennsylvania has 67 counties, embracing (at last count) 2568 cities, boroughs and townships.⁷⁶ This results in county EOCs in Pennsylvania interacting with, on average, 38 municipal EOCs. Pennsylvania’s 67 counties are organized into three State EOC Area Offices, each of which can perform emergency management functions. According to the Pennsylvania Emergency Management Services Code, passed in 1978, each of the 2635 municipalities (the constitution states that a county is a municipality as well) must have an EOC, an emergency operations plan and an emergency management coordinator. The State of Texas, with 254 counties, is

⁷² National Association of Counties, *Counties Secure America: A Survey of Emergency Preparedness of the Nation's Counties* (Washington, D.C.: National Association of Counties, 2001).

⁷³ Richard Staley, Emergency Planning Coordinator, Lockheed Martin Space Systems Company, Personal correspondence, August 11, 2008.

⁷⁴ Arlene G. Crow, Emergency Response Coordinator, Orange County Health Department, Personal correspondence, August 11, 2008.

⁷⁵ Frank J. Kriz, Indianapolis / Marion County EMA, Personal correspondence, August 11, 2008.

⁷⁶ Jim Messinger, Pennsylvania Emergency Management Agency, Bureau of Plans, Personal correspondence, August 11, 2008.

the state with the largest number of counties in the nation. Counties in Texas are organized into regions which function in a coordination roll and help with regional mutual aid and/or regional response, reporting to the State EOC.⁷⁷

1. Virginia's Unique Structure

Of the 45 states with county-level emergency management structures, Virginia's emergency management structure is organizationally unique since, as a commonwealth state, cities in Virginia do not reside in counties.⁷⁸ Virginia's 140 cities and counties are divided into seven emergency management regions, and each region has an assigned Emergency Management Coordinator. The regional coordinators do NOT provide a regionalized span of control for emergency management functions between Virginia's 140 cities and counties and Virginia's EOC. Regional coordinators work with their assigned localities on a daily basis, and are generally the primary Virginia Department of Emergency Management point of contact for city and county officials for issues other than incident response. All resource requests however, go directly from the city or county to the Virginia EOC for coordination, as do situation reports and initial damage assessment reports. Regional coordinators provide support to the localities, which reduces the burden for the Virginia EOC.

D. THE FIVE STATES WITHOUT COUNTY EMERGENCY MANAGEMENT STRUCTURES

1. Connecticut

Connecticut, with 169 towns and cities, does not have county EOCs. It is divided into five emergency management regions.⁷⁹ Each emergency

⁷⁷ Governor's Division of Emergency Management, <http://www.txdps.state.tx.us/dem/pages/fieldresponsedirectory.htm> (accessed September 23, 2008).

⁷⁸ Information on Virginia's emergency management organizational structure was obtained from personal correspondence with Bruce Sterling, Region 2 Coordinator Virginia Department of Emergency Management, August 13, 2008.

⁷⁹ The five regions have between 14 to 43 towns each. Connecticut's Region 2 Regional Coordinator, Personal correspondence, August 20, 2008.

management region has a full-time Regional Coordinator. Regional Coordinators are the “eyes and ears in the field for the Connecticut State EOC.”⁸⁰ Regional Emergency Management Offices used to have the single Regional Coordinator as full-time staff. Through grant money, however, a planner and a trainer are also assigned.⁸¹ When not performing functions during a response, Regional Emergency Management Offices perform mitigation, preparedness, and response functions. The regional teams located in the five offices around the state assist in preparation of local emergency plans and are the primary interface with the local officials (local emergency management personnel and local elected officials) of each of the 169 towns in Connecticut. There are also personnel from within each region, primarily full-time employees of various state agencies offices located geographically within the region, who are assigned the additional duty to perform ESF functions when a regional EOC is stood up. When a regional EOC is staffed with regional representatives in ESF positions, this organization is called a Regional ESF (RESF). In addition, each region has a Regional Emergency Planning Team (REPT).⁸² Depending on the region, Regional EOC facilities are either dedicated or dual-use space.

⁸⁰ Presentation by Connecticut's Emergency Management Director, RISC meeting, Newport Rhode Island.

⁸¹ Roy Walton, Director Operations for Military Support Connecticut National Guard, Personal communication, March 31, 2008; Region 2 Coordinator, Personal correspondence, August 20, 2008.

⁸² ESFs are a part-time additional duty, most personnel are drawn from state agencies within the respective regions. Region 2 Coordinator, Personal correspondence, August 20, 2008.

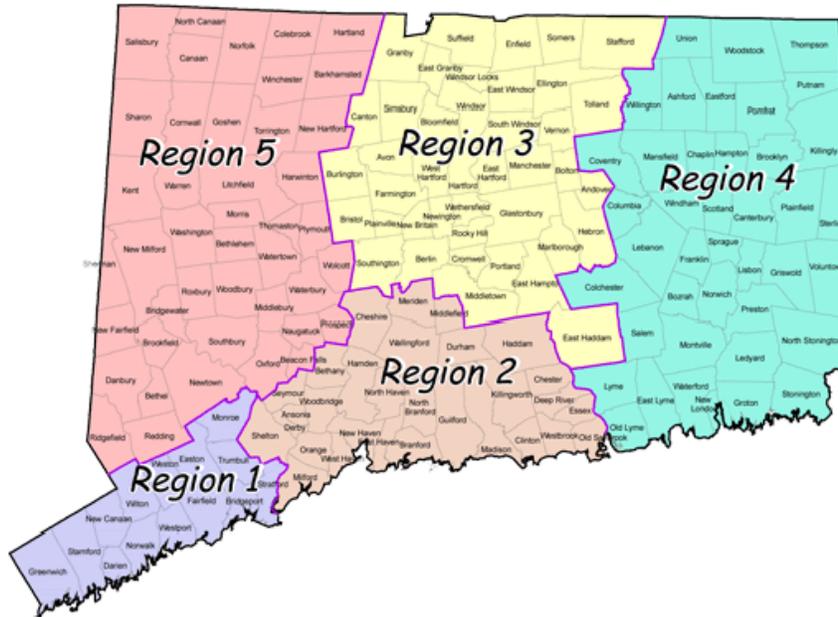


Figure 1. Connecticut Emergency Management Regions⁸³

2. Massachusetts

There are 351 towns and cities in the Commonwealth of Massachusetts.⁸⁴ The Commonwealth does not have county EOCs. It is divided into four regions for the purposes of emergency management functions. Each emergency management region has a Regional Manager, with assigned full-time personnel, who maintain a Regional EOC facility that is prepared to receive additional staff when activated. When local authorities deplete their resources and request aid, the management and coordination of emergency response efforts for the Commonwealth is performed through the four Massachusetts Emergency

⁸³ Department of Emergency Management and Homeland Security, <http://www.ct.gov/demhs/cwp/view.asp?a=1903&q=295316&demhsNav=1> (accessed September 23, 2008).

⁸⁴ The Official Website of the Commonwealth of Massachusetts, www.mass.gov (accessed September 23, 2008).

Management Agency regional offices.⁸⁵ When not performing response functions, the regional boundaries are used by Massachusetts Emergency Management Agency for planning and administrative purposes.⁸⁶

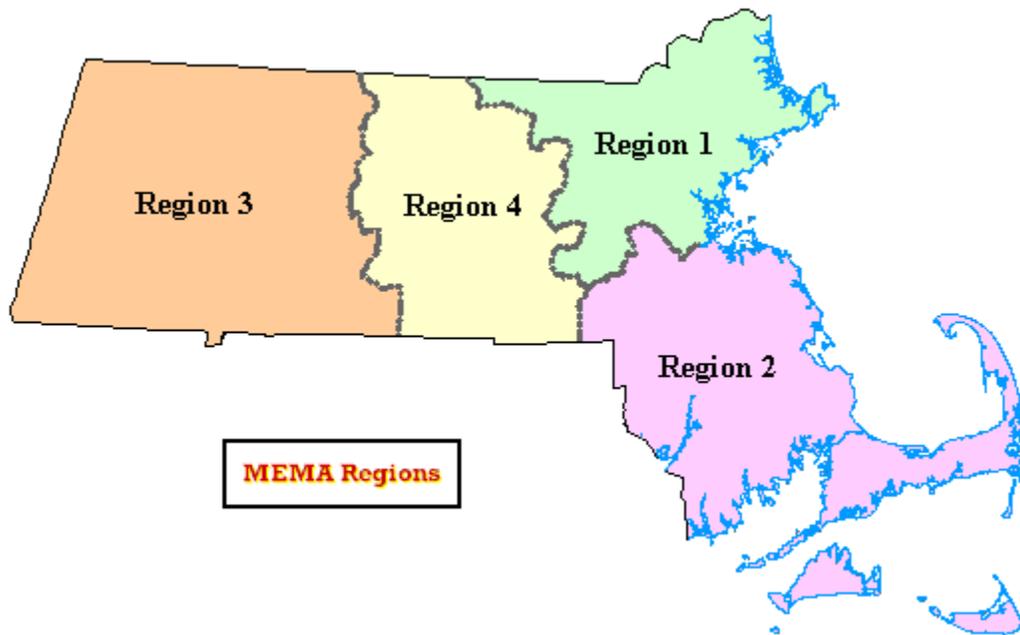


Figure 2. Massachusetts Emergency Management Regions⁸⁷

3. New Hampshire

The State of New Hampshire has 234 incorporated cities and towns.⁸⁸

⁸⁵ The Official Website of the Commonwealth of Massachusetts, www.mass.gov (accessed September 23, 2008).

⁸⁶ Massachusetts Emergency Management Agency (MEMA) Regions, http://www.mass.gov/mgis/reg_mema.htm (accessed September 23, 2008).

⁸⁷ Massachusetts Emergency Management Agency (MEMA) Regions, http://www.mass.gov/mgis/reg_mema.gif (accessed September 10, 2008).

⁸⁸ According to New Hampshire Government, <http://www.nh.gov/government/local.html> (accessed September 23, 2008), there is county government in New Hampshire. The State population, according to the 2000 U.S. Census Bureau, was approximately 1.24 million persons (an increase of 11.4% since the 1990 Census).

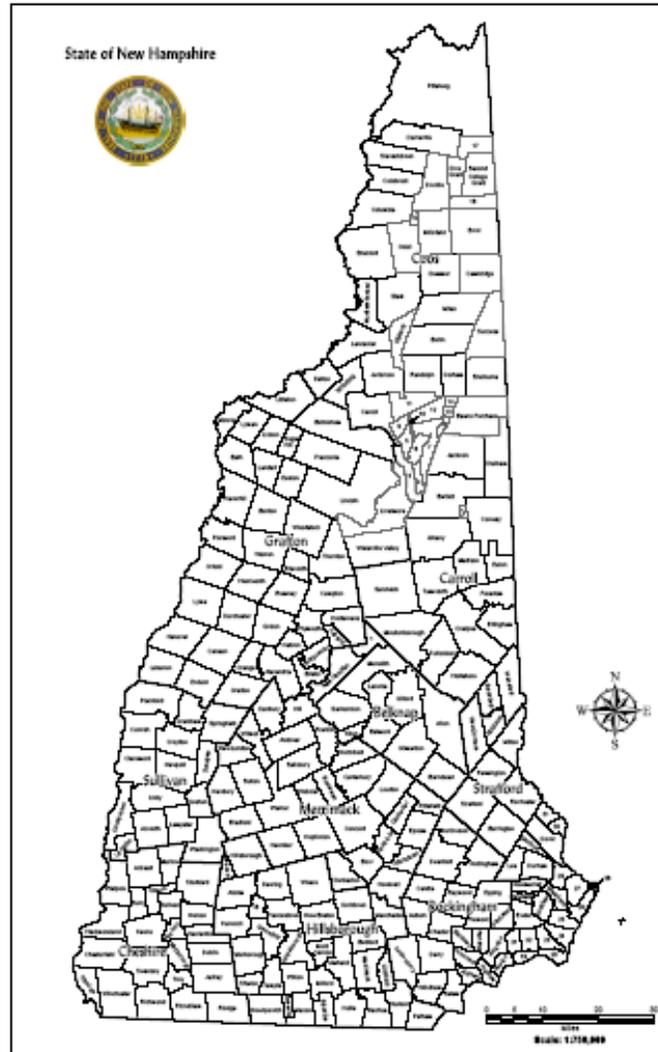


Figure 3. FiNew Hampshire Municipalities⁸⁹

Each municipality is responsible for having an EMD who is responsible for local emergency management programs.⁹⁰ The State of New Hampshire EOC is the facility that coordinates “a State response to any major emergency or disaster

⁸⁹ Jennifer Harper, Personal correspondence, September 29, 2008.

⁹⁰ “Local government has overall responsibility, by law, for the direction and control of emergency disaster operations within the respective jurisdiction. The local emergency management director has the responsibility for the development and implementation of emergency management programs designed to provide for rapid and effective response to an emergency situation. The local EM director should plan for the protection of life and property within the community.” State of New Hampshire Emergency Operations Plan Basic Plan, 22-23.

situation.”⁹¹ With one exception, during most emergencies all of New Hampshire’s 234 municipalities are linked directly to the single state EOC.⁹² This is depicted graphically by the following chart.

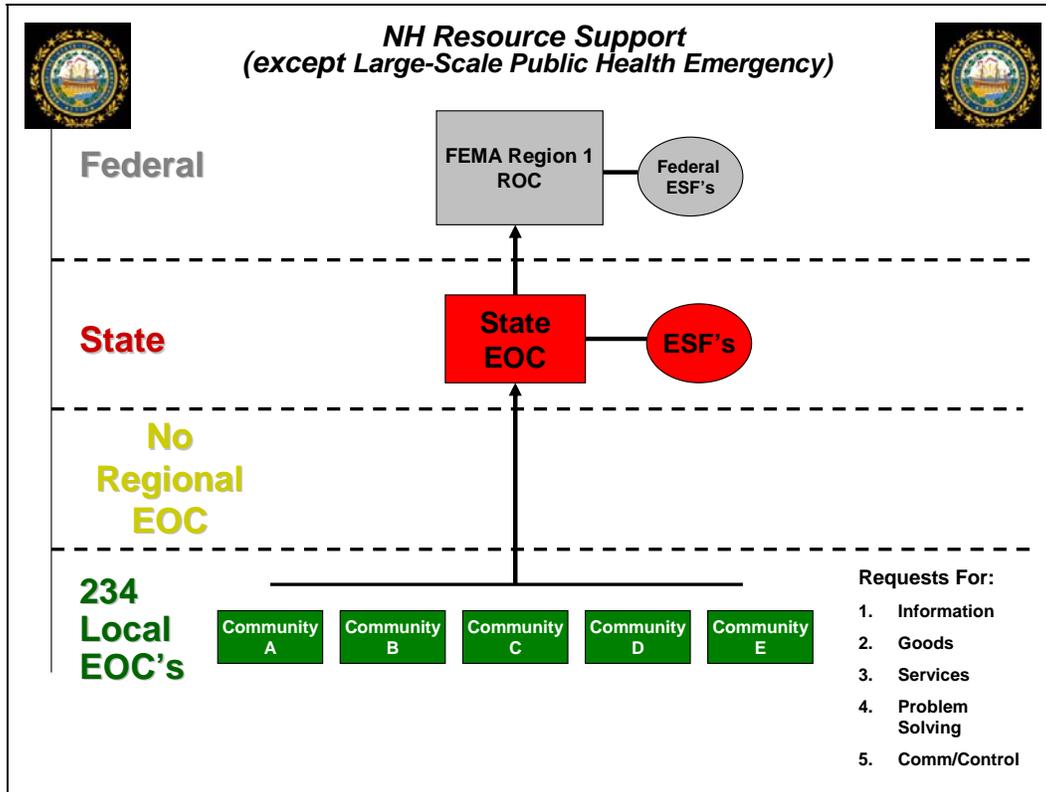


Figure 4. New Hampshire Resource Support (Non-Public Health Emergency)⁹³

The exception to the rule that all 234 municipalities are linked directly to the single state EOC is event-specific. The State of New Hampshire regionalizes its emergency response functions in the event of a large scale public health emergency. If there is a large scale public health emergency, New Hampshire

⁹¹ State of New Hampshire Emergency Operations Plan Basic Plan, 22-23, 13.

⁹² “Planning Assumption #5: 5. Each level of government will respond to an incident using its available resources, to include the use of mutual aid, and may request assistance from the next higher level of government, if required (i.e., municipality to State and State to Federal government).” Ibid., 7.

⁹³ Director of New Hampshire Emergency Management, Personal correspondence, (May 13, 2008).

establishes regional Multi-Agency Coordination Entities with geographic areas of responsibility. The Multi-Agency Coordination Entities manage requests for all resources, not just medical resources. This is depicted in the following chart:

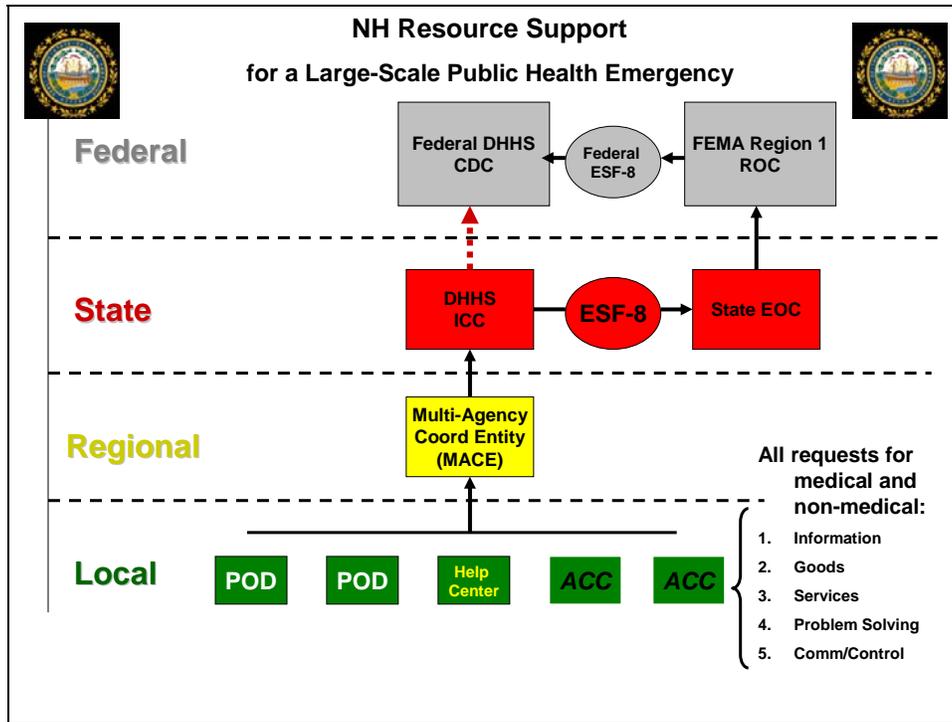


Figure 5. New Hampshire Resource Support (Public Health Emergency)⁹⁴

Under the list entitled “Assumptions”, the New Hampshire Emergency Operations Plan states that the existing span of control will be effective for multiple events, and that local governments will continue to function during all emergencies:

⁹⁴ Director of New Hampshire Emergency Management, Personal correspondence, (May 13, 2008).

Assumptions

...8. Local and State emergency operations plans address the ability to direct, control, coordinate and manage emergency operations during multiple events.

...11. Local government will continue to function under all disaster and emergency conditions.⁹⁵

In contrast, some authors have argued that we should not expect local governments to continue to function under some circumstances:

It is important to bear in mind that some municipalities, and even some small counties, are rendered non-functional by a large-scale disaster. In effect, the governments become victims along with their citizens. This is especially true of those that depend heavily on part-time local officials and have small professional staffs...In such situations, response and recovery must be managed at a higher level of government, at least during the early days after a major disaster.⁹⁶

Some state plans even go so far as to contemplate the failure of emergency management response functions at the state level.⁹⁷

4. Rhode Island

Rhode Island comprises 39 municipalities, ranging in size from 1.21 to 59.54 square miles. Although there are five counties in Rhode Island, there is no county government.

⁹⁵ New Hampshire Emergency Operations Plan, Basic Plan, March 2005, 8.

⁹⁶ *Coping with Catastrophe: Building an Emergency Management System to Meet People's Needs in Natural and Manmade Disasters* (Washington, D.C.: National Academy of Public Administration, 1993), 83.

⁹⁷ "The state's goal is to mitigate and prepare for the consequences of hazards, and respond and recover in the event of an emergency or disaster. However, state resources and systems may become overwhelmed in the event of a major incident." *Washington State Comprehensive Emergency Management Plan (CEMP)* (Camp Murray, WA: Washington Military Department, Emergency Management Division, 2003), 3.

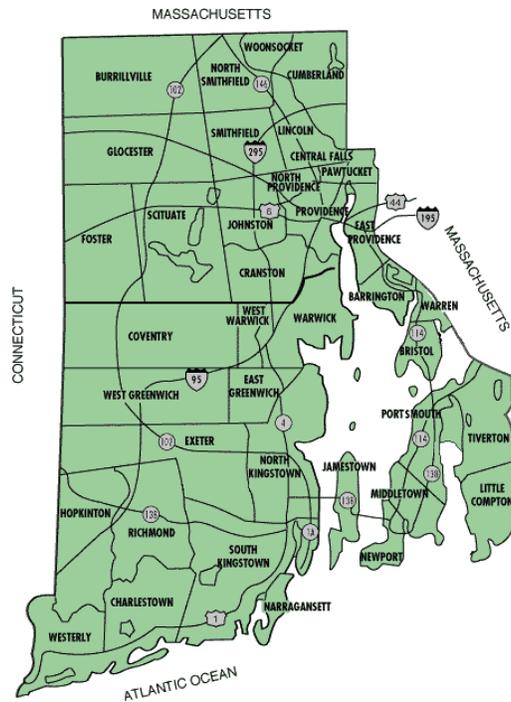


Figure 6. Rhode Island Municipalities⁹⁸

The 39 municipal EOCs report directly to the Rhode Island State EOC. For some events, even this span of control may create challenges for effective emergency management.⁹⁹

5. Vermont

a. Overview

The State of Vermont is geographically the second largest state in New England (Maine is first). Vermont's population was 608,827 as of the last census.¹⁰⁰ Towns, cities, and villages combine for a total of 251 Vermont municipalities.¹⁰¹

⁹⁸ Roger Williams University, http://www.rwu.edu/depository/university/ri_magif (accessed September 11, 2008).

⁹⁹ Lieutenant Colonel Patty Ryan, Director, Operations for Military Support, Rhode Island National Guard, Personal correspondence, March 31, 2008.

¹⁰⁰ *State of Vermont Emergency Operations Plan, Basic Plan*, 9, and 11, April 30, 2005.

¹⁰¹ There are 237 towns, and nine cities in Vermont. Five villages overlay towns and assume responsibility for some municipal services within their boundaries. *Vermont Citizen's Guide*, 25.

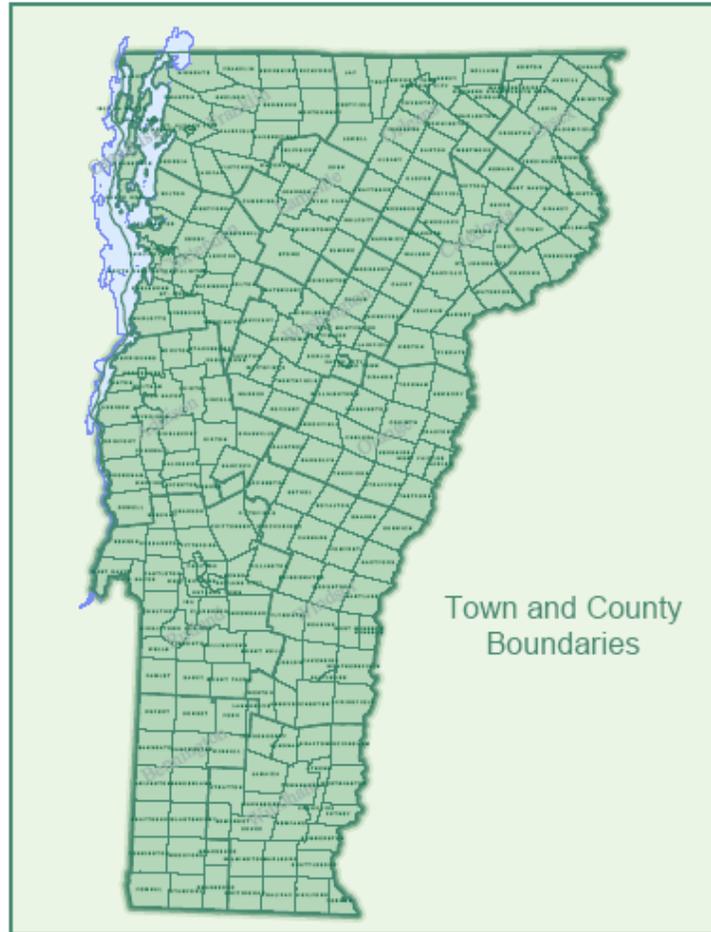


Figure 7. Vermont Municipalities¹⁰²

There are 14 counties in Vermont. In Vermont, the county has never assumed the importance that it has in states outside New England.¹⁰³ County elected officers are State Senators, Assistant County Judges, County Sherriff, State's Attorney, and Judge of Probate.¹⁰⁴ There are no county governmental bodies currently in Vermont with emergency management functions or responsibilities. Vermont has 451 county sheriff, municipal police,

¹⁰² Vermont Agency of Transportation, Online Map Center, <http://vtransmaaot.state.vt.us/omc/images/TownCounty.pdf> (accessed September 1, 2008).

¹⁰³ *Vermont Citizens Guide, League of Women Voters*, 36.

¹⁰⁴ Sherriff Roger Marcoux, Personal correspondence, August 14, 2008. List from *VT Citizens Guide*, 36-37. The County Sherriff has additional functions mandated by statute include the movement of prisoners.

fire departments, and emergency medical organizations, in addition to its 14 state public safety agencies.¹⁰⁵ Public safety agencies employ over 18,000 radio communications devices throughout the state.¹⁰⁶



Figure 8. Vermont Counties

County	2000 Population	Square Miles	County Seat	Founded
Addison	35,974	770	Middlebury	1785
Bennington	36,994	676	Bennington	1779
Caledonia	29,702	651	Saint Johnsbury	1792
Chittenden	146,571	539	Burlington	1787
Essex	6,459	665	Guildhall	1792
Franklin	45,417	637	Saint Albans	1792
Grand Isle	6,901	83	North Hero	1802

¹⁰⁵ User Needs Assessment Report, 1-1.

¹⁰⁶ Ibid., 2-1.

County	2000 Population	Square Miles	County Seat	Founded
Lamoille	23,233	461	Hyde Park	1835
Orange	28,226	689	Chelsea	1781
Orleans	26,277	697	Newport	1792
Rutland	63,400	932	Rutland	1781
Washington	58,039	690	Montpelier	1810
Windham	44,216	789	Newfane	1779
Windsor	57,418	971	Woodstock	1781

Table 1. Vermont Population by County¹⁰⁷

b. Local Emergency Management Directors

By statute, local governments carry out emergency management responsibilities within their municipal limits.¹⁰⁸ Each local government is directed to establish a local organization for emergency management.¹⁰⁹ Each municipality either appoints an EMD, or the position defaults to an elected position, such as the selectman or mayor.¹¹⁰ Local EMDs are under the control of their respective local chief elected officials.¹¹¹ Vermont Emergency Management makes available “Emergency Management 101” training for all

¹⁰⁷ NACO, National Association of Counties, http://www.naco.org/Template.cfm?Section=Find_a_County&Template=/cfiles/counties/state.cfm&statecode=vt

¹⁰⁸ Local organizations are to carry out emergency management responsibilities within their town or city limits, and participate in the development of a hazardous chemical incident response plan with the appropriate local emergency planning committees and emergency management districts. Ver. Stat. Ann. tit. 20, §6 (a). Local governments are authorized to make orders, rules, and regulations for emergency management purposes that are not inconsistent with rules issued by the Governor or state agencies. Ver. Stat. Ann. tit. 20, §16.

¹⁰⁹ *Vermont League of Cities and Towns Handbook for Vermont Town Officers*, 1999.

¹¹⁰ Ver. Stat. Ann. tit 20, VSA Section 6 (a).

¹¹¹ VLCT Handbook for Town Officers, which uses the term ‘emergency management chairperson’ instead of ‘emergency management director’, and ‘selectboard’ instead of ‘local chief elected officials’.

municipal EMDs.¹¹² The training is approximately four hours in length, and is voluntary. EMD turnover rate is approximately 10-20% per year,¹¹³ and there are some challenges in tracking and training Vermont's local EMDs.¹¹⁴

c. Vermont Emergency Management

In Vermont, as in many other states, the history of existing emergency management structures starts with civil defense, which was originally conceived as employing volunteers during wartime to perform municipal defense.¹¹⁵ In 1957, statutory authority was granted expanding the authority of the civil defense division in Vermont to include response to natural disasters.¹¹⁶ In 1989, the statutes were revised to recognize that what was once civil defense had become, primarily, emergency management.¹¹⁷ This was the birth of Vermont Emergency Management with structure and authority that in large part it reflects today. On the state level, Vermont Emergency Management falls within the Department of Public Safety,¹¹⁸ and the Director of Vermont Emergency Management is charged with coordinating all emergency management efforts within the state.¹¹⁹ Vermont Emergency Management's mission during the response phase is to "coordinate the response of state and federal

¹¹² Robert Schell, Vermont Emergency Management, Personal correspondence, (August 12, 2008).

¹¹³ Ibid.

¹¹⁴ Ibid.

¹¹⁵ *Vermont League of Cities and Towns Handbook for Vermont Town Officers*, 1999.

¹¹⁶ Ibid.

¹¹⁷ Ibid. By statute, the state Emergency Management Director position was created within the Department of Public Safety. Responsibilities include coordinating the activities of all emergency management organizations within the state, preparation of the radiological emergency response plan, and liaison with other states and federal emergency management agencies. Ver. Stat. Ann. tit. 20, §3.

¹¹⁸ Ver. Stat. Ann. tit. 20, §3.

¹¹⁹ *Vermont League of Cities and Towns Handbook for Town Officers*, 1999.

agencies/departments in assisting local governments and citizens.”¹²⁰ Vermont has a single State EOC, located in Waterbury, Vermont, with roles and responsibilities as defined in the State Emergency Operations Plan:

Emergencies and disasters impacting Vermont can quickly exceed the response and recovery capabilities of local jurisdictions. During the response phase of such events, the State Emergency Operations Center (SEOC) coordinates the deployment of state resources, personnel, interstate mutual aid, and federal resources to support local agencies. As recovery efforts expand, the SEOC coordinates with impacted jurisdictions and the Department of Homeland Security, Federal Emergency Management Agency (FEMA) regarding the collection of damage estimates, establishment of recovery centers, dissemination of recovery information to disaster victims, and initiation of long-term recovery and redevelopment programs. In support of disaster victims and impacted jurisdictions, the process for deploying state resources including response and recovery personnel and teams, as well as resource staging areas and information centers must be clearly defined and well coordinated.¹²¹

d. State Rapid Assessment & Assistance Team

The State Rapid Assessment & Assistance Team (S-RAAT) is a stand-alone team, usually led by a Department of Public Safety representative with technical specialists as needed from the State Support Functions (SSFs, closely aligned to federal Emergency Support Functions).¹²² The S-RAAT is primarily deployed to coordinate responding state resources.¹²³ In this role, the S-RAAT supports local communities or a Regional Coordination Center (defined later, this section), by ensuring interface between local, state, federal and private response organizations.¹²⁴ In addition, the S-RAAT can be deployed to assess and report the immediate impacts of an event. Further, the S-RAAT may co-

¹²⁰ *Vermont Emergency Management 2007 Annual Report*, 1.

¹²¹ *State of Vermont Emergency Operations Plan*, Support Annex IX – Vermont Emergency Management Field Operations Standard Operating Procedure, April 30, 2005, 1.

¹²² *Ibid.*, 24.

¹²³ *Ibid.*

¹²⁴ *Ibid.*

locate with a Logistical Staging Area to support efficient mobilization of resources into the impacted area, or it may co-locate with the Joint Field Office to enhance coordination of ongoing response issues and recovery actions.¹²⁵

e. Public Safety Districts

In accordance with the changes to Vermont statutes enacted in 2005, the Governor divided Vermont into Public Safety Districts (PSDs), directing that the PSDs correspond to each Vermont State Police Troop Area, as defined by the Commissioner of Public Safety.¹²⁶ The resulting Vermont PSDs are “geographically and administratively” congruent with the four Vermont State Police Troop areas.¹²⁷ By statute, each PSD is headed by a PSD Coordinator,¹²⁸ and in compliance with this requirement, the Commissioner of Public Safety designated Vermont State Police Troop Commanders as PSD Coordinators.¹²⁹

¹²⁵ *State of Vermont Emergency Operations Plan*, Support Annex IX – Vermont Emergency Management Field Operations Standard Operating Procedure, April 30, 2005, 5.

¹²⁶ Ver. Stat. Ann. tit 20, Section 5 (a).

¹²⁷ *State of Vermont Emergency Operations Plan, Basic Plan*, April 30, 2005, 9.

¹²⁸ Ver. Stat. Ann. tit. 20, §5.

¹²⁹ Ver. Stat. Ann. tit 20, Section 5 (b): “The emergency management executive in each district shall be known as the district coordinator.” Vermont Homeland Security Unit PowerPoint presentation, “Public Safety District Coordinators / Regional Coordination Centers,” slide. 5.

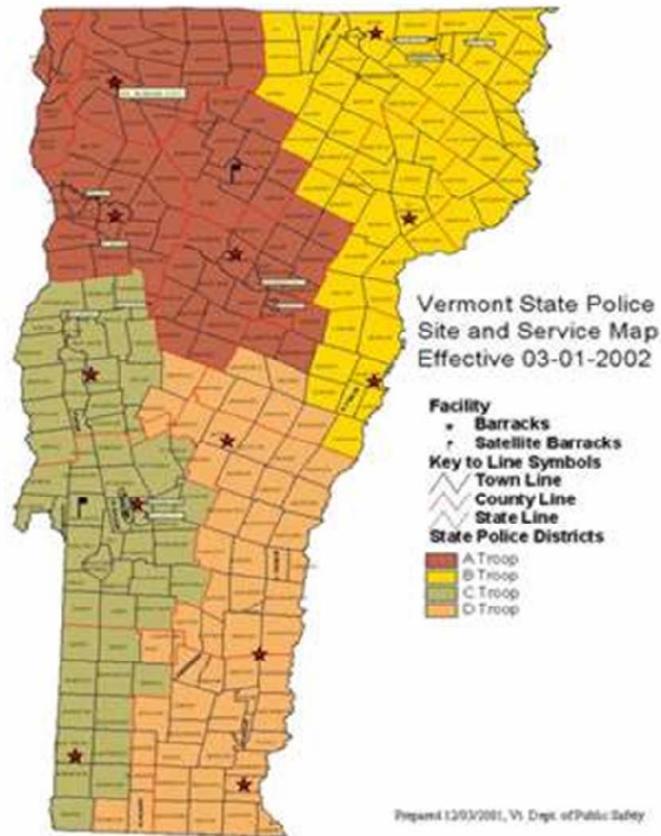


Figure 9. Vermont Public Safety Districts¹³⁰

f. Local Emergency Planning Committees

Nationally, state planning initiatives include Local Emergency Planning Committees (LEPCs), which are appointed by State Emergency Response Commissions. These committees have traditionally revolved around hazardous materials.¹³¹ In Vermont, LEPCs were created and assigned duties related to hazardous material incidents by statute,¹³² although as a practical

¹³⁰ State of Vermont, Department of Public Safety, http://www.dps.state.vt.us/homeland/resp_districts.jpg (accessed August 14, 2008).

¹³¹ Standing Together: An Emergency Planning Guide for America’s Communities, 29. “The LEPCs are a Product of Federal Legislation,” *State of Vermont Emergency Management SERC and Local Emergency Planning Committee (LEPC) Handbook*, March 2005, 1.

¹³² Ver. Stat. Ann. tit. 20, §32. See also “LEPCs are in the best position to assist local governments in developing plans to respond to hazardous material emergencies,” *State of VT EM SERC AND LEPC Handbook*, March 2005, 1; and “The role of LEPCs is to form a partnership with local governments and industries as a resource for enhancing hazardous materials preparedness.” *State of VT EM SERC and LEPC Handbook*, March 2005, 3.

matter many LEPCs have undertaken significant mitigation and preparedness efforts, including coordination of local all-hazard plans and active roles in exercise development.¹³³

Vermont's 13 LEPCs are somewhat, but not exactly, aligned with Vermont's fourteen 14 counties. LEPC personnel include full-time state employees, part-time employees, and volunteers. The LEPCs currently do not have the authority to perform resource coordination or other emergency management response functions following a disaster.

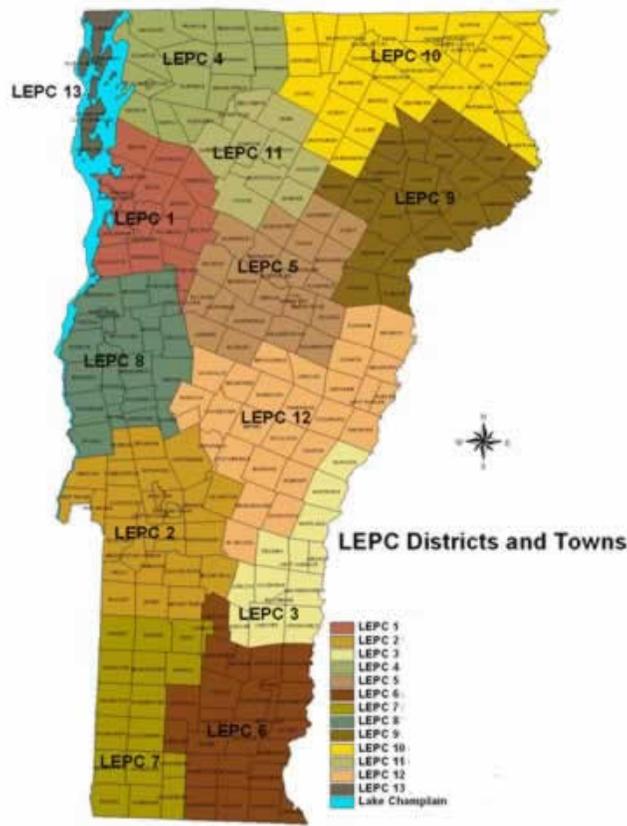


Figure 10. Vermont Local Emergency Planning Committees

¹³³ Personal conversations with LEPC Chairs. See also Kevin Geiger, "LEPCs Have Made Significant Contributions to Assist Communities in Local Emergency Mitigation Efforts and Preparedness Planning," *Regional Emergency Preparedness Compacts, Safeguarding the Nation's Communities*, 32.

g. Regional Planning Commissions

By statute, the State Emergency Response Commission (SERC) is authorized to create the number of Regional Planning Commissions (RPCs) as deemed necessary to assist regional emergency management response efforts related to hazardous material incidents.¹³⁴ Along with and on the same timeline as the LEPCs, Vermont's 11 RPCs have evolved to perform functions across a wide range of mitigation and preparedness-related tasks.¹³⁵ Vermont's RPCs provide municipalities in each region with capable planning services, and "should be first stop for local officials seeking planning assistance."¹³⁶ Representatives from RPCs have "worked in the Vermont Emergency Operations Center,"¹³⁷ but there is no other documentation describing any formal emergency management response phase relationship with Vermont Emergency Management or other response function for the RPCs. The RPCs do not have the authority to perform any emergency management response functions.

¹³⁴ Ver. Stat. Ann. tit. 20, §33.

¹³⁵ On many mitigation and preparedness issues, RPCs are a critical link up to, and down from, the State. Geiger, *Regional Emergency Preparedness Compacts – Safeguarding the Nation's Communities*, 33. See *Ibid.*, 32 for a summary of RPC mitigation efforts and more recent contributions to preparedness planning.

¹³⁶ VT Assoc. of Planning and Development Agencies (VAPDA), <http://www.vpic.info/rpcs> (accessed August 23, 2008).

¹³⁷ Geiger, *Regional Emergency Preparedness Compacts*, 32.

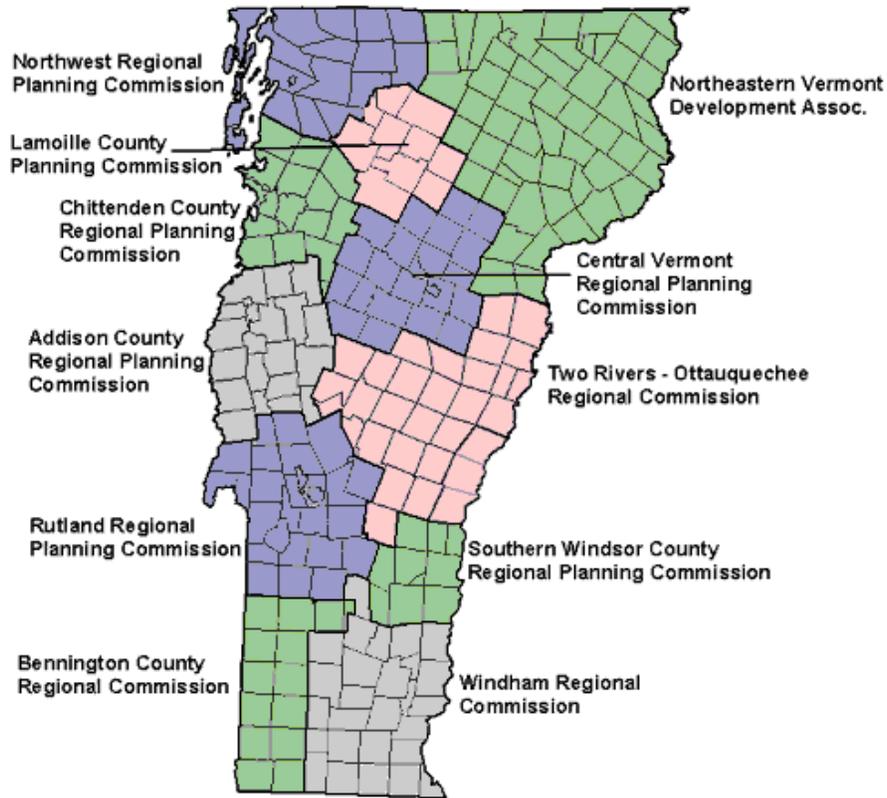


Figure 11. Vermont Regional Planning Commissions¹³⁸

h. State Emergency Response Commission

The Federally mandated mission¹³⁹ of Vermont’s SERC is to “protect public health, safety and the environment by ensuring effective and efficient use of resources, to plan for the response to all hazards incidents to include natural and manmade hazards, and hazardous materials.”¹⁴⁰ SERC membership in Vermont includes: the Commissioner of Department of Public Safety Commissioner, the Director of Vermont Emergency Management,

¹³⁸ VT Assoc. of Planning and Development Agencies (VAPDA), <http://www.vpic.info/rpcs> (accessed August 11, 2008).

¹³⁹ The 1986 Emergency Planning and Community Right-to-Know Act, authorized under Title III of the Superfund Amendments and Reauthorization Act, requires each governor to establish a state emergency response commission (SERC) to oversee implementation of the federal act. National Governor’s Association, A Governor’s Guide to Emergency Management 2001, 12.

¹⁴⁰ Vermont SERC Bylaws, 2/21/07, <http://www.dps.state.vt.us/vem/serc.htm> (accessed September 12, 2008).

Secretary of the Agency of Natural Resources, Secretary of the Agency of Transportation, Secretary of the Agency of Agriculture, Commissioner of the Department of Health, Commissioner of the Department of Labor, and representatives from local government, fire service, emergency medical services, hospitals, RPCs, LEPCs, and law enforcement.¹⁴¹

i. Regional Coordination Centers

As articulated in the current version of the State of Vermont Emergency Operations Plan, Vermont's Regional Coordination Centers (RCCs) are an organizational structure which will regionalize emergency management functions under specific conditions. Although RCCs are described generally in the State Emergency Operations Plan, the concept is still being further developed by Vermont Emergency Management and actual implementation (such as equipping facilities, facility improvements, and training) has not yet begun. Vermont's plan states that an RCC "coordinates available state resources within Public Safety District(s) when the capability of...the SEOC to support multiple operations in the field is exceeded."¹⁴² The geographic boundaries of these four RCCs therefore align with the PSDs, with a single RCC to be located at the respective Vermont State Police Troop Headquarters within each PSD. RCCs will be activated post-event, upon the approval of the Commissioner, Public Safety or Designee based on the joint recommendation of the Director, Vermont Emergency Management or Designee and the affected Vermont State Police troop commander or designee.¹⁴³ At that time, the RCC "may be staffed with State Police resources but usually will be augmented by the deployment of the S-RAAT."¹⁴⁴

¹⁴¹ State of Vermont, Department of Public Safety, Vermont Emergency Management, http://www.dps.state.vt.us/vem/serc_members.htm (accessed September 12, 2008).

¹⁴² *State of Vermont Emergency Operations Plan, Basic Plan*, April 30, 2005, 23.

¹⁴³ *Ibid.*

¹⁴⁴ *Ibid.*

E. A SURVEY OF LOCAL EMERGENCY MANAGEMENT DIRECTORS

To gather additional data for this thesis, a survey was sent to local EMDs in Connecticut, Massachusetts, New Hampshire, and Vermont. The survey instrument is attached as Appendix A, and the survey method and results are attached by state in Appendixes B through E. Each survey was open for seven days. Survey questions were designed to capture information relating to local EOC facilities, EMD training, and EMD experience levels. Specific questions asked local EMDs to identify the amount of training they have received in both emergency management and ICS, to identify whether, in addition to their duties as local EMD, they expect to potentially also serve as incident commander or in other roles during a response. Survey results were consistent with other research on local emergency management facilities and personnel.¹⁴⁵

When results were grouped by state, between 50% and 74% of the respondents had experience levels of six years or less as an EMD. The majority of respondents had more hours of NIMS / ICS training than emergency management training. The total number of disasters varied greatly by respondent, with the average number of responses to local emergencies in the tens, while state and federal disasters on average in the single digits. 100% of included respondents saw their potential role during the response phase as local EMD or local EOC Director (the survey summary excluded all answers from any respondents who indicated that they did not expect to serve as a local EMD). When grouped by state, on average between 33% and 57% of respondents (depending on the state) said they could also potentially serve as the Incident Commander.

¹⁴⁵ For example, the by-state results showing percentages of local Emergency Management Directors who also expect to perform one or more other functions during a response is consistent with Blanchard's statement that "it is not uncommon to find local emergency managers who 'wear other hats' than emergency management coordinator, or their primary job is something else, and emergency management is 'the other hat.'" Blanchard, "Think Piece" for the Emergency Management Roundtable Meeting, 8.

**Dual or Single Role(Emergency Management Director/Incident Commander)
by Tenure as Emergency Management Director**

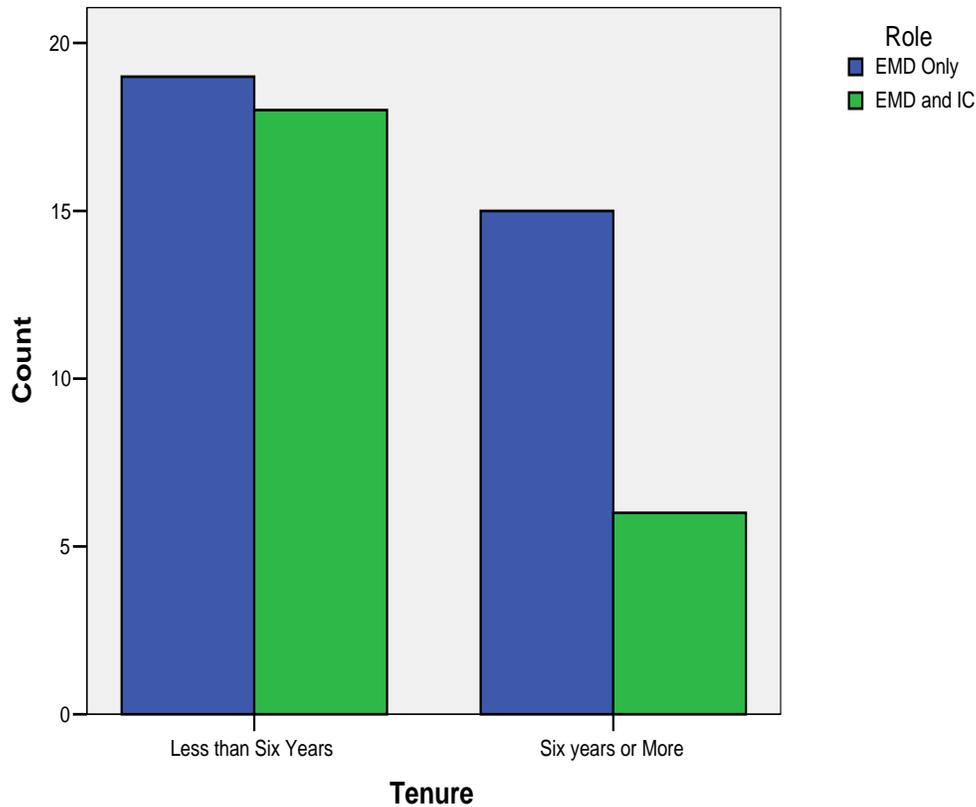


Table 2. Role by Tenure as Emergency Management Director

Table 2 shows the degree to which local EMDs may be dual-hatted as the Incident Commander. While the Chi Square Test of this distribution was not statistically significant ($p=.136$), an examination of the expected frequencies of the cells versus the observed frequency shows that more EMDs with fewer than six years of experience expect to serve as both EMDs and Incident Commanders.

In all four states, it was likely that local governments had pre-identified an EOC location, and it was likely that the pre-identified EOC location has some improvements to enable the pre-identified EOC to perform EOC functions. In all four states, however, it was more likely than not that Incident Command functions were expected to be co-located with EOC functions during the response phase.

In summary, there are wide variations between municipalities with respect to emergency management training, experience, and equipment. Some municipalities are trained and equipped, with dedicated facilities. As is further described in the attachments, other municipalities report one or more shortfalls. During events of similar size and impact, some municipalities will produce outstanding results demonstrating emergency management success; while the same events will create more challenges for other municipalities.¹⁴⁶ There is a significant probability that local EMDs may be dual-hatted as the Incident Commander, and although EOC facilities are very likely to have been identified, it is more likely than not that EOC functions will be co-located in the same room with Incident Command functions. Following a disaster, even if local first responder infrastructure is intact, it is unlikely that at the municipal level there will be a functioning stand-alone EOC staffed with an experienced emergency management professional who is solely performing emergency management functions. Local EMDs may be inexperienced, or serving in multiple roles, or both. The fact that emergency management capabilities vary considerably at the local level should be included as a planning factor when developing state and regional emergency management structures.

¹⁴⁶ Without having collected enough evidence to document a pattern, there are anecdotes of both successes and less than optimum processes. An example of the latter is during the 1998 ice storm in Vermont, Major Thomas Palermo arrived as a member of the Vermont National Guard to assist at the local level and found the local EOC was having difficulty tracking and requesting resources, as well as accomplishing communications. He assisted the municipality in establishing an EOC: "It was second nature to for me to bring maps, phone log, easel paper, and other administrative products to be able to start status tracking and communications...The municipality that I worked with was not trained or prepared...on how to track operations or where to turn to get resources. We used our own SOP on how to track operations, logistic support, and administrative support with a format of reporting via verbal or electronic means." Major Thomas Palermo, Personal communication.

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III. A VISION FOR CHANGE

A. INTRODUCTION

Leadership involves setting the long-term goals of an organization. Leaders identify what is important, describe broad themes and patterns, and convince people to move forward. This end-state guidance, or vision, is the first step in the strategic planning process.¹⁴⁷ As summarized by James Carafano, “when you are working in the strategic realm, thought should precede action.”¹⁴⁸ A strategic vision for emergency management in Vermont should therefore identify an optimized end-state. The sections below describe a process for developing strategic vision: (1) guarding against cognitive errors while developing a strategic vision, (2) determining which organization owns the process of developing a comprehensive strategic vision for emergency management in Vermont, (3) defining the foundational principles of emergency management which are to be enabled by the strategic vision, and (4) reviewing the constraints that define the realm of the possible with respect to strategic vision.

B. COGNITIVE FACTORS

There are several cognitive factors which should be in the cross-check of stakeholders when considering the development of a strategic vision. The first is overconfidence bias, which is the documented tendency for humans to be overly confident in their own abilities to understand the present, and their ability to

¹⁴⁷ A plan is required for an organization or organizations to be effective. The General Accountability Office, the research and investigative body for the U.S. Congress, is blunt about the role of strategic planning. “There is no more important element,” GAO writes, “than the effort of strategic planning. This effort is the starting point and foundation for defining what an organization seeks to accomplish, identifying the strategies it will use to achieve desired results, and then determining how well it succeeds in reaching results-oriented goals and achieved objectives,” GAO, March 29, 2006, 15.

¹⁴⁸ James J. Carafano, “Preparation and Response: Ensuring America's Recovery, The Heritage Foundation,” September 20, 2003, <http://multimedia.heritage.org/CONTENT/lehrman-093003a.ram> (accessed September 7, 2008).

predict and control the future. The effect has been demonstrated in a number of different ways.¹⁴⁹ For example, it is hard for individuals to believe the worst can happen even as it is happening.

The second cognitive factor to consider when evaluating present organizational structure vice possible futures is satisficing. Satisficing is a decision-making strategy that meets the standards of adequacy, rather than working toward the optimal solution. No matter where humans are in the information collection process, we have a documented tendency to fix on the first adequate solution and move on. The term “satisficing” was coined by Herbert Simon,¹⁵⁰ who observed a decision-making error resulting in unrealized maximization due to lack of complete information. The decision-making error occurs when an adequate solution exists, and decisionmakers then cease to have any further curiosity for complete information, which might enable best solutions. Although Voltaire said that “the best is the enemy of the good”,¹⁵¹ the phrase can be turned here to be “the good (or good enough, in other words, satisficing) is the enemy of the best.”

The third cognitive factor to be aware of is escalation of commitment. When new information argues against a currently selected course of action, research shows individuals who have publicly committed to the selected course of action are far less likely to choose another course than individuals who have not publicly committed to the selected course of action. An example of this is the documented tendency for leaders faced with challenges to say “continue, the solution is just more of what we are doing.” However, the selected strategy may be a failing strategy and not a ‘just not yet succeeding strategy’. Logic dictates

¹⁴⁹ Ulrich Hoffrage, "Overconfidence" in Pohl, Rüdiger, *Cognitive Illusions: A Handbook on Fallacies and Biases in Thinking, Judgment and Memory* (New York, NY: Psychology Press, 2004), Sarah Lichtenstein, Baruch Fischhoff, Lawrence D. Phillips. "Calibration of Probabilities: The State of the Art to 1980," in Daniel Kahneman, Paul Slovic, Amos Tversky. *Judgment under Uncertainty: Heuristics and Biases* (Cambridge University Press, 1982), 306-334.

¹⁵⁰ See e.g. "Theories of Bounded Rationality," in *Decision and Organization*, eds. C. B. McGuire and Roy Radner (North-Holland Publishing Company, 1972), 1, 161-76.

¹⁵¹ Voltaire, *Questions sur L'Encyclopédie* II, 1770, 250.

that we not let a previous course of action influence cost/benefit analyses in the present, and that we do not continue moving forward simply to justify past decisions.

Beyond being aware of and guarding against overconfidence bias, satisficing, and escalation of commitment, there are other steps that should be taken to improve the process of developing a strategic vision. First, if a working group is established, then it would be beneficial to ensure broad membership in the working group. When a working group is chartered, policymakers should ensure there is broad functional expertise in the group; this creates more options. Members who might have information relevant to decision making should be included. People should be encouraged to talk about their respective expertise. The working group should pay careful attention to the knowledge aggregation process. Further, the working group could consider tasking one person to argue the pros of a course of action, and another person to argue the cons of a course of action. Foremost, the working group should not immediately analyze the known, and then move to deciding what to do. The better process would include information collection prior to decision-making, guided by answers to the question “What would we like to know?” This prevents the group from reaching the premature conclusion that it has exhausted all options before it identifies its potential courses of action.

C. OWNERSHIP OF STRATEGIC LEADERSHIP

The SERC is properly authorized, and has the appropriate range of stakeholder representation and subject matter expertise, to lead the effort to define a strategic vision for emergency management in Vermont. Whether the SERC itself or a sub-group of the SERC, or perhaps in a collaborative effort with the Governor’s Homeland Security Advisory Council, a working group could be established to review and summarize applicable principles of emergency management, and present end-states which further those principles in the light of existing constraints. The charter of the working group could include direction to

evaluate whether any improvements to Vermont's emergency management structures are required, and if so, then to produce concrete recommendations to enable achievable improvements.

This working group has a number of tools at its disposal to assess the current capabilities of existing state and local emergency management structures. First, considerable resources are available documenting best practices in emergency management theory.¹⁵² Second, a high-level assessment is provided by the National Governor's Association.¹⁵³ Third, a more detailed assessment is the Capability Assessment for Readiness (CAR), which is a self-assessment tool that state emergency management organizations can use to identify strengths and weaknesses in emergency response.¹⁵⁴ Fourth, Vermont's State Preparedness Report could serve as a tool.¹⁵⁵ Fifth, another initiative to identify metrics for evaluating emergency management organizational structures is the Emergency Management Accreditation Program. National organizations cooperated to develop the Emergency Management Accreditation Program (EMAP).¹⁵⁶ EMAP builds on the CAR concept and takes it one step further.¹⁵⁷ EMAP is intended to provide national standards through which

¹⁵² See e.g., Public Entity Risk Institute, *Characteristics of Effective Emergency Management Organizational Structures* (Fairfax, VA: Public Entity Risk Institute, 2001), 1. Case studies...of numerous local government emergency management programs led to the identification of organizational characteristics that contribute to "effective" emergency management programs.

¹⁵³ Assessing the State's Emergency Management Resources and Capabilities. The assessment should include answers to the following questions. Is the emergency management program comprehensive enough to meet the needs of the state? Are the goals, objectives, and mission of the state's emergency management system being achieved? Can the state redirect strategic resources and help communities and citizens avoid becoming disaster victims? National Governors Association, *A Governor's Guide to Emergency Management*, 2001, 12.

¹⁵⁴ *Ibid.*, 13. The Capability Assessment for Readiness (CAR) is a survey instrument developed by FEMA. A tailored CAR might specifically address emergency management span of control functionality during a major or catastrophic event.

¹⁵⁵ Ross Nagy, Vermont Emergency Management, Personal correspondence, October 21, 2008.

¹⁵⁶ The National Emergency Management Association (NEMA), National League of Cities, Federal Emergency Management Agency, National Governors Association, U.S. Department of Transportation, et al.

¹⁵⁷ NGA, 13.

emergency management programs can demonstrate success and accountability and determine areas and issues where additional resources are needed.¹⁵⁸ Finally, simulations exist that replicate the complexity of state-level emergency management processes,¹⁵⁹ and it is not inconceivable that the known nodes and connections between Vermont's SEOC and local EOCs could be mapped and evaluated under a variety of scenarios. Through any combination of the above tools, a SERC-chartered working group could produce a vision for the future foundational to enabling the National Governor's Association's recommended goal of maintaining a constant, high level of all risk comprehensive response capability in the state.¹⁶⁰

D. DEFINING THE PRINCIPLES OF EMERGENCY MANAGEMENT

The development of principles of emergency management is a deliberate process, and the items below are offered for consideration by policymakers reviewing emergency management organizational structures. Some descriptions of emergency management do not inspire us to think that achievable principles of

¹⁵⁸ NGA, 13. See also "A Framework for Assessing Regional Preparedness, *A White Paper on Applying Emergency Preparedness Standards to Multijurisdictional Areas*," by The Emergency Management Accreditation Program (EMAP), April 2006, 2, which describes a five-step assessment methodology to help multijurisdictional areas, urban and rural, identify emergency management capability shortfalls and opportunities. Specifically, step 2 of the 5-step process is the "regional self-assessment (review of regional plans and activities)...The region will be required to conduct a self-assessment of its multijurisdictional planning and coordination structures and activities." 9.

¹⁵⁹ The Georgia Emergency Management State Operations Center created a simulation that "models the information flow among people working within the Center, as well as the flow of information coming into and leaving the Center." Margaret L. Loper and Bart Presnell, *Modeling an Emergency Operations Center with Agents* (Atlanta, GA: Georgia Tech Research Institute, 2005), Proceedings of the 2005 Winter Simulation Conference, eds. M. E. Kuhl, N. M. Steiger, F. B. Armstrong, and J. A. Joines, 347.

¹⁶⁰ NGA, 9.

emergency management can be defined.¹⁶¹ During the response phase, the emergency manager must maintain situational awareness on hazards, the situation, operate with valid facts or valid assumptions in the absence of valid facts, develop a concept of operations including understanding local direction and control, effect communications including warnings and public information, provide guidance on protective actions, coordinate mass care, limited health and medical resources, and other resources as may be required. This activity has to take place among a spectrum of stakeholders including local emergency responders, interjurisdictional responders, state responders, and federal responders (if required). All of this also has to occur in support of the guidance provided by lead elected political officials. In the face of these daunting simultaneous tasks, some emergency management structures perform better than others.¹⁶²

1. Full-time Emergency Managers

Wayne Blanchard asserts that professional emergency management is a “science and knowledge-based full-time job that requires education, training, and experience.”¹⁶³ A lack of experience can create confusion about what actions to

¹⁶¹ The generic problems of emergency management endure because they are rooted in human nature, American attitudes toward long-range planning, the dynamics of power in the Executive Branch, and the short-term perspective of the American political process... Emergency management organizations must plan and train in obscurity and neglect with few resources. Then, in one brief moment, in full glare of media and public scrutiny, they are expected to perform flawlessly like a goalie in hockey or soccer, or a conversion kicker in football. It is a merciless context for a mission that is difficult at best. *Coping with Catastrophe*, 16-17. At the state and local levels, emergency management suffers from: “A lack of clear and measurable objectives, adequate resources, public concern and official commitments; low levels of public concern and support for events of low probability but potentially high impact...A lack of knowledge and competence in emergency management, and a lack of commitment to and finding for emergency management.” *Coping with Catastrophe*, xi.

¹⁶² Jurisdictions with well-organized EOCs have several distinct advantages over other jurisdictions during an emergency because they (1) Serve as a conduit for information passed from the incident scene, through lower-level coordination agencies, to higher-level coordination entities, (2) Allow the Incident Commander to focus on managing the incident, (3) Promote problem resolution at the lowest practical level, and (4) Provide strategic guidance and direction to support incident management activities. IS-775, 2 of 43.

¹⁶³ Blanchard, Background “Think Piece” for The Emergency Management Roundtable Meeting, 24.

take during the response phase of an emergency.¹⁶⁴ An anecdotal example is found in the 1978 National Governors Report *Comprehensive Emergency Management – A Governor’s Guide*:

A series of tornadoes across the state inflicted severe damage on two medium-sized cities. In visiting both, the governor noticed that cleanup seemed to be further along in the more severely hit city. He found that the local emergency services coordinator was well respected in town and had worked out and tested an emergency response plan for early warnings from the National Weather Service. He had initiated installation of new warning sirens at the fire department and had coordinated health services, evacuation procedures, search and rescue operations, debris clearance, temporary shelter construction, feeding programs, and other response services. He had made particularly good use of trained volunteers. The other city had a part-time emergency services coordinator, who was not on duty when the tornado hit. Warnings to the city, as well as notification to city and state officials were delayed. The second city, although less severely struck, took longer to respond to and recover from the emergency.¹⁶⁵

A full-time organizational structure provides for an emergency management monitoring function staffed on a 24-hour basis. This allows monitoring of potential disasters so that governmental employees, and the general public, can be placed on various stages of alert as appropriate.¹⁶⁶ This permits timely, accurate and complete understanding of the nature of a particular situation.¹⁶⁷

Finally, part-time EMDs have a significant probability of also serving as the Incident Commander. Under NIMS, the duties and responsibilities of the Incident Commander performed at the Incident Command Post are both distinct and physically separate from duties and functions of the EMD performed at the EOC.

¹⁶⁴ Donald P. Moynihan, *What Makes Hierarchical Networks Succeed*, paper presented at the annual meeting of the Association of Public Policy and Management, November 2-4, 2006, Madison, Wisconsin, <http://www.lafollette.wisc.edu/appam/moynihankatrina.pdf> (accessed September 10, 2008).

¹⁶⁵ NGA, 16.

¹⁶⁶ Public Entity Risk Institute, 18.

¹⁶⁷ Ibid.

2. Responsible for all Four Phases of Emergency Management

In 1979, a National Governors Association report ushered in a new era of emergency management, by recognizing the close links between mitigation, preparedness, response, and recovery.¹⁶⁸ The concept of handling all types of disasters and their consequences was named “comprehensive emergency management” (CEM).¹⁶⁹ The creation of FEMA in 1979 institutionalized CEM.¹⁷⁰ FEMA resulted from the consolidation of five federal agencies that had previously dealt separately with an aspect of large-scale emergencies.¹⁷¹ A professional emergency manager is seen today as someone who coordinates with and collaboratively integrates all relevant stakeholders into the four phases of emergency management (mitigation, preparedness, response and recovery) related to natural, technological, and intentional hazards.”¹⁷²

There is no reason to have to re-learn the hard lessons that produced the 1979 report, which integrated the four phases of emergency management. There is no clear boundary where one phase ends and another begins, successful emergency management structures coordinate activities in all four phases, and the response phase should not be extricated to be addressed by distinct organizations.¹⁷³

¹⁶⁸ NGA, 7.

¹⁶⁹ FEMA Emergency Manager, 1-8. See also Blanchard, Background “Think Piece” for The Emergency Management Roundtable Meeting, 10: “CEM is the central organizing principle and definition of professional emergency management -- all-hazards, all phases, all actors.”

¹⁷⁰ FEMA Emergency Manager, 1-8.

¹⁷¹ Ibid.

¹⁷² Blanchard, Background “Think Piece” for The Emergency Management Roundtable Meeting, 7.

¹⁷³ *Principles of Emergency Management*, September 11, 2007, 5. See also City of Broken Arrow, Emergency Management, <http://www.brokenarrowok.gov/index.aspx?page=44> (accessed September 12, 2008). “The four phases of comprehensive emergency management appear in a circular relationship to each other. Each phase links to the others. Activities in one phase may overlap those in the previous. Preparedness moves swiftly into response when disaster strikes. Response yields to recovery at different times, depending on the extent and kind of damage. Similarly, recovery should help trigger mitigation, motivating attempts to prevent or reduce the potential for a future disaster. The disaster phases have no beginning or end, so recognition of a threat can motivate mitigation efforts as well as an actual emergency can.”

3. Familiarity with Jurisdiction

By integrating emergency management into daily decisions, and not just during times of disasters, emergency managers build the essential response elements of relationships and trust between stakeholders. Protecting the population cannot be accomplished without building partnerships among disciplines and across all sectors.¹⁷⁴ As Blanchard notes:

Emergency Managers must actively reach out to and engage a wide range of stake-holders in their communities or organizations, do so on a regular and frequent basis, and do so meaningfully and seriously...These attributes characterize U.S. emergency management – building and maintaining relationships – and serve as the best means to build disaster resistant and resilient communities. ***This is the emergency management model and approach.*** (emphasis in original).¹⁷⁵

Thomas Drabek's study of local emergency managers revealed that more successful emergency managers form and maintain interagency bonds of mutual aid and cooperation.¹⁷⁶ Trust is facilitated by past crises, preplanning and exercise experiences that build personal relationships and norms of reciprocity.¹⁷⁷ Pre-existing relationships are one of the most important success factors in disaster response.¹⁷⁸ Familiarity is created by having standing emergency management structures.

4. Standing Organizational Structures, Not Just Plans

Social science research concludes that the most effective disaster response utilizes standing organizations and disaster response structures that

¹⁷⁴ *Principles of Emergency Management*, September 11, 2007, 7.

¹⁷⁵ Blanchard, Background "Think Piece" for The Emergency Management Roundtable Meeting, 16.

¹⁷⁶ In his landmark study conducted in 1987 but still considered a baseline today entitled *The Professional Emergency Manager*, Thomas E. Drabek reports on a study of professional emergency managers in 62 cities and counties and identifies strategies and characteristics of successful job performance. FEMA Emergency Manager, 1-4.

¹⁷⁷ Moynihan, 24.

¹⁷⁸ Consequence Reduction: Response and Recovery, *Volpe Journal*, 2003, 23-24.

are as close as possible to routine organizational structures and procedures. This is one reason why it is important to integrate emergency management into existing organizations.¹⁷⁹ The organizational structure should provide for the integration of emergency management functions into day-to-day operations; that is, emergency planning should be a part of routine activities and not something that is taken off the shelf when a disaster occurs.¹⁸⁰ It is easier to plan than to bring plans into the management of an actual disaster.¹⁸¹

The nation is pre-occupied with disaster planning, at the expense of creating robust, flexible, and scaleable emergency management response structures. It is puzzling that despite years of research on organizational behavior, local governments continue to be surprised when procedures in lengthy, detailed plans are irrelevant to a real disaster.¹⁸² The paradox between extensive preparedness planning and less than effective response management has been attributed to several factors, including an underestimation of the need to plan for flexibility and improvisation in the crisis time response.¹⁸³ Preparedness is a concept routinely analogized with planning, but preparedness should also include pre-disaster steps which increase the ability of emergency management structures to be flexible and improvise in the face of uncertainty.

¹⁷⁹ Blanchard, Background “Think Piece” for The Emergency Management Roundtable Meeting, 21. See also Characteristics of Effective Emergency Management Organizational Structures, Published by the Public Entity Risk Institute, www.riskinstitute.org (accessed September 28, 2008), 7. “The organizational structure that is implemented for disaster situations should be similar to the structure that is used for day-to-day emergencies; that is, as much as possible, the disaster organizational structure should be an extension and expansion of the routine emergency structure.”

¹⁸⁰ Public Entity Risk Institute, 8.

¹⁸¹ E. L. Quarantelli, “Disaster Planning, Emergency Management and Civil Protection: The Historical Development of Organized Efforts to Plan for and to Respond to Disasters,” in *Interorganizational Relationships in Emergency Management*, ed. G. Hoetmer (Newark, DE: Disaster Research Center, University of Delaware, 2000b, 1984), 17, <http://www.udel.edu/DRC/preliminary/227.pdf> (accessed September 17, 2008).

¹⁸² Public Entity Risk Institute, 8.

¹⁸² Quarantelli, *Interorganizational Relationships in Emergency Management*, 19.

¹⁸³ Quarantelli, *Disaster Planning, Emergency Management and Civil Protection*, 18.

There seems to be no recognition that plans have any inherent limits, although much of any response will inevitably have to be improvised.¹⁸⁴ Blanchard states:

One of the long-standing problems of U.S. emergency management, at all levels of government, is the selection of emergency program managers/coordinators from within the ranks of response-oriented emergency services...who fail to transcend their response-oriented backgrounds to develop truly all-phase strategic plans and programs...this response orientation devolves too often into a disaster operations plan-centric program rather than a risk-based strategic plan oriented program.¹⁸⁵

The focus during the preparedness phase on writing all-hazard plans is the most prevalent shortcoming in emergency management structures today, and it is found at the local, regional, state and federal levels. The problem has been described as “the paper plan” syndrome, defined as the assumption that the presence of an emergency operations plan is all that is needed to respond to disasters.¹⁸⁶ Having a written all-hazards plan, with event-specific annexes, without developing capabilities to implement the plan is insufficient to ensure adequate response operations.¹⁸⁷ Exercises have their own limitations. Exercises are necessary and important, but the hard-working exercise planners across the nation cannot overcome the fact that exercises are simplified models of expected futures, where participants perform their largely pre-scripted roles in manageable bit-size parts where the larger systems are rarely tested to failure. Exercises cannot fully replicate uncertainties and unforeseen circumstances that will present themselves during a disaster.

¹⁸⁴ Quarantelli, “Disaster Planning, Emergency Management and Civil Protection: The Historical Development of Organized Efforts to Plan for and to Respond to Disasters,” 20; see also G. Kreps. “Organizing for Emergency Management,” 30-54; Washington, D.C.: International City, Management Association, citing Kreps, 1991, 45-46.

¹⁸⁵ Blanchard, Background “Think Piece” for the Emergency Management Roundtable Meeting, 7.

¹⁸⁶ “The Status of Emergency Management Theory: Issues, Barriers, and Recommendations for Improved Scholarship,” (paper presented at the FEMA Higher Education Conference, David A. McEntire, Emmitsburg, MD, June 8, 2004), 17.

¹⁸⁷ Ibid.

Planning and exercises should make the system more robust and capable in the face of what we know and to the greatest extent possible multiple unknowns. The State of Vermont has local “Emergency Management Directors,” not local “Emergency Operations Plans Implementation Directors.” Trained emergency management professionals, at the local, regional and state levels, equipped with redundant systems, enable success in the face of the unexpected.¹⁸⁸ We should be at least as concerned with the resiliency of the emergency management structure as we are with writing plans. A critical component to ensuring a robust and flexible emergency management response is the fact that the capacity of the overall structure depends a great deal on the span of control at different levels.¹⁸⁹

5. Effective Span of Control

Emergency management span of control is a principle of effective emergency management. To have a manageable span of control, supervisors must be able to “adequately supervise and control their subordinates, as well as communicate with and manage all resources under their supervision.”¹⁹⁰ An Incident Commander is charged with supervising and controlling operations, while also communicating with and managing resources under his or her supervision. Emergency management, by contrast, does not control operations. With respect to span of control for emergency management, the question then becomes whether emergency management is different from incident command to the extent that it effects the ratio of supervisors to subordinates. It is possible that the NIMS span of control rule of between 3 and 7 subordinates, optimally not to exceed 5 subordinates, is incident specific. NIMS guidance states that span of control considerations are influenced by the nature of the task.¹⁹¹ Emergency

¹⁸⁸ “The Status of Emergency Management Theory: Issues, Barriers, and Recommendations for Improved Scholarship,” (paper presented at the FEMA Higher Education Conference, David A. McEntire, Emmitsburg, MD, June 8, 2004), 17.

¹⁸⁹ Moynihan, *What Makes Hierarchical Networks Succeed*, 26.

¹⁹⁰ FEMA Emergency Manager, 6.9.

¹⁹¹ ICS 100, 3-28.

management is a different task than Incident Command. The anecdotal evidence is that even with county EOCs, many state EOCs currently have spans of control greater than between 3 and 7 regional and/or municipal EOCs.

At some point, wider spans of control impact the ability to communicate and coordinate resources. In other words, wider spans of control reduce the capability, responsiveness and flexibility of the emergency management structure. If a major disaster occurs in Vermont, and 130 municipalities forward damage assessments and requests for assistance to the state EOC, does that mean that the other 121 municipalities are responding effectively without the requirement for state assistance, and are merely slow to forward damage assessments, or does it mean that the 121 municipalities are significantly worse off, perhaps to the point that response structures have failed? How will the State EOC know the difference?¹⁹²

Wider spans of control impact the ability to perform all four phases of emergency management, the ability to be familiar with the jurisdictions, and to be able to build the critical relationships and trust that enables success during disaster response. The span of control for Vermont's State EOC, with its 251 linkages, is the widest span of control for any State EOC in the nation.

The principles of emergency management therefore include (1) full-time trained and experienced emergency management personnel, (2) who perform emergency management functions throughout all four phases of an emergency (mitigation, preparedness, response and recovery), (3) who gain familiarity with their jurisdictional area of responsibility, (4) under the umbrella of standing emergency management organizational structures, (5) with effective spans of control. These principles should the development of emergency management structures.

¹⁹² Some have argued that new technologies will expand emergency management spans of control. Having 251 local EMDs communicate SITREPs, Disaster Estimates, and resource requests via the internet is merely quantitatively, not qualitatively, different from having the same individuals communicate the same information via phone. County EOCs were not obviated nationally by the creation of the telephone.

E. CONSTRAINTS

Emergency management constraints range from those the easily overcome, to the intractable. A cost-benefit analysis performed in the light of an objective evaluation of constraints may yield the best solution. The most significant constraints for emergency management structures in Vermont are statutory and fiscal.

1. Statutory

Vermont Statutes Annotated Title 20, Section 5, requires PSDs to align with Vermont State Police Troop Districts. Currently there are four Vermont State Police Troop Districts. Therefore, there are four PSDs whose geographic boundaries mirror the existing Vermont State Police Troop Districts. The result is that any proposal to establish regional EOCs in the State of Vermont with geographic boundaries other than the current Vermont State Police Troop District boundaries will require either (1) re-alignment of Vermont State Police Troop Districts, or (2) the amendment of Title 20, Section 5 to de-couple Vermont State Police Troop District Boundaries from either PSD boundaries, or de-coupling emergency management functions from being regionalized only by PSD. Due to the significant time and stakeholder buy-in required to pursue either of the above, both should be considered unrealistic and should be avoided.

Further, there are no man-made or natural boundaries better suited than the existing PSDs to effect regionalized emergency management in Vermont. The possible boundaries, whether county, LEPC, or RPC, do not naturally lend themselves to regionalization of emergency management functions. Most first responders, let alone citizens, are not familiar with LEPC or RPC boundaries, and although there may be some greater awareness of county boundaries, there is no county government to serve as lead elected official at the county level. Therefore any regional EOCs with county-aligned boundaries would actually have to be regionalized state EOCs, that simply have as their jurisdiction a county, which in and of itself could lead to additional confusion.

Integration is the emergency management concept that advances the notion that “emergency management needs to be integrated into or mainstreamed into other components of a political jurisdiction or an organization.”¹⁹³ Emergency management operates within a governmental system, and not from a position of power.¹⁹⁴ Elected governmental officials have key roles in representing their constituencies during the emergency situation.¹⁹⁵ To have county-aligned EOCs which perform functions in support of a chief elected county official, legislation would be required to establish more significant county governmental structures in Vermont. The challenge of establishing a chief elected official, beyond the existing Sheriffs and State’s Attorneys in Vermont, probably is an insurmountable constraint.

2. Fiscal

When reviewing the possible courses of action, for each possibility it is important to define the portion of the cost-benefit curve that yields an exponential increase in capabilities, and the portion of the cost-benefit curve that yields a linear increase in capabilities. Exponential increases in capability may occur as initial dollars spent, or only after significant fiscal investment. The cost structure for organizational transformation is the relationship between costs and the quantity of the desired end state, which is probably not linear.

The author is not aware of any full-time EMDs in any of Vermont’s municipalities. The City of Burlington previously had an emergency manager in a salaried position with support staff enabled through state funding, but that

¹⁹³ Blanchard, Background “Think Piece” for The Emergency Management Roundtable Meeting, 21.

¹⁹⁴ Ibid.

¹⁹⁵ Public Entity Risk Institute, 5. See also Weseman and Moore, “The Role of Elected/Appointed Officials in Disaster Response: Managing Your Worst Nightmare, Emergency Management Laboratory, Oak Ridge Institute for Science and Education,” (paper presented at 1993 American Society for Public Administration National Training Conference, San Francisco, California, July 1993).

funding ended approximately five or six years ago.¹⁹⁶ A review of the budgets for county EOCs nationally is informative. Emergency management budgets for counties are small, the mean being just a little more than \$33,000 nationally.¹⁹⁷ Clarke concludes that these figures suggest that most emergency management functions are being performed within other public safety units.¹⁹⁸ According to Clarke, “most counties (71 percent) manage the emergency management agency’s budget within the general fund. Of those using a separate governmental fund, many cite a variety of grant funding and interlocal arrangements as the reason for the separation.”¹⁹⁹

There are several possible mechanisms available to secure funding to transform or enhance Vermont’s emergency management structure.²⁰⁰ The respective likelihood of success for each cannot be quantified, but possible funding sources and likelihood of success should be considerations for policymakers as they evaluate possible courses of action. Without any prioritization, one funding mechanism is to acquire state funds integrated into the State’s budget. This can be introduced either through the Governor’s Budget proposal, or initiated by the Legislature. The next opportunity for this is spring, 2009.

The second possible funding mechanism is to establish an Investment Justification under the Fiscal Year 2009 DHS Grants program, and make the organizational transformation of Vermont Emergency Management one of Vermont’s 15 investments. This would be due in approximately May of 2009. The investment justification should describe the business case, in other words

¹⁹⁶ Michael O’Neil, Burlington Emergency Management Director and Fire Chief, Personal communication, August 22, 2008.

¹⁹⁷ Clarke, *Emergency Management in County Government*, 4.

¹⁹⁸ *Ibid.*

¹⁹⁹ *Ibid.*

²⁰⁰ Funding can also result from combined sources. See, e.g., Ver. Stat. Ann. tit. 20, §25: State emergency management appropriations may be used to match federal money for civil defense and emergency management.

the value attained, and if possible include the peer review process, paired with DHS-performed risk analysis. The key here is to propose in the request a strong solution; the request should not merely articulate a need. For example, regionalizing emergency management builds capability to manage risk, and has a regional impact across a spectrum of man-made or natural disasters. For any of the 15 National Planning Scenarios, effective response requires an effective emergency management structure. The enabling impact of organizational transformation of emergency management structures should be shown in relation to the 37 Target Capabilities. The current DHS grant focus includes planning and Improvised Explosive Device preparedness, to which strengthening response functions can be logically tied. A question for additional research is whether there are EOC grants that have passed peer review process. A key to success might be to eliminate “jump ball” grant making, where whoever does the best grant proposal (jumps the highest) wins. There needs to be a collective grant-writing effort, which first requires building consensus with communities. Municipalities should contemplate joining in collective effort and submit the same grant requests to enable a regional solution to their mutual benefit.²⁰¹

The third possible funding mechanism is a Congressional initiative to fund an essential capability for the State of Vermont which is not otherwise addressed by federal budgets. The next opportunity for this is January / February of 2009.

Finally, existing RPC and LEPC resources could be realigned to enable funds to establish Regional EOCs in Vermont. This solution should obviously be carefully considered, and if some portion of RPC or LEPC resources are being

²⁰¹ Michael O’Neil, City of Burlington Emergency Management Director and Fire Chief, Personal conversation, (August 12, 2008). A similar personal conversation was held with the CT Emergency Management Region 3 Coordinator, who said that trust is “municipalities willing to pool money for the benefit of all,” August 20, 2008.

reallocated,²⁰² it is possible that individuals who now only perform mitigation and preparedness functions could be integrated into a regional emergency management structure to provide across all phases of an emergency.

F. POSSIBLE FUTURES

If the principles of emergency management and constraints are described accurately above, as a practical matter any strategic vision to establish more than 10 Regional EOCs in Vermont is off the table. Within the realm of the possible, strategic visions for emergency management organizational end-states include (1) implementing the RCCs as proposed, (2) maintaining the status quo, (3) performing a gap analysis, and pre-identifying requirements for out-of-state resources, (4) strengthening the State EOC, and (5) establishing four Regional EOCs.

1. Implement the RCCs as Proposed

To implement the vision of the RCCs currently articulation in the State of Vermont Emergency Operations Plan, four facilities can be assigned, one per PSD. These facilities can be equipped, primary and alternate personnel can be identified, procedures can be written, and training and exercises can be performed. If implementation is in accordance with the current RCC construct, one possible scenario is as follows: Dual-use spaces within or near the four Vermont State Police Troop Commands will be identified. The rooms will be equipped with phones, computers, information display screens and internet access. The RCC locations will be provided with back-up generator power, if there is not already back-up power. An alternate facility for each RCC will be identified. The Vermont State Police Troop Commander, and a designated alternate, for each RCC will receive the 4-hour EMD training provided by Vermont Emergency Management, to prepare them to serve as PSD

²⁰² Examples of LEPC funding include volunteers and donated services, funding from local government, grants, supplemental environmental projects, industry donations, and other sources. *Vermont Emergency Management SERC AND LEPC Handbook*, March 2005, 33-34.

Coordinators (in practical terms, the regional EMD). State agencies that have offices within the PSD will be tasked to identify primary and alternate personnel to staff the State's Support Functions. RCC procedures will be written, including a description of the desired information flows. Internal RCC procedures for building situational awareness and responding to requests for resources will in large part mirror the procedures established for the state EOC. Several currently unanswered questions will have to be resolved and integrated into the RCC Standard Operating Procedures (SOP): How are municipalities informed that an RCC is being activated? After RCC activation, how does information with respect to situational awareness or resource requests flow from the municipal EOCs? Are the informational flows during a response, following the standing up of one or more RCCs, between the RCC and the municipalities, with the RCC communicating situational awareness and resource request situation to the state EOCs? Once the procedures are defined and written, all RCC primary and alternate personnel will be trained. Following one or more tabletops, an exercise will be held where communications will be tested between the RCC, several municipalities and the state EOC. Exercise participants will build assessments of the simulated disaster and simulate performing regional resource coordination. After the exercise, participants will identify areas for improvement. Armed with the knowledge of defined procedures, what not to do and what is yet to be improved, key personnel may potentially feel confident that they are prepared to perform the emergency management functions of the RCC.

RCCs are to be activated only during the response phase of an emergency, when the state EOC is overwhelmed. A benefit of activating one or more RCCs is that RCCs can regionalize emergency management functions within Vermont, and it is expected that members of the RCC would be more familiar with their jurisdiction than the State EOC might otherwise be. Implementation of an RCC during a real-world response, however, will face many challenges. First, the absence of any full-time emergency management personnel will impact the ability of the RCC to be able to perform alerting,

assessment, resource management, and other emergency management functions. The PSD, who will be performing regional EOC director duties for the RCC's jurisdiction, will not be familiar with ongoing mitigation and preparedness efforts. Personnel with such expertise will remain in the organizationally distinct RPCs and LEPCs. The RCC will extricate the response phase emergency management functions from the other phases of emergency management, in conflict with the principles of CEM. The RCC will not have provided for the integration of emergency management functions into the day-to-day operations; that is, the RCC would not be part of routine activities. The RCC will be something that is taken off the shelf when a disaster occurs; and not only that, RCCs are taken off the shelf only after the state is well into the response phase of a disaster. Further, the dual-hatted PSD Coordinator will probably be giving some if not all of his or her time to those functions required in their primary full-time position as Troop Commander, Vermont State Police Barracks. Beyond the challenge of being fully trained in emergency management as an additional duty, an additional question concerns availability to perform emergency management functions even if trained, given other public safety obligations. If the event is of a scale within a PSD that the state EOC is becoming overwhelmed, it is hard to imagine that the Troop Commander would be other than engaged full-time in his or her primary duties in what would probably be the most significant disaster of his or her career. Whether overseeing agency-specific response, or serving as the agency representative at an Area Command, the RCC will not have the undivided attention of the PSD Coordinator.

The State of Vermont Emergency Operations Plan provides that the State Rapid Assessment and Assistance Team (S-RAAT) is available to assist in the standing up and operation of an RCC:

For major or catastrophic events, the S-RAAT will deploy to the impacted Public Safety District. The primary functions of the S-RAAT include coordinating with impacted communities, the district and the SEOC to ensure that human needs are being met; quickly identifying outstanding response and recovery issues and

coordinating with appropriate state and local personnel on solutions; and assessing the need for expanded state response and recovery operations.²⁰³

The deployment of an S-RAAT will solve the problem of having a dual-hatted PSD Coordinator, but the following questions remain: If the S-RAAT is designed to forward deploy to provide early assessment, and to support overwhelmed municipal EOCs, is the S-RAAT available to staff an RCC? The issue of the thinly-stretched S-RAAT becomes even more problematic if all four RCCs are activated. In addition, there will be delayed response time when deploying an S-RAAT, due both to geographic separation and lack of familiarity with jurisdictional hazards or interagency partners. Just as things are getting to their worst, the state will be implementing organizational constructs which have never participated in a real-world response of any scale.

In summary, during the preparedness phase, steps can be taken to implement the RCC construct, but in a major or catastrophic disaster, the RCC may fail to enable any of the principles of emergency management. This directly limits the size, scope, breadth and depth of the scenarios the RCC will be able to manage.

2. Maintain the Status Quo

Maintaining the status quo can result from either inaction or conscious decision. It can therefore be a likely scenario. There will be no public outcry for organizational transformation of emergency management structures, unless it results from a high-visibility post-event after action review. According to (first name if first time used) Walter Wright, “in many cases, the public never knows its emergency management or emergency services program is inadequate or inefficient until it is too late.”²⁰⁴ The next major or catastrophic disaster may be

²⁰³ *State of Vermont Emergency Operations Plan, Support Annex IX – Vermont Emergency Management Field Operations Standard Operating Procedure*, April 30, 2005, 4.

²⁰⁴ Walter E. Wright, *The Cost of Emergency Management* (Cedar Rapids, IA: Linn County Emergency Management Agency,), 1.

weeks or decades away. Maintaining the status quo will leave the state vulnerable to a cascading loss of situational awareness and inability to perform resource coordination effectively in the event of a major or catastrophic disaster.

3. Perform a Gap Analysis

Existing emergency management structures can be evaluated through a clear-eyed gap analysis. The results could identify the likelihood of scenarios which limit emergency management situational awareness, and the resulting reduced ability to form actionable requests for assistance. The expectations for the functionality of emergency management structures can be adjusted to reflect reality, and requirements for out-of-state emergency management assistance can be identified pre-event. Further, an SOP can be written for the integration of out-of-state emergency management resources into Vermont's emergency management structure. This SOP could include not only specific guidance on incoming assistance with respect to standardizing items such as communications equipment, but also information on Vermont's emergency management structures, municipal structures, and public safety agencies to enable the quick integration of out-of-state teams. Sourcing possibilities include the Emergency Management Assistance Compact, the International Emergency Management Assistance Compact, or requests for federal assistance.

The national resource typing list published by the federal government identifies resource management as a way "To provide operational assistance for incident management operations."²⁰⁵ This allows the State of Vermont to identify pre-built packages under resource management. In support of municipalities, the State of Vermont could plan for a specified number of teams, either severity-based (moderate, severe), or scenario-based (flood, ice storm, other events). Examples of the types of elements that could be included are an EOC Management Support Team (Type II or Type III), an EOC Operations Section

²⁰⁵ Under the 16 National Resource Typing Categories; used to arrange the FEMA 120 resource types into their functional area.

Chief (Type II or Type III), an EOC Planning Section Chief, and an EOC Finance/Administration Section Chief/Coordinator.²⁰⁶ This is a robust package that reflects the fact that the team would be new to both the location and the interagency partners. At the state level or PSD levels, pre-identified support requirements could include an EOC Management Support Team (Type I), consisting of an EOC Operations Section Chief, EOC Planning Section Chief, and EOC Finance/Administration Section Chief/Coordinator. This team would be subordinate to and support Vermont Emergency Management, with specific pre-event identified tasks such as coordinating with arriving municipal EOC support teams.

We have plans for identified hazards. If we know the limitations of the existing emergency management structures, it makes sense to similarly plan for impaired emergency management functionality. The significant and unacceptable downside of performing a gap analysis and relying on EOC support to arrive from out-of-state is that is that these teams will not begin arriving until approximately 72 hours after the event.

4. Strengthen the State Emergency Operations Center

The existing State EOC may be expanded to create additional emergency management response capacity for major or catastrophic events. This could include redundant communications with 251 municipalities, additional personnel to synthesize information including requests, and perhaps regional desks with specific geographic areas of responsibility. These desks could be responsible

²⁰⁶ Typed resources from U.S. Department of Homeland Security, Federal Emergency Management Agency, Typed Resource, Definitions, Incident Management Resources, FEMA 508-2, July 2005, 16. For example, a Type II EOC Operations Section Chief has had a supervisory role in an Operations Section in a federally declared disaster, has organized and supervised subunits of an Operations Section in a non-federally declared disaster, and deploys with laptop, satellite/cellphone, and associated forms. A Type III EOC Operations Section Chief has training and/or experience in Operations for non-federally declared disaster situations and deploys with laptop, communications, and associated forms.

for maintaining communications with cities and towns in their respective jurisdictions, and upchanneling situational awareness and requests for assistance to SSF functions.

The above EOC expansion would enable the emergency management principles of having full-time emergency management professionals, responsible for all four phases of emergencies, using standing emergency management structures. An open question would be whether establishing regional desks within a single state EOC would address span of control issues. Even if there were regional desks within the state EOC, the geographic distance would make it more difficult to gain familiarity with specific jurisdictional hazards and interagency personnel. Finally, there may be institutional inertia against attempts to add full-time personnel to the existing state EOC.

5. Establish Four Standing Regional EOCs

Four standing Regional EOCs, aligned with existing PSDs, would produce scaleable, flexible emergency management structures that could accomplish the spectrum of emergency management principles within existing statutory and fiscal constraints. The Regional EOCs would have full-time personnel who perform emergency management functions during all four phases of emergency management – mitigation, preparedness, response and recovery. An emergency management professional would be appointed PSD Coordinator in each PSD. By statute, PSD Coordinators would discharge the emergency management powers within their districts.²⁰⁷ The Regional EOC would be required to have a plan that considers emergencies and hazards likely to occur within their jurisdiction, which describes functions and activities of the Regional EOC necessary to implement the four phases of emergency management. The Regional EOC would have on-call staff 24 hours a day, 7 days a week. During an emergency or disaster, the Regional EOC would assume enhanced operations under the ICS. Detailed regional EOC procedures and organizational chart would be published. The

²⁰⁷ 20 Ver. Stat. Ann. tit 20 section 5 (b).

regional EOC would utilize SSFs, which identify sources for direct assistance and operational support that the local jurisdictions may need in order to implement hazard mitigation and preparedness or respond and recover from an emergency or disaster. The severity of the incident determines the level at which the Regional EOC would be staffed.

A Regional EOC might consist of three full-time personnel: the PSD Coordinator, an emergency management planner, and an emergency management trainer / exercise coordinator. These three personnel would be the public face of Vermont Emergency Management to the municipalities.²⁰⁸ They would be familiar both with the hazards, as well as the public safety professionals, in their Districts. To better partner with municipalities in mitigation, planning, response and recovery, Regional EOCs could be authorized to engage in one or more cooperative activities, ranging from formal or informal agreements, funding, training, planning to grant coordination or administration. Regional EOCs could potentially collaborate, depending on their grant of authority, with private and non-profit sectors, state agencies or other Regional EOCs, FEMA, Environmental Protection Agency, Radio Amateur Civil Emergency Service, American Red Cross, hospitals, or others. A careful review should be made of existing local, regional, and state mitigation and planning structures, thoughtfully evaluating whether Vermont's RPCs or LEPCs should alter their structures, functions, or geographic boundaries in any way. With revisions of the boundaries of four LEPCs and four RPCs, the LEPCs and RPCs could align with PSD boundaries. LEPCs and RPCs could be then linked to a single PSD, with mutually supporting relationships.

²⁰⁸ See e.g., comments of Mr. Fargione, New York State Emergency Management Office, during his presentation on August 26, 2008 at the New York National Guard Domestic Operations Conference: "NY is broken into five emergency management regions. Each region has a Regional Coordinator, who is the 'face of SEMO'."

Director Farr, Vermont Emergency Management, created an initiative which would align state emergency response functions by PSD, across all four phases. Vermont Emergency Management had sought to identify four “key positions” which were being considered for funding beyond standard levels.²⁰⁹ The objective was to have a lead within each PSD:

Provide one regional (by Public Safety District) point of contact to Vermont Emergency Management...for all emergency response, recovery, mitigation and preparedness efforts between the local emergency management directors, LEPCs, Community Emergency Response Teams (CERT), school safety programs, RPCs, Neighborhood Watch efforts, and the Public Safety Troop Commander.

Note the extent to which this individual would represent Vermont Emergency Management across many of the phases of an emergency. For each of the Public Safety Districts, this individual would:

- Provide coordination assistance to the emergency planning efforts of the regional planning commissions, local emergency preparedness committees, and regional health offices (through the Vermont Department of Health and Agency of Human Services), transportation districts, Forest and Parks districts, school, etc.
- Serve as support and coordinator for public education, training opportunities and volunteers programs under the direction of the VEM Director and/or Deputy Directors.
- Work with local response agencies and the State to increase collaboration among first responders, emergency management and volunteer groups.
- Attend Mutual Aid District meetings as appropriate.
- Support the ongoing volunteer efforts of the Vermont Citizens Corps Council and the oversight and outreach responsibilities of these councils by providing technical assistance, administrative and training services.
- Assist in the coordination of the implementation of CERT training programs. Coordinate with the Citizen Corps Councils to sponsor/host at least two CERT (2) training sessions per year.

²⁰⁹ Director Farr, Personal correspondence, August 19, 2008.

- Coordinate with local emergency directors, town administrators/managers, law enforcement officials and planners that will be operating in the respective Public Safety District.
- Attend regular meetings of each of the LEPCs and CERT teams and act as a liaison for VEM with information dissemination and coordination.
- Coordinate with the RPCs to continue working with local municipalities to complete Regional Response Plans and municipal Emergency Operations Plans.
- Meet with member(s) of the school crisis team to periodically check on needs for schools. Disseminate material as appropriate.
- Coordinate and facilitate Public Safety District meetings twice annually.
- Act as the VEM point of contact for regional and local emergency issues.
- Participate in exercises and drills as needed.
- Participate in real events as needed.
- Assist with DisasterLan training as needed.
- Establish and maintain a statewide tracking system and resource list of CERT organizations, equipment and personnel to be used in disaster response. Include animal rescue teams as identified.
- Generate quarterly reports summarizing activities completed or in progress, including meetings and exercises attended, for the RPCs, CERT teams, Local Emergency Management Directors and LEPCs.
- Provide quarterly updates to State Citizens Corps Council (State Emergency Response Commission)
- Meet with VEM Director and Deputy Directors quarterly to discuss progress, initiatives, needs, gaps, and new or changing initiatives.

Take the above list, add regional resource coordination functions during the response phase, and that inventory would constitute a comprehensive vision for a regionalized state emergency management structure that can represent Vermont Emergency Management across all phases of an emergency.

The Regional EOCs would be standing organizations, which could closely monitor developing situations, and would stand up anytime a municipality within its jurisdiction exceeded its local resources. They would therefore become practiced in performing emergency management for the municipalities in their PSD. Regional EOCs would be stood up first, not last. The State EOC would coordinate between Regional EOCs, with other states, and the federal government. The State EOC also would have capacity to assist any Regional EOC if the Regional EOC faced a potentially overwhelming situation. Four Regional EOCs would preserve the S-RAAT as a mobile EOC team to provide on-scene assessment or assist local officials, upon their request, if they are overwhelmed. Further, if an event does not impact every PSD, it permits staff from unimpacted Regional EOCs to assist in coordination of the response to an emergency. The geographic proximity of the Regional EOC would enable faster response including marshalling of resources. The increased regional communication across the four emergency management phases would result in increased emergency management capacity and capabilities.²¹⁰ Beyond the efforts required to marshal the required political will, there appear to be no drawbacks or downside to the Regional EOC construct.

Vermont can rely on existing emergency management structures without periodically reviewing what structures might maximize capabilities with limited resources. This is an example of overconfidence bias; in other words being overly confident in our ability to understand the present and to predict and control the future. If we implement the RCC construct without deliberative inquiry into other possible solutions, then that course might serve as an example of satisficing or seizing upon the first adequate solution without seeking the best solution. To the extent we remain wedded to the RCC construct because there is public commitment to that course of action, then that is an example of escalation

²¹⁰ “Strengthening Regional Communication Increases Emergency Management Capacity and Capabilities.” *Framework for Assessing Regional Preparedness: A White Paper on Applying Emergency Preparedness Standards to Multijurisdictional Areas* (Lexington, KY: Emergency Management Accreditation Program, 2006), <http://www.emaponline.org/?256> (accessed July 1, 2007). 2.

of commitment. The SERC is positioned to demonstrate leadership in performing a comprehensive review of existing emergency management structures and building an optimized vision for the future of emergency management in Vermont. With cross-functional representation working collaboratively to produce stakeholder buy-in, Vermont will benefit from whatever conclusion distills as the best possible future for emergency management given existing constraints.

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IV. CONCLUSION

The State of Vermont's current emergency management organizational structure will continue to serve the citizens of Vermont effectively for localized events, including flooding, ice storms, wind storms, snow storms, and other man-made and natural disasters. Vermont's emergency management structure, however, may not be able to respond effectively to major or catastrophic events. Major disasters occurred in Vermont, and will occur again. The current span of control of one State EOC coordinating directly with 251 municipalities, may be unwieldy and unworkable. Structural weaknesses will lead to failures to maintain situational awareness, to perform effective resource coordination, and to form actionable requests for assistance. Organizational transformation of Vermont's state-level emergency management structure may be required, and several courses of action are proposed for consideration by policymakers.

Vermont's emergency management structure should be continually assessed to ensure it effectuates the principles of emergency management. The burden of emergency management requires a close working partnership among all levels of government, not a plan that is pulled off the shelf only during worst-case disasters. The lifecycle of disasters entails a series of overlapping management phases that include strategies to mitigate hazards and prepare for, respond to, and recover from emergencies and their effects. Emergency management constructs should not attempt to extricate the response phase and assign that to an isolated organizational structure.

To create a system optimized to enable the principles of emergency management, Vermont should consider establishing a regionalized emergency management structure, within existing PSD boundaries, along with associated personnel, equipment, and training. The Regional EOC should stand-up first, whenever a municipality requires support beyond its locally available resources. Regional PSD Coordinators would be a source of assistance to local EMDs, and would coordinate with all local organizations to ensure an efficient response

throughout the PSD. Regional PSD Coordinators would frequently provide assistance in the form of training, resource information, and sometimes equipment. They would be a main point of contact for local EMDs in times of disaster and in preparation for potential emergencies. Regional EOCs would enable a clear understanding and statement of the organizational structure and processes, resulting in a consistent and cohesive disaster management strategy. When the next large scale disaster occurs, this new structure will then be ready ensure the state responds effectively.

APPENDIX A. SURVEY INSTRUMENT

Attached below is the 10-question survey which was provided to a subset of the local Emergency Management Directors in Connecticut, Massachusetts, New Hampshire, and Vermont. Each state's EMDs received the identical survey.

Emergency Management Director Survey

1

How long have you been a local Emergency Management Director (EMD)?

- 2 years or less
 - 2-4 years
 - 4-6 years
 - 6 or more years
-

2

How many hours of training do you have in NIMS / ICS?

- 0-10 hours
 - 10-20 hours
 - 20-30 hours
 - More than 30 hours
-

3

How many hours of training do you have in emergency management functions? (Emergency management being defined here as the organizing, planning and assigning of available resources to support one or more Incident Commanders)

- 0-10 hours
- 10-20 hours
- 20-30 hours
- More than 30 hours

4

Please identify the total number of events that you have had experience performing emergency management functions.

Local Emergencies (total number of events, even if state or federal declaration)

State Declarations (total number of events, even if federal declaration)

Federal Declarations

5

What additional training would you like to have to make you more prepared to serve as a local/municipal EMD?

6

During an incident, how do you see your role (check all that apply):

- Incident Commander
- Local Emergency Management Director (Local EOC Director)
- Local Public Information Officer
- Liaison within the Incident Command Post to the Regional or State EOC

Other, please specify

7

Does your municipality have a pre-identified facility for your local Emergency Operations Center (EOC)?

Additional Comment

8

If you have a pre-identified location for your local EOC, are there any improvements to that facility which are specific to its EOC functions? (For example, phones, radios, computers, etc.)

Additional Comment

9

Whether or not you have a pre-identified location for your local EOC, how likely is it during an event that your local EOC functions will be to be co-located in the same room with local Incident Command functions:

- Very likely
- Somewhat likely
- Neutral
- Somewhat Unlikely
- Very unlikely

10

Any additional comments you may have concerning any of the above questions:



APPENDIX B. CONNECTICUT LOCAL EMD SURVEY PROCESS AND RESULTS

Connecticut has 169 municipalities with the responsibility for having emergency management directors.²¹¹ Connecticut's Department of Emergency Management and Homeland Security website provides contact information for the state's local emergency management directors.²¹² The local EMD survey found in Appendix A was sent to the 172 email addresses on that list, and the survey was sent in a manner that did not allow forwarding or multiple completions of the survey by a single individual. Twelve of the surveys returned as undeliverable.²¹³ 4 of 22 surveys (18%) were excluded because the respondent did not check "Local Emergency Management Director (Local EOC Director)" under Question 6, "During an incident, how do you see your role (check all that apply)." The survey was sent with the following text:

Hello,

My name is Ludwig J. Schumacher and I am a Master's student in class 0701 at the Naval Postgraduate School's Center for Homeland Defense and Security (www.chds.us). I am writing a thesis addressing regionalization and span of control of emergency management functions.

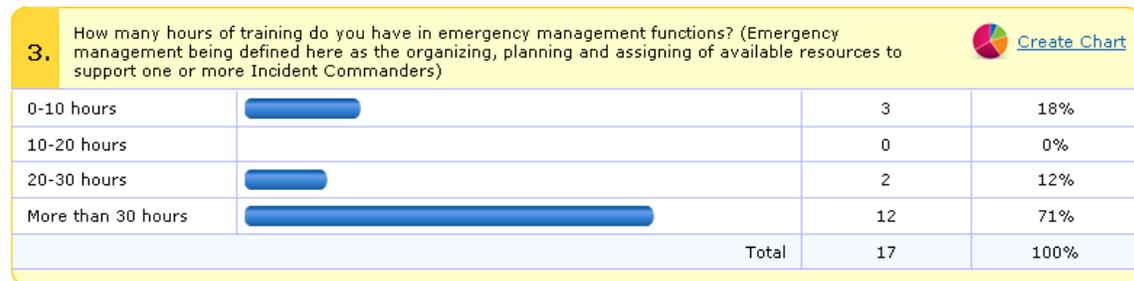
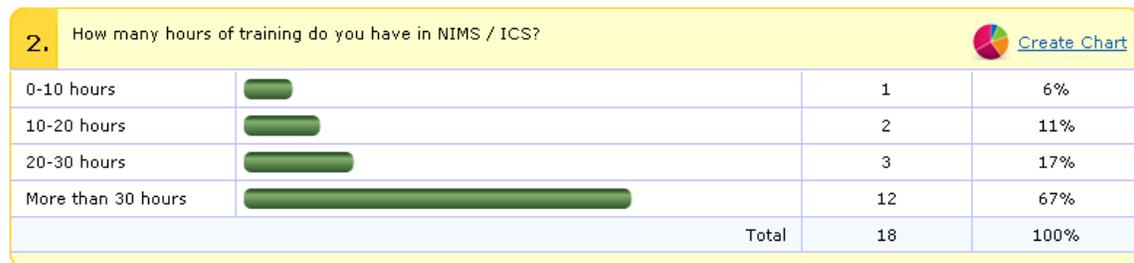
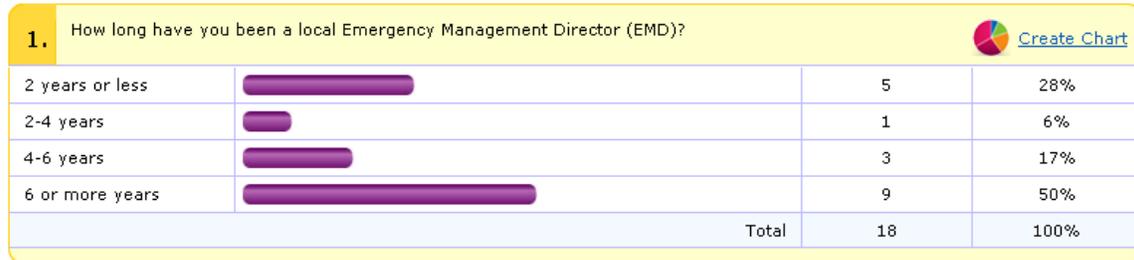
As part of my research, I am sending out a one-time survey to local / municipal Emergency Management Directors. Please click on the link below to complete the short survey. Your time in answering the short questions below is greatly appreciated! If you are not the Emergency Management Director, please forward the email of the current director to me at ljschuma@nps.edu. Again, I sincerely thank you in advance for your participation!

²¹¹ Presentation of the Connecticut Emergency Management Director, Regional Interagency Steering Committee, Newport Rhode Island, June 2008.

²¹² Excel file entitled "Local Emergency Management Public Contacts," http://www.ct.gov/demhs/lib/demhs/emergmgmt/local_emerg_mgmt_public_contacts.xls#48142 (accessed August 18, 2008).

²¹³ Notice from the survey provider: "One or more of your recipient addresses are invalid. This can happen when an address does not exist, has been closed, or has been individually blocked from receiving mail by the recipient ISP."

To complete the survey, please click on the link below:
<http://www.zoomerang.com/Survey/?p=U2A6HSJF9S55>



4. Please identify the total number of events that you have had experience performing emergency management functions.

[View 16 Responses](#)

4. Please identify the total number of events that you have had experience performing emergency management functions.

#	Response
1	Local Emergencies (total number of events, even if state or federal declaration) 50 State Declarations (total number of events, even if federal declaration) 3 Federal Declarations 2
2	Local Emergencies (total number of events, even if state or federal declaration) 30+ State Declarations (total number of events, even if federal declaration) 10 Federal Declarations 0
3	Local Emergencies (total number of events, even if state or federal declaration) 16 State Declarations (total number of events, even if federal declaration) 8 Federal Declarations 8
4	Local Emergencies (total number of events, even if state or federal declaration) unknown State Declarations (total number of events, even if federal declaration) 6 Federal Declarations 0
5	Local Emergencies (total number of events, even if state or federal declaration) 16 - 18 Federal Declarations 0
6	Local Emergencies (total number of events, even if state or federal declaration) 12 State Declarations (total number of events, even if federal declaration) 2
7	Local Emergencies (total number of events, even if state or federal declaration) 24 State Declarations (total number of events, even if federal declaration) 3 Federal Declarations 1
8	Local Emergencies (total number of events, even if state or federal declaration) none as EMD
9	Local Emergencies (total number of events, even if state or federal declaration) 6 State Declarations (total number of events, even if federal declaration) 2 Federal Declarations 0

10	Local Emergencies (total number of events, even if state or federal declaration) 1
11	Local Emergencies (total number of events, even if state or federal declaration) 25 State Declarations (total number of events, even if federal declaration) 5 Federal Declarations 2
12	Local Emergencies (total number of events, even if state or federal declaration) Can't remember State Declarations (total number of events, even if federal declaration) Can't remember Federal Declarations Can't remember
13	Local Emergencies (total number of events, even if state or federal declaration) 100 +/- State Declarations (total number of events, even if federal declaration) 35+/- Federal Declarations 15+/-
14	Local Emergencies (total number of events, even if state or federal declaration) three incidents one local, two were federal dec.
15	Local Emergencies (total number of events, even if state or federal declaration) 4 State Declarations (total number of events, even if federal declaration) 4 Federal Declarations 0
16	Local Emergencies (total number of events, even if state or federal declaration) 2 large; numerous(more than 30) minor-local

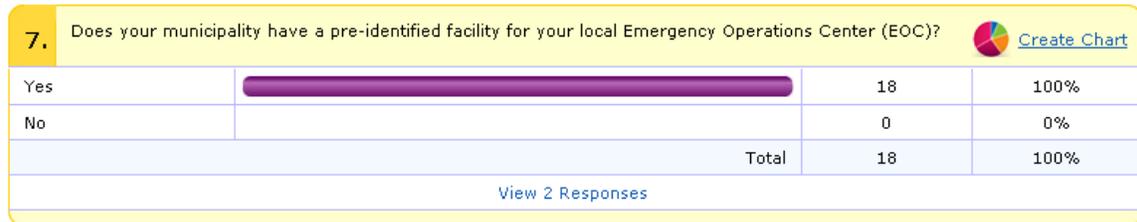
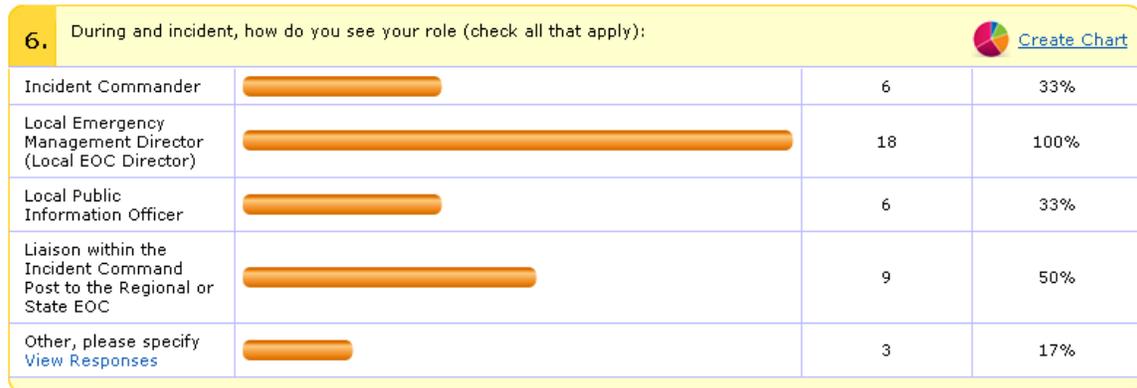
5. What additional training would you like to have to make you more prepared to serve as a local/municipal EMD?

[View 9 Responses](#)

5. What additional training would you like to have to make you more prepared to serve as a local/municipal EMD?

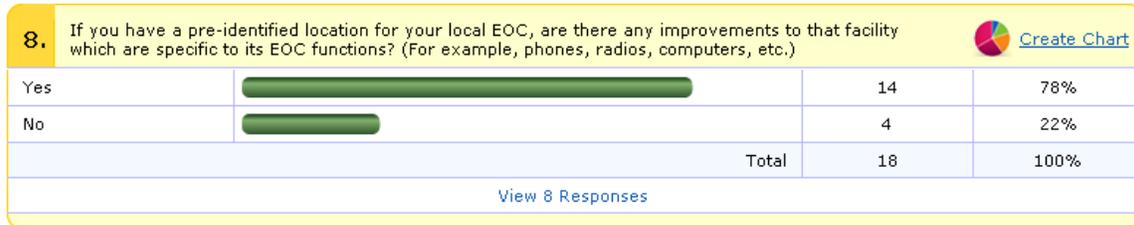
#	Response
1	Continue to train but with locals who would be working with me in EOC.
2	Need some time for this.
3	Training on multi-jurisdictional events but not NIMS and FEMA courses (boring)
4	nothong specific but a mock drill is one of our plans

5	Knowledge of Web EOC software. More table-top exercises for EOC designed by outside agency at no cost to us.
6	None at this time
7	more training as to file required federal forms to recoup for the town and its citizens
8	on how to properly design and equip an EOC
9	Our State needs a Training EMD "Program" - ie: initial(new), and on-going workshops - Certification is a question mark -



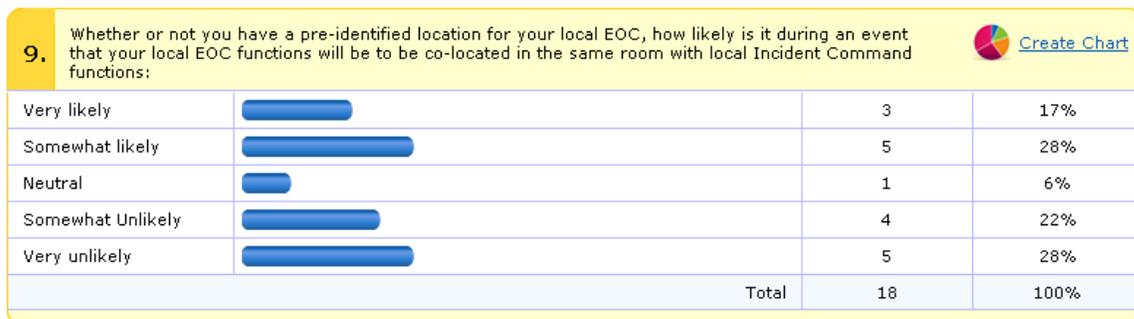
7. Does your municipality have a pre-identified facility for your local Emergency Operations Center (EOC)?

#	Response
1	Underground facility with blast and fallout protection factors of 100
2	fire station for small scale . school for large or extened



8. If you have a pre-identified location for your local EOC, are there any improvements to that facility which are specific to its EOC functions? (For example, phones, radios, computers, etc.)

#	Response
1	We have full dispatch facilities, interoperability, plotter, GIS, phones, bunks room, kitchen, etc.
2	Room for radios, fax and computer.
3	Need to see more improvements, money major issue in upgrading to todays standards
4	Wish it was larger but is equipped well
5	Added phone lines, computers, highband radio, 800 band I-TAC, FAX, overhead projector, whiteboard, office supplies, forms, tables, chairs.
6	Satellite phone; Web EOC; better layout/organization.
7	Dedicated phone, fax, and computer w/ WEBEOC installed
8	However, could be better and is being worked on with newly formed Regional efforts - Our State(CT) does not have County Govt. Function - We now have a "Regional" concept, 5 Regions- with planning and operations in the development stages, under the State Regional Coordinator - Very positive efforts are under way !



10. Any additional comments you may have concerning any of the above questions:

[View 4 Responses](#)

10. Any additional comments you may have concerning any of the above questions:

#	Response
1	I didn't find question 4 the easiest question to answer....it's a guess.
2	I am also the asst. Fire Chief and EMT along with my EMD commitments all which are volunteer. That's what needs to be fixed .
3	Re # 9 if it is NAR (non address response) e.g.wide area event, the ICP could be colocated with the EOC, or in the adjacent conference room.
4	The EOC cannot be effective if it is too close to the ICP. The EOC needs to be away from the action to analyse the needed resources and order the resources needed for the incident.

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APPENDIX C. MASSACHUSETTS LOCAL EMD SURVEY PROCESS AND RESULTS

Massachusetts has 351 municipalities, each with the responsibility for having emergency management directors.²¹⁴ The Massachusetts Emergency Management Agency website provides contact information for the state's local emergency management directors, with approximately half having email addresses listed.²¹⁵ The local EMD survey found in Appendix A was sent to the 174 email addresses provided on that list, and the survey was sent in a manner that did not allow forwarding or multiple completions of the survey by a single individual. 18 of the surveys returned as undeliverable.²¹⁶ 3 of 22 surveys (14%) were excluded because the respondent did not check "Local Emergency Management Director (Local EOC Director)" under Question 6, "During an incident, how do you see your role (check all that apply)." The survey was sent with the following text:

Hello,

My name is Ludwig J. Schumacher and I am a Master's student in class 0701 at the Naval Postgraduate School's Center for Homeland Defense and Security (www.chds.us). I am writing a thesis addressing regionalization and span of control of emergency management functions.

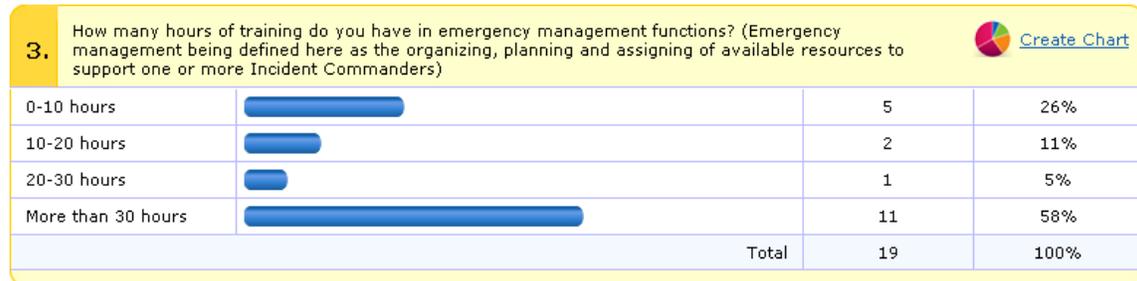
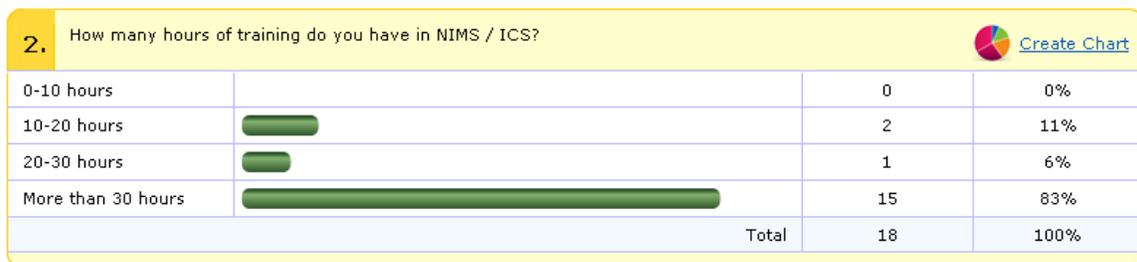
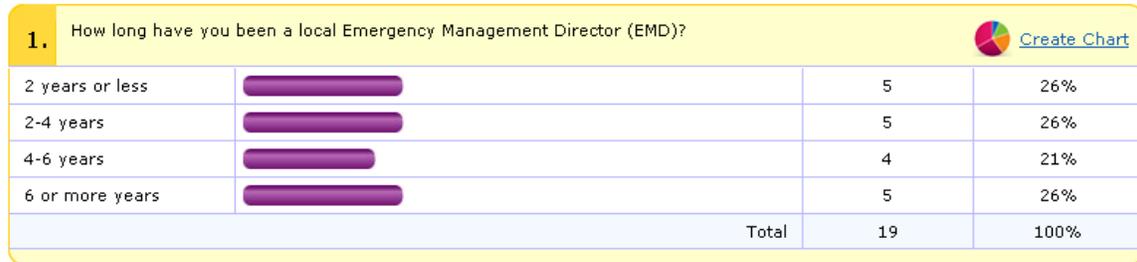
As part of my research, I am sending out a one-time survey to local / municipal Emergency Management Directors. Please click on the link below to complete the short survey. Your time in answering the short questions below is greatly appreciated! If you are not the Emergency Management Director, please forward the email of the current director to me at ljschuma@nps.edu. Again, I sincerely thank you in advance for your participation!

²¹⁴ Massachusetts Emergency Management Agency, www.mass.gov/mema/ (accessed August 18, 2008).

²¹⁵ Massachusetts Emergency Management Agency, "Emergency Management Directors Listing," www.mass.gov/mema/ (accessed August 18, 2008).

²¹⁶ Notice from the survey provider: "One or more of your recipient addresses are invalid. This can happen when an address does not exist, has been closed, or has been individually blocked from receiving mail by the recipient ISP."

To complete the survey, please click on the link below:
<http://www.zoomerang.com/Survey/?p=U2A6HSJF9S5S>



4. Please identify the total number of events that you have had experience performing emergency management functions.

[View 18 Responses](#)

4. Please identify the total number of events that you have had experience performing emergency management functions.

#	Response
1	Local Emergencies (total number of events, even if state or federal declaration) 15 State Declarations (total number of events, even if federal declaration) 3 Federal Declarations 1
2	Local Emergencies (total number of events, even if state or federal declaration) 1 State Declarations (total number of events, even if federal declaration) 0 Federal Declarations 0
3	Local Emergencies (total number of events, even if state or federal declaration) 5
4	Local Emergencies (total number of events, even if state or federal declaration) 2 State Declarations (total number of events, even if federal declaration) 1 Federal Declarations 0
5	Local Emergencies (total number of events, even if state or federal declaration) one
6	Local Emergencies (total number of events, even if state or federal declaration) 0 State Declarations (total number of events, even if federal declaration) 0 Federal Declarations 0
7	Local Emergencies (total number of events, even if state or federal declaration) 20+ State Declarations (total number of events, even if federal declaration) 6 Federal Declarations 3
8	Local Emergencies (total number of events, even if state or federal declaration) 10 State Declarations (total number of events, even if federal declaration) 4 Federal Declarations 2
9	Local Emergencies (total number of events, even if state or federal declaration) 3
10	Local Emergencies (total number of events, even if state or federal declaration) 10-12 State Declarations (total number of events, even if federal declaration) 0

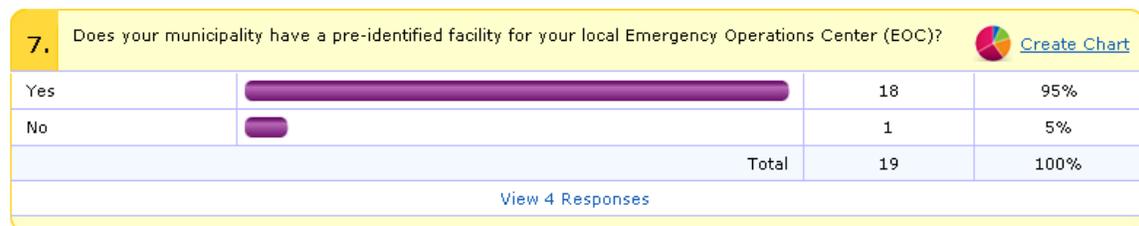
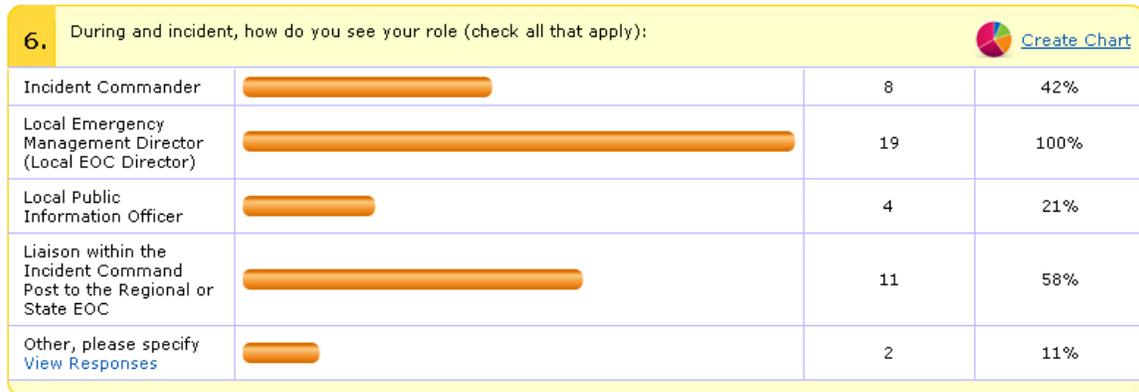
	Federal Declarations 0
11	Local Emergencies (total number of events, even if state or federal declaration) 20 State Declarations (total number of events, even if federal declaration) 8 Federal Declarations 4
12	Local Emergencies (total number of events, even if state or federal declaration) 10 State Declarations (total number of events, even if federal declaration) 0 Federal Declarations 0
13	Local Emergencies (total number of events, even if state or federal declaration) 25+ State Declarations (total number of events, even if federal declaration) 5+ Federal Declarations 5
14	Local Emergencies (total number of events, even if state or federal declaration) a dozen or more since 1978 State Declarations (total number of events, even if federal declaration) same Federal Declarations probably one half as many
15	Local Emergencies (total number of events, even if state or federal declaration) 1 State Declarations (total number of events, even if federal declaration) 0 Federal Declarations 0
16	Local Emergencies (total number of events, even if state or federal declaration) 2 State Declarations (total number of events, even if federal declaration) 0 Federal Declarations 0
17	Local Emergencies (total number of events, even if state or federal declaration) 4 State Declarations (total number of events, even if federal declaration) 2 Federal Declarations 2
18	Local Emergencies (total number of events, even if state or federal declaration) 2 State Declarations (total number of events, even if federal declaration) 0 Federal Declarations 0

5. What additional training would you like to have to make you more prepared to serve as a local/municipal EMD?

[View 9 Responses](#)

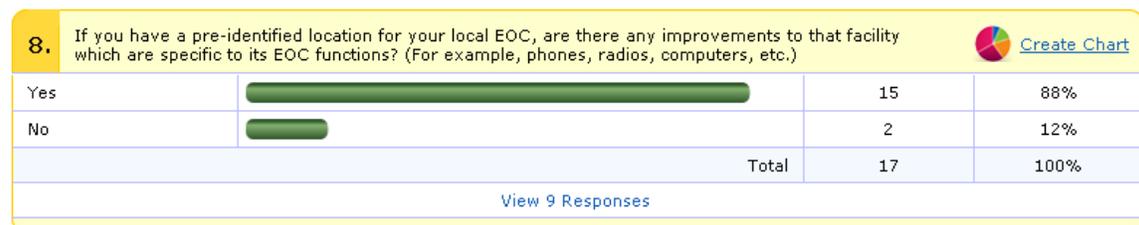
5. What additional training would you like to have to make you more prepared to serve as a local/municipal EMD?

#	Response
1	Filling out some of the gov't paperwork-
2	resource management
3	More training for new EMDs on paperwork and required filings
4	Grant writing and financial management of events. Operational "best practices"
5	None, I've been an active fulltime EMD for 25 years.
6	<p>In my case none. I am about to retire but, for someone just entering the field they need a broad based education in business management, administration, finance, and development of organizational skills as well as, Debris management and inventory techniques. In addition to the formal education they must have "time on the ground" say, several years and of actual hands on experience in working the various aspects of Emergency management. The idea that effective leadership can be gained from classroom learning is incorrect. The model that needs to be in place for effective Emergerncy leaders is the military model. Even the Generals in the military begin as lowly Lt.s and as they gain field experience they advance in rank. People in general and especially those in a disaster respond much better and quicker to someone "who has been there and done it." Make no mistake about it, people in these situations immediately "see right through" the phonies who have no experience and are operating form the "do as I say" mode instead of from experience. Experience provides the opportunity to learn to anticipate and prepare several levles of contingency plans and responses. The polictically appointed Emergency manager does not have that experiential learning to draw upon and therefore has to learn from his/her own mistakes at the expense of the victims of the incident he/she is supose to be assisting.</p>
7	I'd rather see more equipment or grants instead of training. The State provides many training courses.
8	More in depth training on the details of NIMS and how it functions at the national level, this would be in addition to ICS etc.
9	Any and all that are related to emergency management.



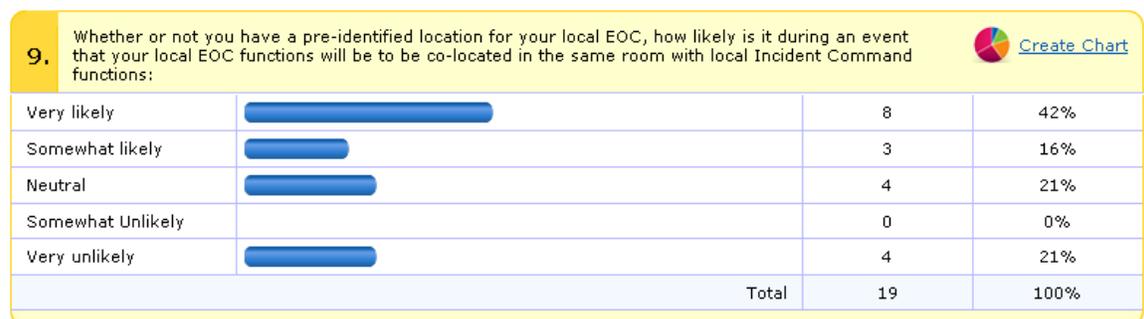
7. Does your municipality have a pre-identified facility for your local Emergency Operations Center (EOC)?

#	Response
1	But the facility is lacking in many technology needs, and could not accommodate a large EOC set-up (more than a medium sized, local event.)
2	Full communications capability with FD, PD, EMS, EM within a 20 mile radius as well as state agencies.
3	It is within the Police Dept, but not very efficient.
4	police station



8. If you have a pre-identified location for your local EOC, are there any improvements to that

facility which are specific to its EOC functions? (For example, phones, radios, computers, etc.)	
#	Response
1	Maps, wireless internet
2	Emergency Power, High speed internet, multiple phone lines, briefing room, multiple radio systems
3	Additional phone lines and permanently mounted radio banks, computers, improved bathroom facilities, more parking (new location)
4	Telephones, internet connections, computers, maps, storage area
5	Radios, phones, new building to meet today's codes.
6	Laptops with Internet & city connectability for 10, 3 large screen TV's, 2 way radio's on Low band, UHF, VHF, 800 mhz, Aircraft, 2 Meter and Marine. Link to homeland security and city security camera's [total 65]
7	An office with phones, radios and computers.
8	The Police Dept was retrofitted with phones and antennae for communcations, however many of those items have stoppped working or are outdated. It would take much more money then the Town provides my budget with, to fix the problems.
9	ability to plug in phones and computers desks area developed with this in mind



10. Any additional comments you may have concerning any of the above questions:

[View 2 Responses](#)

10. Any additional comments you may have concerning any of the above questions:

#	Response
1	we need to streamline the amount of agencies that we report to to do our jobs
2	Our Emergency Management Department is a vital component of our public safety. 9-1-1 In The City of Chelsea MA [the 11 busiest PSAP per capata in MA] is in Emergency Management and not PD or FD.

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APPENDIX D. NEW HAMPSHIRE LOCAL EMD SURVEY PROCESS AND RESULTS

New Hampshire has 234 municipalities with the responsibility for having Emergency Management Directors. I could not locate an email list of municipal Emergency Management Directors for New Hampshire, but I was able to locate a list of municipalities in New Hampshire, that included links to many of the municipalities' websites.²¹⁷ Not all New Hampshire municipalities have websites. I reviewed the available webpages for municipalities in New Hampshire and attempted to select a single email address for each municipality using the following process: If the website listed an EMD, then that email address was used. If the website did not list an EMD, or the EMD did not have an email address listed, then the Fire Chief's email address was selected. If those were not available, then the Police Chief's email address was selected. If none of the above were available, then the Selectman's address was used. Finally, in the absence of all of the above, if the website listed an email address for the Town Clerk or for town general information then email address was used. Very few New Hampshire municipalities listed an Emergency Management Department or Director as a municipal department, although some did.²¹⁸ Some websites listed a Fire Chief,²¹⁹ Police Chief, or a member of the Police Department²²⁰ specifically as EMD. Several municipal websites that the Emergency Management department was established under the New Hampshire Emergency

²¹⁷ New Hampshire Local Government Center, <http://www.nhlgc.org/LGCWebSite/InfoForOfficials/nhmunicipalities.htm> (accessed August 16, 2008).

²¹⁸ Perhaps the most detailed information available was The Town of Stoddard's website shows an EOP with ESFs.

²¹⁹ See e.g., Dover, NH.

²²⁰ See e.g., Durham, NH.

Management Act,²²¹ but the act appears to have been repealed.²²² In every case, I sent a maximum of one email to a municipality, asking that if they were not the EMD, to forward the survey as appropriate.

The process used was therefore different from the Connecticut, Massachusetts, and Vermont EMD surveys. The Connecticut, Massachusetts, and Vermont surveys were sent to an email list of identified EMDs, and the selected electronic survey options for those surveys did not permit those EMDs to forward the survey. In other words, Connecticut, Massachusetts, and Vermont EMD surveys could only be complete once, by the specified individual. The New Hampshire surveys could be forwarded to anyone for completion, and could potentially have been completed multiple times by the same or other individuals.

The end result was that out of the 234 municipalities in New Hampshire, the survey was sent to a single individual in 140 separate municipalities. Five of the surveys returned as undeliverable.²²³ 3 of 10 surveys (30%) were excluded because the respondent did not check “Local Emergency Management Director (Local EOC Director)” under Question 6, “During an incident, how do you see your role (check all that apply).” The survey was sent with the following text:

If you are the Emergency Management Director for your municipality, please complete the survey below. If you are not the Emergency Management Director for your municipality, please forward to your local Emergency Management Director.

Hello, my name is Ludwig Schumacher and I am a graduate student at the Naval Postgraduate School Center for Homeland Defense and Security. I am currently conducting research in support of my masters thesis. An important aspect of my research is understanding the span of control for emergency management functions between the local and state emergency operation centers in the New England states.

²²¹ Town of Columbia, New Hampshire, Columbia Management and Community, <http://www.columbianh.org/management.htm> (accessed August 11, 2008).

²²² New Hampshire General Court, <http://www.gencourt.state.nh.us/rsa/html/viii/107-c/107-c-mrg.htm> (accessed August 16, 2008).

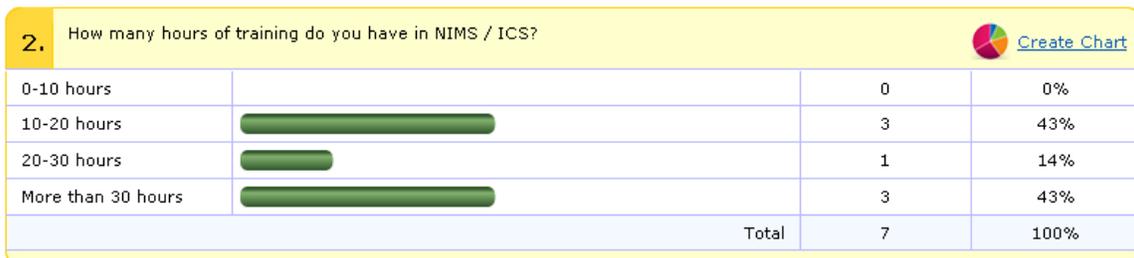
²²³ Notice from the survey provider: “One or more of your recipient addresses are invalid. This can happen when an address does not exist, has been closed, or has been individually blocked from receiving mail by the recipient ISP.”

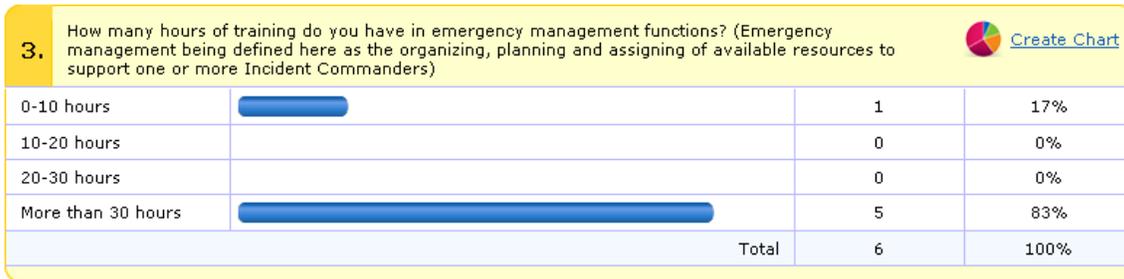
If you are a municipal Emergency Management Director, please take the time today to complete the survey. Your input is very important to my research. **The survey can be accessed by clicking on the link below.** The survey consists of 10 questions and can be completed in less than 5 minutes. About the survey:

- This survey is completely voluntary; there is no penalty for not completing it.
- This survey does not identify you through any personal identification and only collects data about you as it pertains to demographic information.
- Your answers will be kept strictly confidential and will not be released in any form that can be identified with you individually.
- Results of the survey may be published in aggregate form only, without identifying any individual or organization.

Thank you,

Ludwig J. Schumacher
 Graduate Student
 ljschuma@nps.edu
 Naval Postgraduate School
 Center for Homeland Defense and Security <http://chds.us/>





4. Please identify the total number of events that you have had experience performing emergency management functions.

[View 6 Responses](#)

4. Please identify the total number of events that you have had experience performing emergency management functions.

#	Response
1	Local Emergencies (total number of events, even if state or federal declaration) 2
2	Local Emergencies (total number of events, even if state or federal declaration) 10 State Declarations (total number of events, even if federal declaration) 5 Federal Declarations 2
3	Local Emergencies (total number of events, even if state or federal declaration) 3 State Declarations (total number of events, even if federal declaration) 3 Federal Declarations 3
4	Local Emergencies (total number of events, even if state or federal declaration) 2 State Declarations (total number of events, even if federal declaration) 1 Federal Declarations 0
5	Local Emergencies (total number of events, even if state or federal declaration) hundreds
6	Local Emergencies (total number of events, even if state or federal declaration) 10 Federal Declarations 26 federal wildland fire crews

5. What additional training would you like to have to make you more prepared to serve as a local/municipal EMD?

[View 3 Responses](#)

5. What additional training would you like to have to make you more prepared to serve as a local/municipal EMD?

#	Response
1	Specific training on the Local Emergency Mangement interface with Regional and State Emergency Management Plans.
2	ICS 300 and 400
3	more training in local, state incident at EOC,

6. During an incident, how do you see your role (check all that apply):

 [Create Chart](#)

Incident Commander		4	57%
Local Emergency Management Director (Local EOC Director)		7	100%
Local Public Information Officer		2	29%
Liaison within the Incident Command Post to the Regional or State EOC		4	57%
Other, please specify		0	0%

7. Does your municipality have a pre-identified facility for your local Emergency Operations Center (EOC)?

 [Create Chart](#)

Yes		7	100%
No		0	0%
Total		7	100%
0 Responses			

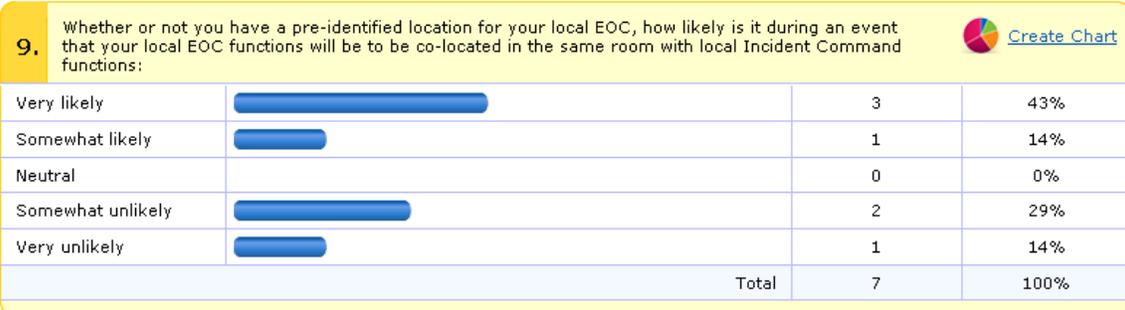
8. If you have a pre-identified location for your local EOC, are there any improvements to that facility which are specific to its EOC functions? (For example, phones, radios, computers, etc.)

 [Create Chart](#)

Yes		6	86%
No		1	14%
Total		7	100%
View 2 Responses			

8. If you have a pre-identified location for your local EOC, are there any improvements to that facility which are specific to its EOC functions? (For example, phones, radios, computers, etc.)

#	Response
1	Cell Phone amplifier, desk chairs
2	additional computers, white boards, map programs,



10. Any additional comments you may have concerning any of the above questions:
[View 3 Responses](#)

10. Any additional comments you may have concerning any of the above questions:

#	Response
1	It is very difficult to convince local officials of the importance of preparing for an event which requires the opening of an EOC.
2	we try to run the EOC from the police station and operations from the neighboring fire stations to separate functions and working conditions.
3	NIMS should be junked and plain language implemented in its place.

APPENDIX E. VERMONT LOCAL EMD SURVEY PROCESS AND RESULTS

Vermont has 251 municipalities with the responsibility for having emergency management directors. Vermont Emergency Management maintains an email distribution list entitled Emergency Management Directors. The local EMD survey found in Appendix A was sent to the 459 email addresses provided on that list, and the survey was sent in a manner that did not allow forwarding or multiple completions of the survey by a single individual. 114 of the surveys returned as undeliverable, due in large part to email blocking mechanisms of two regional internet service providers.²²⁴ 4 of 22 surveys (18%) were excluded because the respondent did not check “Local Emergency Management Director (Local EOC Director)” under Question 6, “During an incident, how do you see your role (check all that apply).” The survey was sent with the following text:

If you are the Emergency Management Director for your municipality, please complete the survey below!

Hello, my name is Ludwig Schumacher and I am enrolled in a distance learning course at the Naval Postgraduate School’s Center for Homeland Defense and Security (<http://chds.us/>). I am currently conducting research in support of my thesis. An important aspect of my research is understanding the span of control for emergency management functions between the local and state emergency operation centers in the New England states, particularly in the five states without county EOCs.

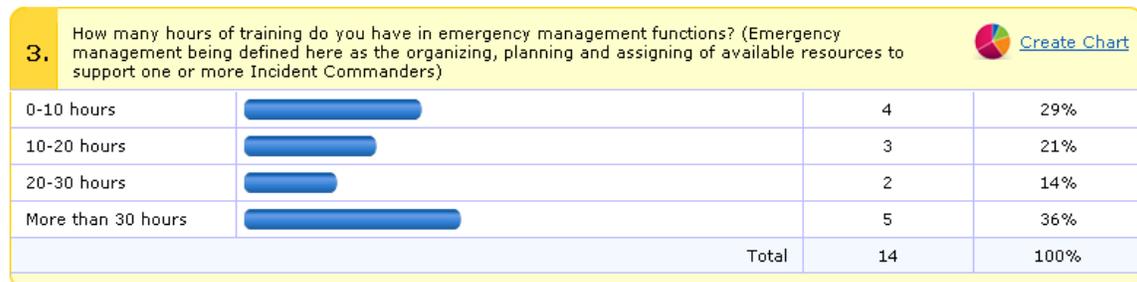
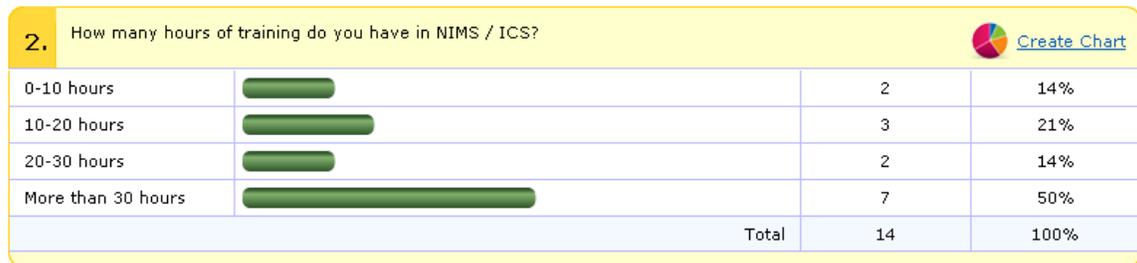
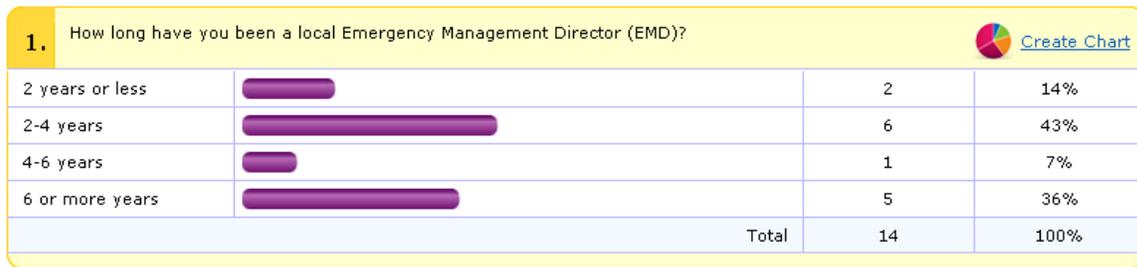
If you are a municipal Emergency Management Director, please take the time today to complete the survey. Your input is very important to my research. **The survey can be accessed by clicking on the link below.** The survey consists of 10 questions and can be completed in less than 5 minutes. About the survey:

²²⁴ Notice from the survey provider: “One or more of your recipient addresses are invalid. This can happen when an address does not exist, has been closed, or has been individually blocked from receiving mail by the recipient ISP.”

- This survey is completely voluntary; there is no penalty for not completing it.
- This survey does not identify you through any personal identification and only collects data about you as it pertains to demographic information.
- Your answers will be kept strictly confidential and will not be released in any form that can be identified with you individually.
- Results of the survey may be published in aggregate form only, without identifying any individual or organization.

Thank you,

Ludwig J. Schumacher
 ljschuma@nps.edu
 Naval Postgraduate School
 Center for Homeland Defense and Security



4. Please identify the total number of events that you have had experience performing emergency management functions.

[View 13 Responses](#)

4. Please identify the total number of events that you have had experience performing emergency management functions.

#	Response
1	<p>Local Emergencies (total number of events, even if state or federal declaration) 3</p> <p>State Declarations (total number of events, even if federal declaration) 2</p> <p>Federal Declarations 2</p>
2	<p>Local Emergencies (total number of events, even if state or federal declaration) 0</p> <p>State Declarations (total number of events, even if federal declaration) 0</p> <p>Federal Declarations 0</p>
3	<p>Local Emergencies (total number of events, even if state or federal declaration) 5</p> <p>State Declarations (total number of events, even if federal declaration) 2</p> <p>Federal Declarations 3</p>
4	<p>Local Emergencies (total number of events, even if state or federal declaration) 2</p>
5	<p>Local Emergencies (total number of events, even if state or federal declaration) 5</p> <p>State Declarations (total number of events, even if federal declaration) 2</p>
6	<p>Local Emergencies (total number of events, even if state or federal declaration) 5</p> <p>State Declarations (total number of events, even if federal declaration) 3</p> <p>Federal Declarations 3</p>
7	<p>Local Emergencies (total number of events, even if state or federal declaration) None</p> <p>State Declarations (total number of events, even if federal declaration) None</p> <p>Federal Declarations None</p>
8	<p>Local Emergencies (total number of events, even if state or federal declaration) 0</p> <p>State Declarations (total number of events, even if federal declaration) 0</p> <p>Federal Declarations 0</p>

9	Local Emergencies (total number of events, even if state or federal declaration) 1 State Declarations (total number of events, even if federal declaration) 1 Federal Declarations 0
10	Local Emergencies (total number of events, even if state or federal declaration) 3 very serious plus countless others in CT & VT State Declarations (total number of events, even if federal declaration) 2 Federal Declarations 2
11	Local Emergencies (total number of events, even if state or federal declaration) 5 State Declarations (total number of events, even if federal declaration) 5 Federal Declarations 2
12	Local Emergencies (total number of events, even if state or federal declaration) a few at local level, I'm also member of Fire Dept State Declarations (total number of events, even if federal declaration) 0 Federal Declarations 0
13	Local Emergencies (total number of events, even if state or federal declaration) 1000+ (not specific to local EMD role) State Declarations (total number of events, even if federal declaration) 10+ (not specific to local EMD role) Federal Declarations 20+ (not specific to local EMD role)

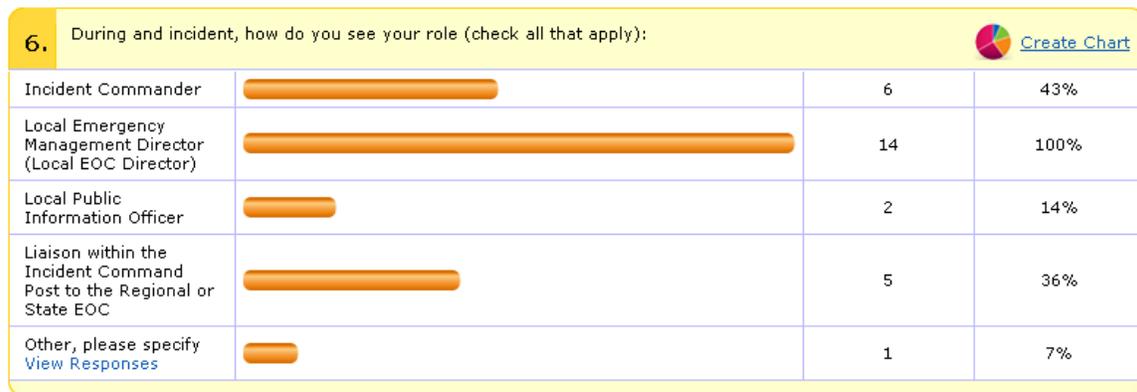
5. What additional training would you like to have to make you more prepared to serve as a local/municipal EMD?

[View 11 Responses](#)

5. What additional training would you like to have to make you more prepared to serve as a local/municipal EMD?

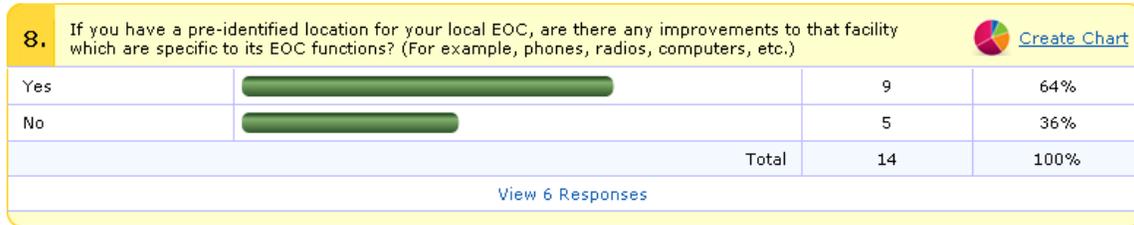
#	Response
1	Basics of being an EMD, local and state authority/statutes for the EMD.
2	More ICS training!
3	Interaction with State EM
4	more locally training
5	frequent drills are helpful

6	None. Training supplied by Vermont Emergency Management is sufficient.
7	more table top exercises with local first responders. The ones we have had were super but we need more and regular every couple of months.
8	I would like to see more training that is practical and realistic that can be built on rather than starting for the so called "big one"
9	none
10	HSU sponsored/organized scenarios, table tops and full scale exercises, relating to realistic events
11	N/A



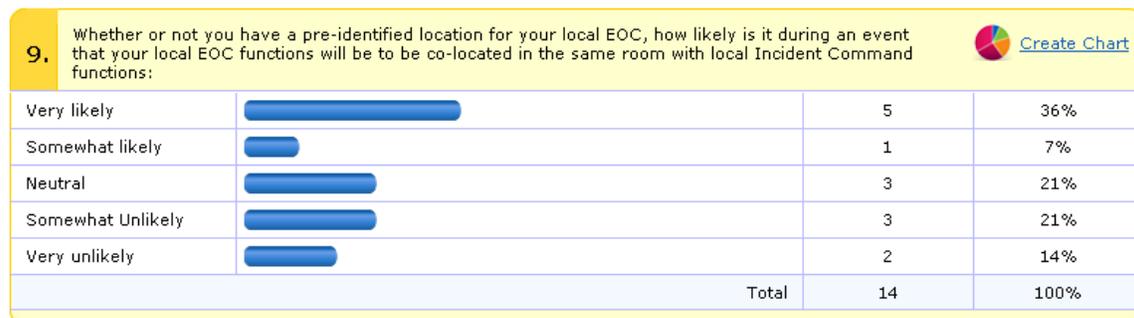
7. Does your municipality have a pre-identified facility for your local Emergency Operations Center (EOC)?

#	Response
1	We do have an identified location for our EOC, and do have funding to make it functional (question below), however we feel this location is not suitable for a larger scale event and are looking at other locations at this time.
2	We serve as a Reception Center in the event of a nuclear accident
3	Two, one at the north end of town and one at the south end



8. If you have a pre-identified location for your local EOC, are there any improvements to that facility which are specific to its EOC functions? (For example, phones, radios, computers, etc.)

#	Response
1	We have funding available to install phones, computers/networking and radios. However we will likely not utilize this location and are looking at alternatives
2	Communications equip. (phones,internet access)
3	Extra phone , radio and computer connections available. Bulletin, chalk and white erase boards on every wall.
4	Vermont Emergency Management has equipped our command center with communication and office needs
5	a generator would be good but no money
6	back up generators, portable radios



10. Any additional comments you may have concerning any of the above questions:

[View 7 Responses](#)

10. Any additional comments you may have concerning any of the above questions:

#	Response
1	I would like to see more frequent offering of courses from VEM, both the ICS series, and other courses they offer.
2	The function of EM should not continue to be an individual community effort. There needs to be a regional approach. Insufficient resources supporting too many un-coordinated efforts.
3	None.
4	Why does the survey recycle back to the beginning every time I click on a choice answer to a question?
5	I have managed several real major hurricane emergencies in another state and I am unhappy with the lack of participation of the non paid organizations which are the back bone of first response in the rural world. Also much of the required training places unrealistic demands on volunteer organizations such as fire and EMS. Since 9/11 everyone has become complacent again except for those that have now managed to make a career out of Homeland Security
6	No
7	Is the results of survey going to be released to us for informational purposes, Thanks for your efforts with regards to emergency management.

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